ORIGINAL ARTICLE





The future perspectives of the European Unified Patent Court in the light of the existing intellectual property courts in the United States and Japan

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Abstract

The entering into force of Europe's Unified Patent Court (UPC) on 1 June 2023 shifts the question on whether and how a specialised and unified court should be designed to the question on how the already conceived court shall function to meet the set institutional and substantive goals for the European patent adjudication. Despite the contextual legal and economic differences, the examples of the US Court of Appeals for the Federal Circuit (CAFC) and the Tokyo Intellectual Property High Court (IPHC) can serve as guidance for the new European court, especially in its early days of operation. This article, outlining both the differences and similarities in the origins of the three courts, articulates upon the challenges as well as the achievements of the United States and Japanese examples to shed light on the future perspectives of the UPC and wherever relevant, provide policy-oriented and practical recommendations for those in charge of shaping the UPC's jurisprudence. To this end, it is submitted that particular attention should be paid to ensuring the wide range of competences of the UPC judges; the interinstitutional dialogue between the UPC and the Court of Justice of the European Union

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(CJEU) as well as the dialogue among the UPC judges, including the encouragement of dissenting opinions; consultation of public, if possible in the form of *amicus curiae* briefs; and international cooperation with existing specialised IP courts worldwide. Based on evidenced foreign practices, these mechanisms are argued to serve the objectives of avoiding 'overspecialisation', achieving uniformity while maintaining accuracy, securing the new court's legitimacy and, finally, fostering global judicial harmonisation.

KEYWORDS

Court of Appeals for the Federal Circuit, global judicial harmonisation, lessons for the UPC, specialised IP courts, Tokyo Intellectual Property High Court, Unified Patent Court

1 | INTRODUCTION

Europe has entered a new phase as the long-awaited specialised intellectual property court—the Unified Patent Court (UPC) became fully operational on 1 June 2023. This reform implies a fundamental transformation of patent litigation for innovative industries as well as for the entire European judicial architecture and justice system. Besides, the globalised nature of innovation and cross-border trade provides the UPC with the capacity to impact not only European perspectives, but also foreign outlooks on European patent law and judiciary. Therefore, the UPC is supposed to operate within an international context calling for a thorough understanding of the existing experience of specialised intellectual property courts and drawing lessons wherever possible.

As much controversial the debate has been around the question of whether and in which form to create the uniform and specialised European patent judiciary, the discussion on how it will function is equally intense now that the UPC has already been built and has entered into force. The principal question is whether and how it will fulfil its set goals, particularly in terms of ending fragmented patent litigation, fostering uniform patent jurisprudence and legal certainty as well as maintaining accuracy in patent enforcement, and in turn secure its legitimacy as a new, specialised institutional actor on the European and international judicial scene. Efficient patent enforcement is also considered to be largely accountable for the European economic growth in an increasingly competitive global context.2 Indeed, according to the most recent study of the European Observatory from 2022, intellectual property intensive industries account for 47% of total economic activity within the EU, equalling a total of EUR 6,4 trillion.³ Moreover, IPR intensive industries account for a large share of EU's internal as well as external trade, notably with patent rights marking the highest monetary value amongst all IP rights in both exports and imports. Inevitably, an increase in economic activities involving patent rights implies more room for potential legal conflicts, therefore, expectations towards their effective resolution also rise. In light of this context, as Europe aims at expanding its knowledge economy, policy makers have focused on effective patent enforcement and the idea to create a centralised and specialised intellectual property court has been developed.⁵ However, the path of creating a uniform patent judicial system for Europe has been challenging, counting several unsuccessful milestones starting from the Community Patent Convention signed in 1975, going through Commission's several proposals for a Community Intellectual Property Court, the European patent Litigation Agreement promoted by the European Patent Organisation's intergovernmental working party, and finally reaching to the adopted Unitary Patent Package,⁶ containing the agreement on the UPC among the 24 EU Member States.⁷ Out of all these initiatives that considered the construction of some kind of a specialised intellectual property court, either strictly within the framework of the European Union legal order, or on the regional European law level, the latest version—the UPC—has finally reached the implementation phase despite fierce debates.⁸

The concept of judicial specialisation in general and particularly in the field of IP law is not new or unique in Europe. Europe's initiative to create a specialised IP court does not only originate from the local patent litigation issues but is born within the international legal developments and the acquired experiences of IP specialisation. First, the TRIPS Agreement to which the EU is a signatory, indicates that IPR enforcement must be 'fair and equitable' and not 'unnecessarily complicated or costly'9 and that the signatory states can decide whether they allocate separate resources to create specialised intellectual property enforcement mechanisms, ¹⁰ that is, they are free to establish specialised IP courts. On a global level, even though a 'one-size-fits-all' approach does not exist, as the litigation issues and the local contexts vary, a trend towards establishing IP specialised courts is noticeable. 11 Due to the importance of patent intensive industries to the local economic developments, two such intellectual property courts have been established before the UPC that can be invoked for the purpose of this article: one in the United States-the Court of Appeals for the Federal Circuit (CAFC) and the second one in Japan-the Intellectual Property High Court (IPHC). Observations of the performances of these two courts can be a valuable contribution to the discussion on successful implementation and future perspectives of the UPC, which is the principal objective of this paper. Undeniably, now that Europe has established a specialised patent judiciary, discussions on whether and to what extent it is needed must be shifted towards how the UPC should operate and what should be highlighted right in the initial phase of the Court to achieve its set goals and attract patent litigation to Europe, that is, reinforce its legitimacy.

After the aforementioned legislative failures to introduce a single forum for patent disputes in Europe, the most obvious functional goal of the UPC was to become such a forum with its uniform jurisprudence. Despite the common legal instrument-the European Patent Convention (EPC) signed in 1973, serving as the principal substantive patent law text in Europe, the national courts' mandate to hear patent disputes engendered debates around the efficiency of the European judicial system. The debate became particularly pertinent due to the possibility of forum shopping that had become a prevalent practice in Europe. In particular, despite the rules on competent jurisdiction as defined in the Brussels Regulation, 12 certain strategies could be employed by the patent holders depending on the different approaches of national courts towards procedural and substantive patent matters. For example, a preliminary relief, a so called 'KortGeding' issued by Dutch courts in urgent matters rendered the Netherlands a preferrable forum for patent holders until it was limited by the decision of the Court of Justice only to the situations where the defendant was domiciled in the Netherlands and the invalidity issue was not concerned.¹³ Differences in upholding or dismissing the novelty and inventive step across the jurisdictions were also contributing to the European 'forum shopping' as demonstrated by Zeebroeck and Graham in their seminal work on cross-border patent litigation in Europe. 14 Such a disbalanced system was considered to be untenable and self-inflicting. According to Brinkhof, these differences led to divergent decisions in terms of quality, differences in speed and costs of litigation which was burdensome for the patent holders and their competitors. 15 Therefore, 'falling back on the national level diminish[ed] the value of [the central] granting system'. It is in this context that the concepts of judicial harmonisation and dialogue became central to the European patent scene. Observations of national case law regarding cross-border patent disputes demonstrate that some European judges were willing to engage in an inter-judicial dialogue by consulting the decisions of the other national courts. For example, the courts of the United Kingdom and Germany have emphasised in their decisions the importance of taking into consideration the decisions of the courts of the other EPC Contracting States. 16 Case law of the Boards of Appeal of the European Patent Office (EPO) has also been an essential source for national courts. 17 Such informal cooperation was, however, within the discretion of individual judges. Moreover, due to the different strategies that litigants could adopt before different national courts depending on their interests in a given national proceeding, the risk of divergent outcomes was produced.¹⁸ A single patent jurisdiction initiative was thus advanced by the

European Commission, eventually resulting in the UPC after the fierce debates on its institutional nature and organisational structure. Some have argued that the new court may be incompatible with EU law and the Article 118 of the Treaty on the Functioning of the European Union (TFEU) that speaks of establishing 'measures for the creation of European intellectual property rights to provide uniform protection of intellectual property rights throughout the Union and for the setting up of centralised Union-wide authorisation, coordination and supervision arrangements'. 19 The main criticism is directed to the fact that the new system is not integrated into the EU's judicial architecture and that the role of the Court of Justice of the European Union (CJEU or the Court of Justice) as a guardian of the acquis Communautaire is limited.²⁰ Up to now, the legality of the UPC in its current form has not been questioned before the Court of Justice and it has successfully entered into force. However, it is argued that open questions remain that might resurface later. 21 Importantly, the call for a legality review of the new court does not originate from purely formal and technically 'correct' law-making interests, but rather is linked to the idea that these formal aspects may define the legitimacy of setting a patent policy for Europe. In other words, the legal construction of any new court, the applicable law of the court and the rules on its accountability can shape its jurisprudence in one way or another. Therefore, for a new court that has started its way on allegedly 'shaky foundation'22 and as a result of one of the longest legislative and political debates, securing the legitimacy is of utmost importance at this stage. On the way to fulfilling its functional goals as a legitimate court, any lesson that can be drawn from similar reforms is valuable, particularly in the initial phase of the UPC.

