

Killed in the Art?

How Artificial Intelligence challenges the fictional concept of the skilled person in patent law

The legal fiction of the “person skilled in the art” is at the core of patent law. It impacts both a patent's validity and its scope of protection as determined in infringement proceedings. The advent of Artificial Intelligence (“AI”) technology challenges the legal fiction, handing the “person skilled in the art” a powerful tool to process the world's information with unprecedented breadth and speed. This article explores the effects of AI on the skilled person fiction, mapping out the potential points of friction in future patent validity and infringement litigation.

I. Introduction

Lawrence Lessig's short and famous quote “Code is law”¹ can be applied to patent claims without further ado: “Claim is law”. The reason for this is the normative character of the patent claim: The claim wording draws the formal boundary of what is to be claimed and determines its scope of protection.² The general public understands the claim and its scope of protection, and can conduct its economic activity accordingly – in theory.

The legislator faces a problem that is also known to the drafters and examiners/readers of patent claims: Legal certainty requires consistency. Flexible and constantly changing rules might allow quick individual case solutions – but they also result in a fragmented legal situation whose dynamics are difficult to predict. If one strives to establish sustainable rules for a long period of time, one must formulate them as abstract and static as possible.

This is the case with patent claims: they are intended to grant inventors the exclusive right to exploit a specific technical teaching for a period of up to twenty years in return for its disclosure to the general public. Consequently, patent claims are drafted deliberately vague, creating a representation of the underlying technical teaching as abstract as possible to make it future-proof. Generalized formulations lure with a broad scope of protection but make the claim vulnerable to validity attacks based on pre-published

¹ Lessig, L., “Code and Other Laws of Cyberspace”, 1999.

² E.g. Art. 69 (1) S. 1 EPC.

documents that are just as general. If the applicant uses the term "nail" in a patent claim, what is claimed is limited to a nail. Using "fastener" instead of nail enlarges the scope of protection of the claim to cover nails, screws, rivets, etc. – but also extends the bandwidth of potentially relevant prior art to such fasteners. The resourceful patent attorney strikes the balance between the widest possible scope of protection and a valid claim.³

The practice described above has been producing peculiar word creations in the wording of claims for more than a hundred years, which no reasonably thinking engineer would ever use to describe her/his device or process to her/his peers. Thus, some leeway in understanding the wording of claims patent claims is required: interpretation, or claim construction, which allows determining a claim's technical meaning based on its wording.⁴ Only what actually falls within the technical meaning of the claim will be protected. In order for the general public to understand a claim's subject matter and scope of protection and to be able to align their economic activity accordingly, an objective means of interpretation – a benchmark – is required. For this purpose, the “person skilled in the art” or “skilled person” was created in international patent law.⁵ The notion of the “skilled person” is used to determine the objective content of a patent claim and the scope of disclosure of patent specifications.⁶

During claim interpretation, subjective feelings need to be put aside and the key question is how the skilled person understands the claim in the totality of its features⁷ and with the help of the description and the figures of a patent specification⁸ objectively on the basis of his/her expert knowledge. The skilled person is a fictional figure, representing the average expert who is typically active in the field of the invention, who has enjoyed the usual training and who has acquired average knowledge, skills and practical

³ Cf. *Kather, P./Block, J.*, "Die Aufgabe des Patentanwalts bei der Erlangung und Verteidigung von Patenten", FS 50 Jahre Patentanwaltsordnung, pp. 237 et seq., 2017.

⁴ E.g. German Federal Court of Justice, dec. of 12 Nov. 1974, X ZR 76/68 = GRUR 1975, 422 – *Streckwalze*; dec. 2 Mar 1999, X ZR 85/96 = GRUR 1999, 909 – *Spannschraube*.

⁵ See Art. 29 (1) TRIPS and comment by *Gulati N./Gulati, J.*, "Knowledge/Skill Standards of a "Person Skilled in Art": A Concern Less Visited", 17 J. MARSHALL REV.INTELL.PROP.L.588 (2018).

⁶ Haedicke, M./Timmann, H./Naegerl, J., "Handbuch des Patentrechts", § 4, mn. 15, 2nd ed., 2020.

⁷ E.g. German Federal Court of Justice, dec. of 17 Apr. 2007, X ZR 72/05 = GRUR 2007, 778 – *Ziehmaschinenzugeinheit I*.

⁸ Cf. Art. 69 (1) S. 2 EPC.

experience.⁹ Depending on the specific field of application, the skilled person has various attributes which facilitate and at the same time objectively limit the understanding of the claim. The skilled person is not a real figure such as a patent examiner, development manager, engineer, university professor, inventor or