One might argue that observing experiences of systems that differ from the European context may not be relevant. However, there are more contextual and purposive similarities amongst the three jurisdictions than might appear at first glance. Furthermore, some of the objective elements surrounding the creation of the three courts render the comparison a worthwhile exercise. Before pointing those similarities and elements out, it must be noted that indeed, Europe is organised as a region, consisting of different countries (27 within the EU). Hence, the UPC is supposed to function as a court common to its Contracting Member States, outside the national jurisdictions, while the CAFC and the IPHC are integrated within the national judicial systems.²³ Another important difference is that the UPC is a two instance court while the CAFC and the IPHC are both placed on an appellate levels.²⁴ Jurisdictions of the CAFC and the IPHC are also not confined purely to the patent litigation as it is the case at the UPC.²⁵ Importantly, both the CAFC and the IPHC also hear appeals of the national patent offices' decisions, while the UPC is only reserved for postgrant disputes on patent infringement and validity.²⁶ Despite these different characteristics, the comparative analysis of the three courts is, however, highly relevant, first, due to the principal rationales behind the creation of these courts, that is, similarities in some of the issues for the resolution of which they were devised. These issues were the unification of judgements, the ending of existing forum shopping, the fostering of high quality and speedy IP adjudication while strengthening legal certainty and enhancing IP enforcement system²⁷; second, due to the fact that all three jurisdictions are part of a larger international legal framework, including the TRIPS Agreement; and third, because the timeline for the creation of the courts in the United States and Japan permits solid observation of both achievements and failures, something that the UPC can benefit from. While the CAFC was created in 1982, the IPHC entered into force in 2005 and the UPC opened its doors in 2023. Such a vicennial scheme of establishing intellectual property courts in three major economic industries worldwide creates a unique academic opportunity to investigate the performance of the existing courts and draw important lessons from them. In addition to the evident advantage of such analysis for the UPC itself, any academic contribution to an inter-continental institutional comparison is beneficial for the cross-fertilising of ideas and the advancement of international academic debate.

Following this introductory section, the second and third sections of the paper discuss in detail the legal and economic context, as well as the advantages and drawbacks of the CAFC in the United States and the IPHC in Japan, respectively. This observation is conducted through the lens of how a newly created court such as the UPC can avoid the potential issues associated with a centralised and specialised IP court and instead enhance the positive aspects acquired by the reforms. Based on the themes that transpire throughout this discussion, the fourth chapter is particularly dedicated to outlining the specific UPC-relevant facets and submitting tailored and concrete recommendations. Finally, the conclusion marks the end of the paper.

2 | ORIGINS AND PERFORMANCE OF THE CAFC IN THE UNITED STATES—PARALLELS WITH THE UPC

2.1 | The legal and economic context of the creation of the CAFC

The 1970s were challenging times for the US federal judicial system, as appellate courts were overburdened with cases, triggering the Congress to respond in 1982 with the Federal Courts Improvement Act (FCIA) which created the CAFC—a court with subject-matter jurisdiction that centralised patent jurisdiction on an appellate level.²⁸ Before adopting this Act, a so-called HRUSKA Commission established in 1975, reported on the diversity issue and pointed out the concerns associated with the creation of specialised courts.²⁹ One of the main disadvantages highlighted by the HRUSKA Commission was the potential to develop a 'tunnel vision' by a specialised judicial body, threatening to isolate patent law from the broader legal framework.³⁰ Another fear was that a court with exclusive jurisdiction might not draft persuasive judgements due to its monopolistic judicial position and that specialisation might lead to industries' interests being favoured.³¹ Despite these concerns, proposals to grant patent jurisdiction to other courts were rejected as this would be contrary to the main rational of the Congress to foster uniformity of patent law.³² Moreover, the 1970s, characterised by economic recession, urged the US government to promote the country's technological advancement by tackling the disuniform patent law—an obstacle at the time.³³ It was assumed that eliminating the differences in patent validity standards that were employed by the United States Patent and Trademark Office (USPTO) and district courts would be addressed by the creation of the CAFC, which in turn would create a more stable environment for innovation.³⁴

As a response to the fear that specialisation might lead to malfunctioning of the court, the CAFC was devised to also hear nonpatent disputes, such as antitrust cases, to create a 'semispecialisation' that would positively influence patent jurisprudence.³⁵ According to Dreyfuss, such commercial disputes provide an opportunity to understand broader legal and commercial aspects, without which there is a risk that patents will always be prioritised over encouraging innovation.³⁶ Over time, however, patent cases became dominant at the CAFC, amounting to more than 60% of all cases.³⁷ There is a vast literature suggesting that the CAFC has become a patent-centric court frequently isolated from the broader legal and technological issues.³⁸

Nevertheless, at the time when the CAFC was created, uniformity was perceived as an ultimate goal, the achievement of which would end forum-shopping between the different circuits.³⁹ However, it must be noted that the risks identified concerning the creation of a specialised court were also addressed during the discussion of the FCIA, a process that was marked by the strong involvement of industrial actors that insisted on the creation of a specialised patent court.⁴⁰ According to the Federal Circuit Judge Marion Bennet, patent bar and industrial members were indeed insisting on the adoption of the FCIA.⁴¹ Consequently, although still worried about 'overspecialisation', convinced by the industry's arguments concerning the need of uniform patent doctrine, the Congress adopted the FCIA with a majority vote and created the CAFC—not a classical specialised court, but a court with tightly defined jurisdiction.⁴²

The controversial nature of passing a legislative act that paves the way for a judicial reconstruction is inherent to any democratic society in which the independence of the justice system is highly valued. The long journey leading to the UPC Agreement was also characterised by submission of the viewpoints of various actors, including industry and the patent law profession. ⁴³ The creation of a new court for patent disputes both in the United States and Europe was seen as an experiment, ⁴⁴ filled with high expectations but not supported by all stakeholders who are likely to be affected by a new system. The EU's positive expectations towards the UPC are based on its economic benefits, however, whether these will outweigh the possible loopholes generated by the creation of the UPC and therefore change the EU's position is not yet clear. ⁴⁵ While it is indeed too early for the UPC 'experiment' to be evaluated, this work has already been done in relation to the CAFC, outlining both its drawbacks as well as achievements that can be employed to guide the UPC in its future work. The next two sections draw attention to these controversies.

2.2 | Tensions around the jurisprudence, structure, and language of the CAFC

The many efforts put into the creation of the CAFC have invited for investigation of its work to assess whether the institutional changes have led to maximising the benefits of specialisation. One of the main critics towards the CAFC has been voiced concerning its jurisprudence, particularly that its decisions are not sufficiently clear to build a consistent body of law with precedential opinions and that there is too much inconsistency in the decisions. Linked to the critics on the jurisprudence, the issue of inconsistency with other areas of law outside the patent field has also been signalled, for example in the case *In re Independent Service Organizations Antitrust Litigation*, in which the Federal Circuit Court declined the competition law defence. In addition to diminishing antitrust considerations, Dreyfuss has criticised the CAFC for the lack of reliance on empirical and social science material as well as the inefficient process of decision-making with several reviews of other institutions' decisions, such as the USPTO. Nard and Duffy also highlight the issue of CAFC's remoteness from technological communities and academic works.

Criticism towards the CAFC's jurisprudence is often argumented by referring to the revisions of the CAFC's decisions by the US Supreme Court. 52 Notably, after the first 20 years of the CAFC's existence, 80% of its decisions were reversed or modified by the Supreme Court. 53 The relationship between the CAFC and the US Supreme Court is emblematic of the disagreements between hierarchically interdependent specialised and generalist courts. The absence of a similar supreme court placed above the UPC puts the Court of Appeal of the UPC in a powerful and at the same time, highly responsible position. Moreover, as the first instance level of the UPC is shared amongst the various local and regional divisions, the Court of Appeal will have a harmonising role for any divergence that might occur as a result of different divisions handling the cases on the first instance level. Though any risk of differences is minimised by a tailored training of judges of the UPC,⁵⁴ the procedural discretion granted to the local divisions, for example, in relation to the rule on bifurcation under Article 33(3) of the UPC Agreement, may cause uneven practices. 55 The Court of Appeal will have to harmonise the UPC law, but also reconcile it with the EU law wherever a conflict may emerge. In the United States, the subjects of disagreements between the CAFC and the Supreme Court concern, for example, the liberal approach of the CAFC towards the standard of inventive step, computer implemented inventions and the CAFC's jurisdiction in cases that originate outside patent law.⁵⁶ Hence, the reputation of the CAFC's tensed relationship with the generalist Supreme Court is often evidenced by overruled judgements.⁵⁷ In the European reality, such direct overruling will not be possible, which inevitably underscores the role of the Court of Justice that can play a limited but crucial role in the new patent jurisprudence in Europe, an argument further developed below in this paper.

Moreover, part of the criticism of the CAFC's jurisprudence is its propatent nature.⁵⁸ Empirically speaking, the CAFC has proven to be propatent when it comes to patent validity, due to the presumption of patent validity which in turn has led to increased success of patent holders in patent validity disputes.⁵⁹ Since the risk of getting a patent invalidated is low, such practice has also encouraged patent holders to chase patent infringements.⁶⁰ The pro patent bias of the CAFC has arguably stemmed from the influential interest groups holding large patent portfolios that frequently use the court's services.⁶¹ As a result, the 'creative sector' pays for the high patent value set by a court, something that the UPC should be particularly careful about in its early years of operation, as it might be prone to ensuring the (over)protection of the interests of the large patent players to attract patent litigation to this newly created forum.⁶²

Apart from loopholes in the jurisprudence, the structural and language related issues outlined in relation to the CAFC must be also taken into consideration. In particular, the fact that the majority of the Court's judges have a background in patent or commercial law renders its judicial bench rather disbalanced. The issue of disbalance is also linked to the subject-matter jurisprudence of the CAFC which, coupled with the complexity of patent law, leads to the ambiguity of the language adopted at the Court. The isolation of patent vocabulary is ascertained to produce complexity and idiosyncrasy. This is indeed problematic as the Federal Circuit is the de facto highest court for the majority of patent cases in the United States and the stability of its language is required for the lower courts as well as the administrative agencies that follow its jurisprudence. Moreover, vocabulary produced by the CAFC is prone to repetition not only by lower instances, but also by practicing patent attorneys 'parroting back to the court'.

Therefore, ambiguities produced by an authoritative court such as the CAFC, or by any other specialised court, such as the UPC, can have far-reaching consequences for the development of the patent field. Even though the UPC and the EPO are independent from one another from a legal and institutional point of view, the EPO will most probably integrate the interpretation of a patent validity standard set by the UPC, just as it integrates the nonbinding decisions of the CJEU in its examination guidelines.⁶⁶ Therefore, the sharpness of the UPC's language will be closely assessed by the EPO as well as the national courts. Both the EPO's Boards of Appeal and the UPC, for deciding substantive patent matters such as the patent validity ground and patent scope, apply the EPC as their principal legal source. The two institutions thus will have to take into account each other's case law to achieve uniformity. This will be possible only if both authorities apply these substantive norms in a consistent manner. The same applies to the national courts that will continue having jurisdiction for opted out European patents as well as national patents. Despite the nonbinding nature of the case law of national courts for the Boards of Appeal of the EPO, the Enlarged Boards of Appeal has already stated in its case on Second Medical Indication that the EPO should follow the interpretations of the EPC Contracting States' courts as well as the patent offices.⁶⁷ Therefore, there is no doubt that the decisions of the UPC, a court Common to the Contracting Member States, that are at the same time parties to the EPC will also be observed by the EPO and the national courts to ensure the continuity of justice. In fact, this observation is likely to be reciprocal-it is to be expected that the persuasive authority of the EPO's Boards of Appeal and its case law will also resume for the UPC, as it has been the case for the national courts up to now.⁶⁸ Yet, over time the UPC will develop its own solid body of case law integrating not only very technical and functional aspects of patentability, but also other principles of law, especially stemming from this court's EU-law related obligations.⁶⁹ Therefore, the UPC's jurisprudence can potentially become a backbone of the European patent law development which must be sufficiently sharp and comprehensive to enable a true patent law harmonisation throughout the relevant European institutions. Yet, stabilising the jurisprudence of a new specialised court can take some time. In the United States, apart from the invoked criticisms concerning the CAFC's performance, it is ascertained that it is still on its journey to fulfil its mandate—to create a coherent patent jurisprudence for the United States. 70 The next section shifts the focus from the detriments of patent specialisation to the achievements that the CAFC is associated with.

2.3 | The CAFC's achievements in the development of patent law and policy

Patent professionals are in consensus that overall, the creation of the CAFC has been a success for the advancement of the US patent adjudication.⁷¹ The Court has certainly ended the forum shopping on an appellate level and has also engaged in a more careful consideration of essential aspects of patent law, such as the criterion of obviousness and the interpretation of patent claims.⁷² It is also noteworthy that the patent-friendly biasness of the Court seen in its early years is slowly disappearing.⁷³

In addition to the inevitable structural consequence of reducing forum shopping at the appellate level, the CAFC has also emphasised the need to reduce the wide choice of forum at the district court level in its decision in the case *TS Tech*. ⁷⁴ Notably, a rule on an appropriate jurisdiction has also been clarified by the Supreme Court in the case *TC Heartland*. ⁷⁵ This decision, which in turn triggered further rulings by the CAFC on limiting the patent lawsuit jurisdiction, is one of the examples of the judicial dialogue between the CAFC and the Supreme Court leading to the clarification of emerging questions in the US district courts. ⁷⁶ As the creation of the CAFC has eliminated intercircuit percolation, such dialogue between the CAFC and the Supreme Court, although not entirely, has filled this lacuna. ⁷⁷ Any sort of percolation itself and judicial dialogue where courts can modify and inspire one another provide important information to a legislative body, in the US context, to the Congress, for any legislative amendments. ⁷⁸ Another important source of information regarding substantive law discussions are the dissenting opinions of CAFC's judges, which mark one of the highest numbers in the entire federal judicial system. ⁷⁹

Regarding the argumentation on substantive patent law elements, the CAFC has previously been accused of creating rather isolated, bright-line rules on obviousness, particularly concerning the combination patents. In this regard,

the CAFC had developed a Teaching, Suggestion or Motivation (TSM) test, according to which the nonobviousness of a combination patent would have been destroyed only if the prior art had explicitly included the teaching, suggestion and motivation to arrive at the combination.⁸⁰ Such test inevitably rendered burdensome to argue for the obviousness of a patent, leading to the upholding of more patents.⁸¹ However, the Supreme Court's decision in the case KSR changed this rigid practice of the CAFC and indorsed a more flexible approach towards finding obviousness to avoid the promotion of ordinary inventions without innovative elements.⁸² Even though still inclined towards the TSM test, CAFC's subsequent cases with comprehensive argumentation concerning the combination of elements when determining the criterion of obviousness demonstrates the Court's rootedness in the KSR case⁸³ and the shift from shallower towards more persuasive judgements. This trend demonstrates that whenever there is competing jurisprudence or an additional layer of judicial review, a highly centralised and specialised court does not take its persuasive authority for granted and is urged to provide thought-through decisions in light of another court's jurisprudence. Congressional involvement has also mitigated some of the CAFC's extreme approaches, for instance the bill on limiting damages, that were previously granted generously by the CAFC, is believed to have reduced malpractices by the NPE's. 84 Moreover, adoption of the Amicus Curiae mechanism and the CAFC's particularly welcoming approach towards such external submissions is remarkable. In fact, Amicus briefs submitted to the CAFC can have high persuasive power⁸⁵ and are used as important tools for communication outside the court. Arguably, as a result of these institutional interactions, the CAFC's propatent reputation is also changing. Some commentators observe rulings in which the Court has even exhibited antipatent bias and made it more difficult to prove infringement.86

Overall, while one cannot claim that the CAFC has been a pure success, over time it has realised the Congress's goals not only structurally but also in terms of the development of patent doctrine.⁸⁷ Moreover, patents have undoubtedly become more valuable instruments since 1982,⁸⁸ worthy of investments.⁸⁹ According to Judge Lourie, the CAFC has promoted innovation and provided a uniform body of law.⁹⁰ As for the innovation, if not all, at least some of the technological advancements in the United States can be attributed to the creation of the CAFC, that has served as a model for other innovation-based regions and countries to design a similar specialised intellectual property court.⁹¹ such as in Japan and Europe.

Based on the drawbacks identified in relation to the CAFC, the following potential dangers relevant for the UPC should therefore be noted: possible judicial isolation and 'tunnel vision' due to disregarding other areas of law; the court's propatent biasness partly attributed to the influence of interest groups frequently litigating to protect their large patent portfolios; and the court's complex vocabulary caused by subject-matter jurisprudence and patent law qualifications of the majority of judges filling the judicial benches. Nevertheless, the positive aspects to be expected from centralised and specialised jurisdiction also transpire, and these are: reduced forum shopping, a thorough argumentation of substantive patent issues as long as there is an institutional and particularly a judicial dialogue, both inside and outside the court, and the promotion of innovative industries by ensuring a solid patent doctrine and legal certainty.

The next experience to draw inspiration from is the IPHC of Japan, which was itself inspired by the CAFC. It is thus a relatively recent example to investigate and furthermore observe how a legal transplant can function despite the differences in legal and economic contexts.

3 | THE BIRTH OF THE IPHC IN JAPAN-RELEVANT ASPECTS FOR THE UPC

3.1 | Rationales behind the creation of the IPHC—Economic recovery and the idea of an IP-oriented nation

In the early 2000s, the Prime Minister Koizumi, driven by the idea of Japan's economic recovery from a decade of stagnation, declared his intention to transform Japan into an IP-based nation. One of the main rationales behind this idea was the regional concurrence deriving from China, with its mass production at a relatively low price. As a

consequence, Japan's ability to produce goods was insufficient to obtain an economic advantage in the Asian region. Based on the US example of successful shift from a 'hard' to a knowledge-based economy, the Japanese government decided to introduce IP law reforms modelled after the US system.⁹⁴ The reform idea was concerned with both, patent examination and litigation arrangements.⁹⁵ A specific proposal for the creation of an IPHC was submitted in 2003 as part of the Japanese government's IP Strategic Program stirred by the Strategic Council on IP.⁹⁶ The members of this Council, in addition to the Prime Minister, were lawyers, scientists, members of industry as well as representatives of academia, thus promising a strong leadership.⁹⁷ At the time when the intention to create the IPHC was declared, patent litigation had been concentrated at the district courts of Osaka and Tokyo by a Revised Code of Civil Procedure of 2003.⁹⁸ As for the appellate level, the Tokyo High Court had been functioning as a de facto specialised patent appeal court.⁹⁹ Therefore, the IPHC essentially originates from the IP sections of the Tokyo High Court, ¹⁰⁰ formalising the existing informal IP specialisation.¹⁰¹ The bill on the creation of the IPHC was passed at the Diet in June 2004 and on 1st April 2005 the new court entered into force.¹⁰²

Three reasons for the creation of the IPHC were highlighted: to unify the diverse judgements, to accelerate the IP proceedings and to mark that Japan is an IP-based nation—a so-called 'announcement effect'. However, as there had been a de facto concentration of IP litigation, the diversity and the speed issues were significantly resolved, so that the Court was mainly a signal of Japanese IP-oriented policymaking for strengthening economy. While the governments' intention of economic recovery is a shared context between the United States and Japan, the elimination of forum shopping has not been an issue in Japan, something that is however one of the main shared loopholes within the United States and European patent litigation systems.

Just like in the United States, the issue of court specialisation faced heated debate in Japan. The industry was supportive of specialisation idea, but the expert committee members, having examined the CAFC's creation process and the HRUSKA report, were concerned about 'overspecialisation'. Consequently, as a political compromise, the IP High Court was embodied within the Tokyo High Court instead of creating an independent IP specialised court fully isolated from the existing judicial architecture. ¹⁰⁶ Some commentators argue that even though the Japanese IP law reforms were modelled after the US system, considerable adjustments have been made to respond to the local economic and legal reality. ¹⁰⁷ After almost 20 years of IPHC's functioning, one can examine what this experiment has yielded, a question that will be tackled in the next two sections of the paper which analyse both the challenging and the positive aspects of the Japanese experience.

3.2 | Challenges surrounding the reform of the Japanese IP court system and the criticism of the IPHC

Since the Japanese judicial construction and IP law are based on the civil law tradition, specifically the German legal system, transposing the legal implant from the common law-based US system was challenging for the Japanese policy-makers. Contrary to the US Federal Circuit that has led to increased legal certainty, particularly in relation to patent validity, the IPHC is rather blamed to be accountable for a significant fall of patent validity rates in Japan. Statemake submits that this trend developed due to adopting the US feature of raising invalidity defences in infringement proceedings at courts, whereas the validity issue was previously reserved exclusively for the Japan Patent Office (JPO). In particular, previously all oppositions for patent cancellations—*Igi-Moushitate*—, as well as postgrant invalidity proceedings—*Muko Shinpan*—, were part of the JPO's jurisdiction. However, since the Japanese Supreme Court's decision in the *Kilby* case in 2000, a court in infringement proceedings may also determine the patent validity wherever 'reason for invalidity exists'. The possibility of attacking patents as part of the postgrant opposition at the JPO, as well as during the infringement proceedings in courts, obviously doubled the chances of getting patents invalidated. This is all the more true since an important element concerning the presumption of patent validity adopted in the US patent law statute was not introduced when codifying the law on the courts' power to examine patent validity. Such a setting inevitably encouraged the patent validity attacks in

Japanese courts. 115 However, to stabilise the situation caused by a double-layered system shared between the JPO and Japanese courts, the IP Strategic Program proposed the three requirements: first, information on invalidity defence must be communicated by a court to the JPO; second, when such an invalidity defence is invoked, the JPO shall promptly review the validity of a concerned patent; and third, the invalidity defense must be rejected by a court when it solely aims to delay the dispute resolution process. 116 At the same time, it must be noted that, in case a patent is invalidated in infringement proceedings at the court, the decision is only binding on the dispute parties, according to the Article 104(3) of the Patent Act. 117 Therefore, the JPO's trial for invalidity remains more attractive option for obtaining patent invalidity with a larger scope of application. 118 As a result, the court decisions that are obviously the fruit of judicial deliberations and expenditure of human resources do not benefit the wider public because the patent in question remains in force outside the dispute unless an administrative agency agrees with the court. 119 In case of any contradictions between the courts and the agency, it is up to the IPHC to provide harmonisation. However, as Tilt argues, this convergence occurs rather 'late in the lifecycle of a dispute'. 120 The question of patent revocation in the UPC-EPO context has also been a subject of debate. According to Article 32(1) (d) and (e) of the UPC Agreement, actions for revocation and declaration of invalidity of patents as well as counterclaims for the revocation of patents, respectively, fall under the exclusive competence of the UPC. At the same time, within the period of 9 months from the patent grant, the opposition of a patent is possible at the EPO according to Article 99 of the EPC. While the two procedures are not in concurrence with each other, there is still a risk of ongoing opposition proceedings at the EPO against the patent regarding which the UPC hears a case. In this situation, the UPC, based on Article 33(10) of the UPC Agreement, may suspend the proceedings until the decision is reached by the EPO. While this seems to be a logical solution, in practice, the court proceedings might become unnecessarily lengthy until the decision on the opposition is reached at the EPO. It has even been argued that the mentioned Article 33(10) should have been drafted in such a way that the EPO suspends its proceedings if the invalidity action has been raised at the UPC to ensure the UPC's leading role when it comes to validity checks. 121 Moreover, unlike the IPHC, UPC's decision on patent validity are not limited to inter-parte proceedings but reach a wider scope of application. In the case of European patents, the UPC's decisions apply to the territories of the states in which the patent had been validated, as for patents with unitary effect, the decision on their validity or revocation will be effective in all countries participating in the unitary patent system. 122 Consequently, in the European case the court's decisions have a broader impact, providing greater legal certainty, however, this comes with the cost to bear by patent holders if their patents are held invalid not just for one country but for a larger European market.

As for the reviews conducted by the IPHC, during the first 4 years of its existence, it has been criticised for reversing most of the JPO's decisions upholding patents in contrast to those upholding invalidations. Such antipatent biasness was assumed to derive from the Court's restrictive interpretation of the inventive step criterion, that finally ended because of the industry's and government's complaints that the Court's approach was not responding to its goals of promoting innovation. It is not into previously that the IPHC engaged in a dialogue with the JPO to harmonise the understanding of the inventive step. In particular, the IPHC adopted the CAFC's TSM test, a change that was subsequently reflected on the increased number of judgements favourable to patent holders. As for the UPC, as it does not start from the scratch and integrates technically qualified judges experienced with the functioning of the EPO and aware of the industry's needs, the miscommunication is less of a risk but rather the opposite. Particularly, the specialisation of the judiciary may reinforce the already powerful position of the EPO. While this is crucial from a legal certainty perspective, the possibility of reviewing the decisions of the EPO and wherever necessary, overruling them, should not be alien to the court. Schovsbo argues that precisely because the judges of the UPC will be specialised, the UPC will be able to fulfill a 'watch-dog function' in relation to the EPO. The UPC's hegemony is, however, yet to be ascertained as it has recently entered into force and it remains to be seen which direction it will take as a specialised and independent court.

The journey of Japanese patent enforcement reforms, similar to the US experience, is an example of a series of institutional power struggles and compromises between on the one hand, innovation-driven actions and on the

other hand, upholding independent justice system. Notably, industrial voices complaining about the new court's rigid approach towards patent validity, which triggered the shift to the court's softer approach, can serve as a precaution for the UPC to acknowledge, once again, the powerful lobbying strategies of large market participants, something that has been criticised in the United States as mentioned in the section above. Though a new court's adaptation ability can be seen as a sign that litigators' concerns have been taken into account, at the same time, proprietors' and innovators' interests must be carefully balanced to avoid surge of worthless patents impeding innovation in Europe. The high degree of specialisation of the UPC may be prone to creating some sort of patentcentred community to which only a relatively small number of patent attorneys and lawyers belong. Judges who have also arisen out of this community might incline towards normative choices that are narrower and tailored for specific technology-oriented interests. The determination of patent scope and the interpretation of Article 69 of the EPC is an example of how judicial perceptions may differ. The German courts' approach towards extending the patent scope beyond the literal infringement, 127 compared to the English courts' rather narrower understanding of patent scope 128 until the eventual convergence of practices, illustrate that one of the central concepts of patent law can be differently shaped depending on the judges and the respective case law. The drafting of patent claims by the patent practitioners and the pleading of experienced litigants may lead to the establishment of routines that the court will inevitably follow, with the risk of overlooking the broader perspective. While specialised and uniform judicial solutions are essential to the patent proprietors, patent disputes are rarely exclusive to specific industries, therefore, upholding the social function of patents and patent law will also be a preoccupation of the UPC as a new, independent and legitimate court.

3.3 | The IPHC leading to the significant shift towards stronger patent enforcement jurisdiction

Based on the above discussions, the success of Koizumi's initiatives, and whether the benefits of judicial specialisation would outweigh its costs were not obvious at the beginning. For example, the Osaka Bar Association was against the idea of concentrating patent litigation at the Tokyo High Court, insisting that the CAFC had created propatent biasness in the United States and that Japan did not suffer from diversity of judgements and thus, was not in need of uniformity. However, with careful consideration of the US experiment and adaptations to local demands, the implementation of the IPHC is considered to be a significant step forward for IP development in Japan. The assumption that the creation of an intellectual property court is indicative of the government's policy to prioritise IP rights and efficiently protect and enforce IP rights can be certainly applied to the Japanese precedent. At the same time, Japan's decision to place the Court within the existing Tokyo High Court illustrates how the concern of 'overspecialisation' has been addressed, while also responding to the needs of industry for efficient handling of complex technology-related cases. Moreover, for overly complex cases, the IPHC introduced an enlarged board—the Grand Panel—modelled after the CAFC's *en banc* system, which is a unique feature of the IPHC among other Japanese courts and consists of presiding judges of all divisions of the Court. 133

Linked to the danger of overspecialisation is the decision on the required qualifications of judges at the IPHC. Unlike other specialised courts, the IPHC judges have a general legal background, but technical expertise has been incorporated into the Court by providing technical advisors to the judges instead of appointing technical judges. This was a compromise, particularly to tame the objections of the conservatives concerning the creation of an IP court. Importantly, the technical advisors are neutral and not appointed by parties, which guarantees that their argumentation is based solely on technological knowledge and not on the parties' interests. Contrary to the Japanese approach, for the UPC, it has been decided to incorporate the technical expertise inside the court by appointing technically qualified judges. According to the Article 8(6) of the UPC Agreement, central divisions of the UPC are composed of two legally qualified judges and one technically qualified judge. Further, under Article 9(1), out of five judges, three are legally and two are technically qualified

judges at the Court of Appeal of the UPC. The local and regional divisions sit in a composition of three legally qualified judges¹³⁸ unless they request the president of the court of the first instance to add a technically qualified judge from the pool of judges. 139 The pool itself is composed of full or part-time legally and technically qualified judges. 140 Despite the rule on the conflict of interest in the UPC Agreement and the Statute in relation to part-time judges and their other occupations, ¹⁴¹ the closeness of technical judges to the concerned field of technology coupled with the fact that they have a relatively limited exposure to legal norms regarding impartiality compared to their legally trained colleagues, the risk of bias is still present. While this can be valid also for the technical advisors, the difference is that the latter are not judges themselves and as external members they advise the judges of the IPHC. The technical judges, on the other hand, vote in the process of decision-making, 142 therefore, the risk of conflict of interest can be more persistent at the UPC. At the time being, out of 105 judges at the UPC, 37 are legally and 68 are technically qualified judges. 143 Amongst the technically qualified judges, the majority-39, have previously worked as patent attorneys, followed by 20 persons who previously worked as judges in their national jurisdictions and four as judges at the Boards of Appeal (BoA) of the EPO. 144 The six technical judges of the UPC had been working as examiners in national patent and/or trade mark offices and the one remaining technical judge was a former chairman of the opposition division in the national patent and trade mark office. 145 Furthermore, of all 68 technical judges, two have previously occupied positions of both, patent attorney and a judge at their national jurisdictions. Subsequently, all technical judges of the UPC are slightly more than 70% of all the UPC's judges. Based on their former occupations it can be argued that they come from the densely populated patent world which reasonably leads to concerns over the issue of conflict of interest despite the adopted Code of Conduct. Although in Article 5, the Code lists the situations when the judges shall not take part in the proceedings, there is some leeway enshrined in the Article 4(4). According to the latter, judges will not be considered to be in conflict with their judicial duties if they 'occasionally' participate in seminars, conferences, symposia, and so on. Undoubtedly, this leaves the Administrative Committee of the UPC with wide discretion with regard to defining these occasional participations and deciding whether a particular participation falls under this exception.

Despite the invoked criticism towards a potential bias, it is however true that such a rich expertise brought by the technically qualified judges will contribute to the beforementioned leading role of the UPC when it comes to setting the European patent jurisprudence, including on the issues that were scrutinised by the EPO and the BoA of the EPO previously. For example, the UPC has an exclusive competence for the unitary patents and nonopted-out classic European patents in actions for patent revocation or a counterclaim for patent revocation raised in accordance with the Article 32(1)(d) and (e). As mentioned earlier, this will complement the EPO's opposition procedure. Thus, the UPC may gradually dominate over the jurisprudence of the BoA on the patent validity standard and the related issues, such as skilled person, definition of the state of the art, added subject-matter, sufficiency of disclosure, novelty and inventive step criteria, to name just a few. Moreover, the UPC aims at resolving cases expeditiously and with high quality as stated in the recitals of the UPC Agreement and the Rules of Procedure of the UPC, 146 therefore, the ability of technical judges to promptly understand the concerned technological matters can certainly serve the court's objective of shortening the duration of proceedings. It remains to be seen whether the central attack on patent validity at the UPC and the related proceedings handled by the technical judges will lead to altered strategies of market participants accustomed to the EPO's opposition proceedings, the appeals at the BoAs of the EPO as well as the national court proceedings. This will be particularly relevant in the transitional period, during which patent holders can still decide whether they wish to subject their classic European patents to the UPC's jurisdiction 147 and therefore, potentially open up the possibility of a validity attack at the UPC.

Another significant feature that the IPHC has adopted unlike the UPC is the mechanism modelled after the US Amicus Curiae that allows the involvement of a broader public in resolving intellectual property matters. The Apple v Samsung case is remarkable in this regard, not only was it heard by the Grand Panel, but it was also the first time when the IPHC sought public opinions from stakeholders in Japan and abroad. Notably, public

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engagement was tremendous and the Court stated that this helped the adoption of the decision from a broad perspective. 151 The soft law dynamic of the IPHC is highly valued by some commentators as it goes beyond the Amicus briefs and includes the organisation of academic events by the Court. 152

Hence, the IPHC has indeed become a cornerstone for the stability of the Japanese IP system. It has enhanced the uniformity and consistency of jurisprudence around the patent validity standard, as its competence includes hearing appeals of lower courts' and the JPO's decisions, which in turn ensures a high degree of deference to the Court's interpretations and a harmonising effect of patent law concepts all the way from patent granting to the patent litigation phase.

The Japanese example illustrates that due to the urge to enhance the intellectual property system, the local judiciary was modeled on a foreign experience, yet, with a considerable care and adjustments wherever necessary. Though the system is not flowless, as can be seen, for example, due to the double-tracked mechanism for handling validity of patents, the issue of overspecialisation was seriously scrutinised right from the Court's inception. Observing the criticism towards the US system has led the Japanese policy makers to create a semispecialisation, a court embodied within the local judiciary, while at the same time ensuring a certain degree of technical expertise at the Court. The possibility of public engagement in the form of the Amicus Curiae tool during the decision-making is also a noteworthy positive aspect.

The UPC, compared to the IPHC, does not exhibit the abovementioned features aimed at overhauling of a larger picture and mitigating the risks of patent-bias: Grand Panel, only technical advisors instead of technical judges and amicus curiae can be understood as guardians of a more neutral patent court specialisation and a policy choice that Japan opted for.

LESSONS FOR THE UPC TO ACHIEVE ITS GOALS AND SECURE ITS LEGITIMACY IN EUROPE AND INTERNATIONALLY

There is no longer any doubt that the European patent system has been fragmented and that it has left much room for reforms. 153 Such a fragmented system is held accountable on numerous occasions for the high cost of obtaining and maintaining European patents. Both grant and the litigation phases are seen as burdensome, as the former requires national validations of European patents (opted out from the UPC system), while the latter is (still) characterised by parallel national court proceedings that sometimes end with contradictory judgements. Back in 2007, the European Commission expressed its concern that the fragmented European patent system 'has serious consequences for the competitiveness of Europe in relation to the challenges of the United States, Japan and emerging economic powers such as China'. 154 As stated at the beginning of the paper, patent law and judiciary have undergone a series of reforms to face these challenges in a highly competitive global economy. Both the reformation processes in the United States and Japan illustrate the political sensitivity of the matter, which has reached yet another level in the European reality due to the multiplicity of states, legal cultures and economic interests. After all, the UPC can be labelled as a European compromise. From an international perspective, it is seen as an equivalent of the CAFC in the United States, 155 which in turn was an inspiration for Japan's IPHC. Even though the negotiations around the unification of patent judiciary in Europe go back further in the past than the time when the courts in the United States and Japan came into being, the UPC as a formally established court is still the youngest counterpart within this patent judicial triad. Therefore, the recurrent issues throughout the lifetime of the existing specialised courts are a valuable information for those in charge of the successful operation of the UPC and shaping its jurisprudence. Based on the discussions above and for the purposes of the UPC, it is submitted that particular attention must be paid to avoiding 'overspecialisation', achieving uniformity while maintaining accuracy, securing the new court's legitimacy and finally, strengthening international cooperation to foster global judicial harmonisation where the UPC will have its place.

4.1 | Avoiding 'overspecialisation' by increasing judges' competences and fostering interinstitutional dialogue

'Even when measured by the yardstick of the CAFC, the UPC is *very* specialised in respect of the court's competence and the appointment of judges' as noted by Schovsbo et al.¹⁵⁶ Compared to the IPHC, the UPC can be considered *even more* specialised, as seen in the previous section. Indeed, the UPC's exclusive competence over patent litigation and the fact that a large proportion of the UPC judges are technically qualified,¹⁵⁷ increase the risk of developing patent-friendly biases, something criticised with respect to the CAFC.¹⁵⁸ As Dreyfuss notes, the UPC's 'insulation from the mainstream jurisprudence will be absolute'.¹⁵⁹

Acknowledging the limits of implementing any new proposal at a stage when the UPC has already been designed, the extension of the competences of the UPC can, however, become part of any future amendment. Even without the formal amendments, it can be expected that the incoming cases will de facto rarely concern purely patent law, so that broadening the new court's perspectives will be necessary to avoid overlooking issues arising in the patent-related yet other fields of law, such as human rights, competition law as well as free movement of goods. 160 Unlike the experience of the CAFC, to which antitrust and other commercial cases were formally handed over, removing any jurisdiction from the national courts and transferring it to the UPC is a burdensome process due to varying constitutional constraints of national legal systems in Europe as well as obligations deriving form EU law. However, one can observe certain norms provided inside and outside the UPC agreement that are destined at creating a de facto competence of the UPC on issues linked to, but not limited to, patent law. To start with the UPC Agreement itself, the primacy of EU primary and secondary law is enshrined in its preamble, which focuses on the Charter of Fundamental Rights of the EU and the general principles of EU law. 161 Just as any (quasi)judicial institution, apart from courts specifically focused on human rights adjudication, at the UPC as well, the most obvious link with fundamental rights will be devised in the context of procedural guarantees. Indeed, Articles 41 and 42 of the UPC Agreement targeting the procedural rules, impose the obligation on the court to ensure efficient and predictable court proceedings 162 as well as proportionate litigation. 163 These norms will give rise to the need to observe the case law on fundamental rights and general principles of EU law applied to court proceedings that are not necessarily patent-related, particularly as the UPC does not have its own jurisprudence as a reference. For example, the question on the principle of proportionality will arise when dealing with the provisional measures provided in Article 62 of the UPC Agreement as well as the permanent injunctions that may be granted by the court in accordance with the Article 63 of the UPC Agreement. In these cases, while the UPC's primary competence will be to decide whether there had been a patent infringement and whether or not to grant an injunction against alleged infringers, a balancing exercise will have to be conducted by considering the existing case law of the national (EU) courts and the CJEU. 164 The closest point of reference related to patent proceedings may be the rulings of national courts and the CJEU with regard to the EU Directive 2004/48/EC on the enforcement of intellectual property rights (Enforcement Directive), 165 an EU legal instrument outside the UPC system per se. For example, the concept of 'imminent infringement' provided both, in the Article 62 of the UPC Agreement and in the Article 9(1)(a) of the Enforcement Directive, may be subject to interpretation and might require the UPC to look into the national courts' case law, the preliminary rulings of the CJEU¹⁶⁶ or at most, refer questions to the Court of Justice for a preliminary ruling when doubts remain. Another area to which the UPC Agreement contains the reference is competition law. Article 42(2) of the UPC Agreement states that all the rules, procedures and remedies provided by the UPC system must be used in a way not to distort competition. This provision opens up an avenue for competition law considerations when adjudicating on patents. In particular, questions linked to any potential abusive and anticompetitive patent enforcement practices around the patents for which the UPC has its competence will have to be dealt with by the new court. For example, the preliminary ruling delivered by the CJEU in the context of enforcing standard essential patents (SEPs) against the alleged infringer 167 can be adopted as a guidance on implementing the proportionality principle at the UPC when dealing with the issue of grant of injunctions in the cases involving allegedly abusive enforcement of SEPs. This will inevitably lead to the UPC

stepping into the assessment of norms enshrined in the EU Treaties in relation to competition, such as the Article 102 TFEU concerning the abuse of a dominant position to balance the exclusivity of patent rights against the competitors and consumers. 168 Therefore, the question of the Court's competence to resolve such matters on its own or make references to the CJEU will once again come into play. The same holds true when it comes to the issue of free movement of goods in the context of compulsory licences granted for patents with unitary effect, a matter that is regulated by national laws. ¹⁶⁹ In particular, when products manufactured within the limits of one EU Member State's compulsory license arrangement according to the national law are then exported to another Member State's market, it remains debatable whether the holder of a patent with unitary effect can claim his/her patent rights or whether this would amount to the division of the EU internal market. While the first sentence of the Article 3(2) of the EU Regulation 1257/2012 on patents with unitary effect ¹⁷⁰ states that a European patent with unitary effect shall have a unitary character, according to the third sentence it can be licensed in part of the territories of the participating Member States. Therefore, the question of exportation of goods created under such license is not straightforward and may trigger a judicial discussion. The debate may arise particularly in light of the Article 118 TFEU, the core of the EU Treaty when it comes to IP rights, setting as its main goal the establishment of a wellfunctioning internal market when creating uniform IP rights. ¹⁷¹ Despite the fact that the Article 32(1) of the UPC Agreement on the exclusive competences of the UPC does not include actions on compulsory licences as falling under such competence, it may form an auxiliary issue of a case on matters where the UPC holds an exclusive competence based on that same article. It is in the cross-cutting issues mentioned above that the character of the UPC as a 'court common to the Contracting Member States' 1772 with the obligation to cooperate with the CJEU will be exhibited the most. 173

To readily face the invoked situations, as a middle-ground solution, enlarging the competences of the UPC's individual judges in areas of law outside patent law can be a viable tool. This way, the court will be equipped with the right qualifications to deal with real-life hybrid cases in a balanced manner. Such a balanced approach is also important for gaining persuasive authority as the adopted court's vocabulary should speak to generalist courts. Although the UPC is not hierarchically superior to national courts, as is the case with the CAFC and the IPHC, its precedents will certainly be observed by national courts in Europe.

When it comes to mitigating the risks of 'overspecialisation' and the 'tunnel vision', the most important lesson learned from the US system is how the extended judicial dialogue between the CAFC and the Supreme Court has lessened concerns about 'overspecialisation' 174 and has ensured the right balance between the interests of property holders, innovators and the general public. ¹⁷⁵ Baldan holds that any propatent trend can be controlled if there is enough exchange between specialist and generalist courts. 176 Within the European reality, where the UPC has been established as an international-law based court between EU Member States, the CJEU is an obvious candidate to serve as a counterpart to the US Supreme Court. Though the CJEU is not a supreme court, but rather a supranational, generalist court at the top of the judicial hierarchy within the EU legal order, and though the UPC has been built outside the EU law, the new unitary patents, regarding which the UPC will have exclusive jurisdiction, come to life through EU law-the EU Regulation 1257/2012. 177 Moreover, the abovementioned areas of EU law and legislative instruments that may potentially fall within the UPC's jurisdiction will necessarily create ample room for references to the CJEU, an obligation also explicitly mentioned in the UPC Agreement.¹⁷⁸ Although the CJEU has been criticised during the negotiations on the UPC's design for not holding sufficient expertise in the field of patent law and the industry was against its involvement in patent adjudication, ¹⁷⁹ it has a significant leeway to play the role of a generalist court that is considered so necessary as seen from the US experience. 180 In addition, it must be recalled that Japan's experience proves that generalist, nonpatent judges can produce fresh ideas and also quickly learn complex technical matters. 181 Overall, the Japanese adaptation process when designing the IPHC modelled after the CAFC, is an illustration of the need for a cautious approach towards judicial specialisation. Thus, the UPC's commitment to engage in the judicial dialogue with the CJEU through preliminary references will be needed to positively influence a balanced development of the new court's case law.

4.2 | Achieving uniformity of patent law while maintaining accuracy—need for not only inter- but also intra-institutional cooperation

In addition to the patent law expertise introduced by the UPC, producing European-level uniformity has been one of the principal goals of its creators. 182 The issue of forum shopping and disbalanced patent litigation amongst the national courts is vastly discussed in European scholarship. 183 Centralising patent litigation, both on first and second instance level, is supposed to address this problem. However, despite this centralisation, the architecture of the UPC is rather complex, reflecting the European geographical specificity. As mentioned above, at the first instance level, the UPC will operate through its local, regional and central divisions, spread around the different European countries and represented by multinational judge panels. 184 At least at the initial phase of the Court's functioning, maintaining uniformity will thus be a challenge. However, as the newly appointed president of the Court of Appeal of the UPC, Klaus Grabinski, pointed out, when discussing the patent scope interpretation, the UPC will not start from the scratch and will greatly benefit from the existing case law of national courts and from the EPC, specifically its Article 69(1) and the Protocol 1.185 While this is true, the possibility of diverse interpretations depending on a panel hearing the case should not be underestimated. It has been argued that the CAFC has delivered different interpretations on claim construction and adopted different methodologies depending on the panel hearing the appeal. 186 Hence, training of the UPC judges to ensure a uniform understanding of patent law concepts is a vital tool, something that is already in place and shall be continuously provided. Otherwise, patent litigants can always find the gaps in rules on defining the right local, regional or central division to try to litigate before the panel reputed to be in their favour.

Although uniformity can be an essential gain of the UPC, several US commentators have argued that it is not always a good thing.¹⁸⁷ There is a widely accepted opinion that uniformity does not always mean accuracy. As Wood notes, 'a broken clock tells the time with impeccable uniformity: the only problem is that it is right only twice a day'. Therefore, the interinstitutional dialogue, mentioned in the previous section, will be important in such a highly specialised UPC, particularly in cases with public policy and human rights' implications.

In addition to interinstitutional dialogue, discussion inside the court should also be encouraged to allow for the percolation of concurrent ideas among UPC judges. Article 78(2) of the UPC Agreement allows a judge in exceptional circumstances to express a dissenting opinion. While it is unclear how these 'exceptional circumstances' will be defined in practice, it will be indispensable, especially at the beginning of the UPC's functioning that the judges with strong arguments concerning both, procedural or substantive matters, make use of their power granted by the Article 78(2) of the UPC Agreement and issue a dissenting opinion. This may lay the ground for the discussion at the Court of Appeal when a case reaches the second instance level. Depending on the level of quality of the arguments submitted by the judge disagreeing with the majority's decision, a dissenting opinion can play a role for the general development of law and for the discussion in other local, regional and central divisions of the UPC. As these divisions are in a horizontal relationship and not bound by the decisions of one another, they can draw inspiration from such dissenting opinions that can, over time, become the majority view and a settled case law of the UPC. Notably, the CAFC's transparent policy towards the dissenting opinions is viewed positively, as it demonstrates that the Court is not only concerned about uniformity but also values accuracy. ¹⁸⁹ Whereas the fact that the IPHC allows the publication of only one opinion of the court is highly criticised. ¹⁹⁰

Indeed, communicating to the wider public that there is an ongoing discussion inside the court, can only be a healthy sign, unless of course every decision is controversial. Maintaining balance between uniformity and accuracy is thus like walking a thin line and shall be in the spotlight for the UPC judges.

4.3 | Securing the new court's legitimacy through communication outside the court—towards *Amicus Curiae* system

Securing trust amongst the patent professionals and the wider public, which can in turn increase the legitimacy of the new court, depends not only on interinstitutional dialogue and discussion among judges, but also on the court's

willingness to adopt nontraditional measures to broaden its perspectives. The US experience, according to which the CAFC particularly welcomes Amicus Curiae briefs, shows that the latter can be essential instruments for communication outside the court. In fact, the quality and persuasive character of Amicus briefs submitted to the CAFC is well-known. 191 In many cases, they are empirically grounded and present the outlook of the different industrial communities. 192 Collected data illustrates that the Amicus briefs can have a considerable influence on the CAFC's decisions. 193 Besides, whenever multiple briefs are submitted, the Court is aware of a high public importance of a case, which certainly increases its responsibility. 194 As mentioned earlier, the CAFC's successful experience with respect to Amicus briefs has also been adopted by the IPHC equally successfully. 195 This decision was encouraged by the Japanese patent attorney association and legal commentators. 196 As for the UPC system, introducing the Amicus Curiae briefs was initially discussed but ultimately not included in the Rules of Procedure of the UPC. 197 Apparently, patent communities argued that Amicus briefs would introduce unnecessary delays and barriers to efficient case resolution, ¹⁹⁸ just as limiting the role of the CJEU was argued by the same interest groups. The argument against Amicus Curiae briefs can be partially acceptable within a European reality where the introduction of a specialised and centralised court has already been so controversial, yet any instrument that can lead to increased public engagement in patent adjudication must be welcomed. 199 Though desirable, at the moment, officially Amicus briefs cannot be submitted to the UPC. Therefore, any constructive scrutiny of the new court's decisions provided by the public, specifically by the scientific and academic community should be taken into consideration de facto.

4.4 | Strengthening global judicial cooperation—The trilateral-like model on the court level

In light of the fact that the UPC enters not only the European judiciary but also the international patent scene, it is necessary to consider the perspectives of its successful functioning beyond the European patent market. As highlighted at the beginning of this paper, Europe has the ambition to remain competitive in global technological development.²⁰⁰ Introducing the single patent granting procedure was driven by the high cost of European patent protection. According to the EU Commission, the costs of European patent protection over a 20-year period were nine times more expensive compared to holding the United States and Japanese patents for the same duration.²⁰¹ As far as the patent litigation is concerned, apart from direct costs linked to forum shopping, the societal costs resulting from legal uncertainty also urged the reform of the court system. In fact, the value and viability of a European patent was considered to be diminished without stable litigation arrangements.²⁰² Thus, with the creation of the UPC, Europe is also pursuing the 'announcement effect' goal, just as Japan did with the creation of the IPHC. Consequently, the UPC has great potential to impact the decision of international marketplace participants to enter the European patent market with its solid patent doctrine, which has also been achieved through the creation of the CAFC in the United States.

In view of this great responsibility and the fact that the discussion on the global harmonisation of IP law is continuously emerging, ²⁰³ UPC judges must be encouraged to exchange ideas with their international counterparts, including in the United States and Japan. While existing international agreements in the field of IP play a vital role in harmonising IP protection standards, institutional cooperation is equally important, as they are eventually in charge of interpreting and implementing these rules. Particularly, in the context of the globalisation of technological innovation and the increase in multinational patents, the cross-border patent infringement and in turn, the need for cross-border patent enforcement, become salient. For example, when a company holds equivalent patents in various jurisdictions and intends to enforce its patent against the alleged multinational infringement in various jurisdictions, an action must be brought separately in each of those jurisdictions apart from situations where the UPC's jurisdiction unifying patent enforcement for several European countries would be activated. However, for international and even more, intercontinental patent enforcement, the diversity of jurisdictions remains. The latter

necessitates specific preparation for each court proceedings, that is, hiring multiple representatives, investing financially in each court lawsuit, and spending a considerable amount of time.²⁰⁴ It is the territoriality of intellectual property and particularly patent rights that creates these geographical and legal boundaries when it comes to ascertaining the obtained and registered rights. For this reason, various international treaties address the issue of harmonisation of patent laws with regard to the protection and registration of rights, for example the TRIPS Agreement and all the subsequent agreements within its framework pertaining to all IP rights. Specifically in the field of patents one can recall the Patent Cooperation Treaty from 1970 that was adopted to foster the harmonised patent registration across different countries. One should also mention that between certain countries, IP law harmonisation has occurred through bilateral or multilateral Free Trade Agreements (FTAs). For instance, the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) contains an IP chapter with regard to building a consistent IP protection system between the parties of the Agreement.²⁰⁵ However, concrete measures towards harmonising IP and particularly patent proceedings that will facilitate the litigation process for the multinationally active businesses are scarce. As a minimum standard, the TRIPS agreement contains a provision stating that 'procedures concerning the enforcement of intellectual property rights shall be fair and equitable. They shall not be unnecessarily complicated or costly, or entail unreasonable time-limits or unwarranted delays'. This can be understood as a general provision laying the ground for further collaborative work in this direction. Notably, the US courts' judicial practice demonstrates that giving the preclusive effect to the decisions of foreign courts are opposed by judges. For example, before the establishment of the CAFC, its predecessor court-Court of Customs and Patent Appeals (CCPA) has held that due to the differences in law, the court could not take into account the decision of the German court in relation to the validity of an equivalent German patent.²⁰⁶ The CAFC has similarly refused to take into consideration a foreign judgement on patent (in)validity in one of its first decisions where the question on the consideration of a foreign judgement arose.²⁰⁷ However, in relatively recent years, the CAFC has shown its readiness to give weight to the statements made in the foreign patent offices, including in the EPO.²⁰⁸ As for the existing legal framework, it suffices for the purposes of this article to state here that as a general rule, in case where foreign issues are involved in a court proceeding, private international rules apply (e.g., regarding the recognition and enforcement of foreign judgements). Nevertheless, due to the upper-mentioned global nature of IP infringement and the territoriality of the rights, the mentioned rules might not always be effective.²⁰⁹ Therefore. international judicial cooperation in patent proceedings is of utmost importance. The UPC's Rules of Procedure contains a statement (Rule 173) on the judicial cooperation specifically in relation to the taking of evidence. In particular, the methods provided by the EU Regulation 2020/1783,²¹⁰ the Hague Convention 1970²¹¹ or the national laws should be applied by the UPC when dealing with evidence. While such provisions may assist regarding the procedural complexity of an evidence, it is yet another question how foreign decisions on patent valdity can be taken into consideration, particularly when the courts do not share the same substantive law. Even in the case of European courts that have been applying the EPC, the reference to foreign judgements is rarely welcome. A sociological network study carried out by Lazega concerning European patent judges demonstrates that the Dutch, British and German judges are the most active in reading, discussing and explicitly referring to foreign decisions.²¹² Consequently, there has been a de facto harmonisation of judicial practices amongst certain courts. The alignment of the understanding of the doctrine of equivalence is one result of such a judicial dialogue. ²¹³ Bringing together specialised courts from different judicial families is yet more challenging, nevertheless, even in such distanced legal traditions, an institutional dialogue is possible. Notably, at the office level, the three patent offices—EPO, JPO, and USPTO—initiated a partnership in the form of the Trilateral in the early 1980s to address common challenges.²¹⁴ With the joint efforts of the three offices, the Trilateral counts numerous achievements, such as the creation of TRINet for exchanging the priority documents, harmonised examination practices, and so on.²¹⁵ Thanks to the Trilateral, the JPO provides English texts of Japanese patent abstracts to the EPO and the USPTO since 1986. 216 A similar platform on a judicial level can extend the harmonisation of patent protection among the three jurisdictions. An agreement between the three jurisdictions²¹⁷ regarding the judicial cooperation in patent matters could potentially create a platform for considering foreign decisions. Though the foreign rulings cannot be binding, at least they can have a persuasive authority wherever the state of the art and the contested patented technology is the same. Moreover, when an interpretation is given by one court to a norm forming part of the international agreement signed by all concerned parties, for example, the TRIPS Agreement, other courts shall be encouraged to follow that interpretation and not 'reinvent the wheel'.²¹⁸

While politically it is challenging to conclude new treaties among number of countries, the three jurisdictions can serve as a pioneering example for international judicial cooperation. In the future this can include other IP courts worldwide, such as in China and South Korea. Within the framework of a proposed trilateral (or in the future, multilateral) treaty, a forum of judges can be created where they will regularly discuss the similar cases handled in their domestic jurisdictions. Enhancing the judicial dialogue at the international level will be beneficial for the concerned jurisdictions, as this will be a sign of the quality and legal certainty of their patent court systems and may address the impracticalities imposed on litigants mentioned above. Building upon the submitted proposals, extending an academic dialogue on various possibilities and tools to achieve the mentioned judicial cooperation is thus necessary and timely.

5 | CONCLUSION

While there are no clear recipes for a successful implementation of the Unified Patent Court—the result of one of the longest and most controversial reform processes in Europe—it is at least possible to observe its future perspectives in light of the existing examples of specialised intellectual property courts and to submit recommendations where appropriate. Based on the experiences of its United States and Japanese counterparts—the CAFC and the IPHC, respectively—this paper has outlined both the shared challenges and the positive facets that are also relevant for the UPC.

Though the UPC has been created with the intention to reinforce the European uniformity, to introduce a high level of expertise to patent adjudication and to secure Europe's place in international patent judicial scene, the journey towards achieving these goals must be pursued vigilantly. Some of the elements outlined in this article, such as the US practice of judicial dialogue between the CAFC and the Supreme Court, the high rate of publication of judges' dissenting opinions, and the Japanese approach of 'semispecialisation' of the IPHC, which is staffed by generalist judges and technical experts, can guide the UPC on its way in meeting the unification agenda while avoiding 'overspecialisation' and maintaining accuracy. Granting an important role to the CJEU, expanding the competences of the UPC judges, and ensuring transparent discussions inside the court must be prioritised, particularly at the beginning of the UPC's implementation. Moreover, both the United States and Japanese examples of the successful adoption of the Amicus Curiae mechanism is an essential tool to broaden the perspectives of the UPC and to signal to the wider public that the Court is concerned with the societal implications of its case law. Lastly, to render Europe an up-to-date forum for patent adjudication that develops in line with the international IP harmonisation agenda and to foster international IP litigation, enhancing international judicial cooperation between the three concerned courts is recommended. Such cooperation however, should not be confined to the three courts but rather should promote the future enlargement. While patents are important mechanisms for fostering innovation, courts play an essential role in benefiting from their full potential. In other words, as Hilty submits, 'without effective enforcement, IPRs are nothing but empty shells', 219 Now that the UPC has entered into force, any mechanism that can lead the new court in the right direction in its early days of operation needs to be identified and indorsed.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ENDNOTES

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- ¹⁶⁷ Case C-170/13, Huawei Technologies, ECLI:EU:C:2015:477.
- ¹⁶⁸ See on this matter, Clement Salung Petersen, Thomas Riis, Jens Schovsbo, 'The Unified Patent Court (UPC), Compulsory Licensing and Competition Law' (2014) Nordiskt Immaterieelt Rättskydd (NIR), Forthcoming, Available at SSRN: https://ssrn.com/abstract=2489006, 7, accessed 18 December 2023.
- ¹⁶⁹ According to the Recital 10 of the UPC Agreement, Compulsory licences for European patents with unitary effect should be governed by the laws of the participating Member States as regards their respective territories.
- ¹⁷⁰ Regulation (EU) No 1257/2012 of the European Parliament and the Council of 17 December 2012 implementing enhanced cooperation in the area of the creation of unitary patent protection, OJ L 361, 31.12.2012, pp. 1-8 (EU Regulation No 1257/2012 on Unitary Patent Protection).
- ¹⁷¹ See on this matter, Hanns Ullrich, 'Select from within the System" The European Patent with Unitary Effect' (2012), in Ch. Geiger (ed) Quel droit des brevets pour l'Union européenne?/What Patent System for the European Union?, (Paris Litec 2013) 207-246, Max Planck Institute for Intellectual Property & Competition Law Research Paper No. 12-11, Available at SSRN: https://ssrn.com/abstract=2159672, 44, accessed 20 December 2023.
- ¹⁷² Article 1, UPC Agreement.
- ¹⁷³ Petersen et al. (n 168) 9, the authors submit that the question whether the unitary character of patents is reconciled with the possibility to grant a licence only for a portion of the internal market, for example, in one EU Member State, will be eventually resolved by the CJEU.
- ¹⁷⁴ Baldan (n 23) 197.
- ¹⁷⁵ For the lessons that the UPC can learn from the US experience generally, see, Dreyfuss (n 61) 73; For the specific argument about the dialogue between the CAFC, the Supreme Court and the Congress, see, Dreyfuss (n 61) 88-89.
- ¹⁷⁶ Baldan (n 23) 197.

- ¹⁷⁷ EU Regulation No 1257/2012 on Unitary Patent Protection.
- ¹⁷⁸ Article 21, UPC Agreement.
- 179 Clement Salung Petersen, Jens Schovsbo, 'Decision-making in the Unified Patent Court: Ensuring a Balanced Approach', in Ch. Geiger, C. A. Nard and X. Seuba (eds), Intellectual Property and the Judiciary (Edward Elgar 2018) 238.
- Daniel J. Meador, 'Origin of the Federal Circuit: A Personal Account,' (1992) AULR 587. The author has witnessed that creating a so-called National Court of Appeal and thus, concentrating patent cases in a single court was controversial.
- ¹⁸¹ Takenaka (n 26) 424.
- ¹⁸² The Honorable Kathleen M O'Malley, The Honorable Barbara M. G. Lynn, 'The Proposed Structure of the Unified Patent Court: Lessons from the American Judicial Experience, in Ch. Geiger, C. A. Nard and X. Seuba (eds), *Intellectual Property and the Judiciary* (Edward Elgar 2018) 370.
- 183 See, Katrin Cremers et al., 'Patent Litigation in Europe' (2016) 44(1) EJLE 5. It is submitted that the German courts attract the largest share of patent litigation.
- ¹⁸⁴ Article 7-8, UPC Agreement. For the list of the local, regional and central divisions and their locations see, https://www.unified-patent-court.org/en/court/locations accessed 20 November 2022.
- 185 Klaus Grabinksi, Public Speech held at the Conference 'European Patent Enforcement and the UPC: Status Que and Perspectives', 24.11.2022, Luxembourg.
- ¹⁸⁶ Dreyfuss (n 39) 519.
- ¹⁸⁷ Takenaka (n 26) 414.
- ¹⁸⁸ Wood (n 42) 2.
- ¹⁸⁹ Dreyfuss (n 39) 517.
- ¹⁹⁰ Takenaka (n 26) 419.
- ¹⁹¹ Chien (n 85).
- ¹⁹² Ibid.
- ¹⁹³ Ibid 400.
- ¹⁹⁴ Ibid 401.
- ¹⁹⁵ Takenaka (n 26) 406.
- ¹⁹⁶ Ibid, 407.
- 197 Federica Baldan and Esther Zimmeren, 'The Future Role of the Unified Patent Court in Safeguarding Coherence in the European Patent System' (2015) 52, CMLR 1575.
- ¹⁹⁸ Ibid.
- ¹⁹⁹ For the same line of argumentation see, Baldan and Zimmeren (n 197) 1575.
- ²⁰⁰ Commission's Communication 2020 (n 27) 1.
- ²⁰¹ Commission's Communication 2007 (2) 3.
- ²⁰² Commission of the European Communities, 'Promoting Innovation Though Patents: Green Paper on the Community Patent and the Patent System in Europe', Brussels, 24.06.1997, COM (1997) 314 final, 5.
- ²⁰³ For the benefits of global patent law harmonisation, see, Randy L. Campbell, 'Global Patent Law Harmmonization: Benefits and Implementation' (2003) 13(2) IILCLR 605.
- 204 Alexandra George, 'Transcending Territoriality: International Cooperation and Harmonization in Intellectual Property Enforcement and Dispute Resolution' (2018) 10(2) TCLR 235.
- ²⁰⁵ Chapter 20 of the Canada-European Union Comprehensive Economic and Trade Agreement 2014 (CETA).
- In re GUINOT, 22 Court of Customs and Patent Appeals 1067 (C.C.P.A) 1935. See on this matter, Roberto Rosas, 'Foreign Patent Decisions and Harmonization: A View of the Presumption against Giving Foreign Patent Decisions Preclusive Effect in United States Proceedings in Light of Patent Law International Harmonization' (2018) 18(1) JMRIPL 11.
- ²⁰⁷ Medtronic, Inc. v. Daig Corp., 789 F.2d 903 (Fed. Cir. 1986), cert. denied, 479 U.S. 931 (1986). See on this matter, Rosas (n 206) 12.
- ²⁰⁸ Rosas (n 206) 15.

17471796, 0, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/jwsp.12314 by Cochrane Luxembourg, Wiley Online Library on [11/11/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons

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- 210 Regulation (EU) 2020/1783 of the European Parliament and of the Council of 25 November 2020 on cooperation between the courts of the Member States in the taking of evidence in civil or commercial matters (taking of evidence).
- ²¹¹ The Hague Convention of 18 March 1970 on the Taking of Evidence Abroad in Civil or Commercial Matters.
- ²¹² Emmanuel Lazega, 'Mapping Judicial Dialogue across National Borders: An Explanatory Network Study of Learning rom Lobbying Among European Intellectual Property Judges' (2012) 8(2) ULR 118.
- ²¹³ Walsh (n 16) 410.
- ²¹⁴ See https://www.trilateral.net/about/history accessed 30 November 2022.
- ²¹⁵ Ibid
- ²¹⁶ Ibid.
- 217 Since the UPC covers several participating Member States, they would be the signatories to such a treaty together with Japan and the United States.
- ²¹⁸ See, Gerben Hartman, 'EUIPO v KaiKai—Filling an 'EU Legislative Gap' with an International Treaty Gap? On the Interpretative Effect of the International Agreement at Issue and Consideration of Other Decisions on Its Interpretation' (2023) 18(9) JIPLP, 625. In the context of a case at the CJEU in relation to the claimed priority based on an earlier international patent application, the author argues that while decisions of national courts and the Boards of Appeal of the EPO regarding the EPC and the Paris Convention are not binding for the CJEU, they can still have a persuasive authority.
- 219 Reto M. Hilty, 'Economic, legal and social impacts of counterfeiting' in Ch. Geiger (ed), Criminal Enforcement of Intellectual Property—A Handbook of Contemporary Research (Edward Elgar 2012) MA, 11.

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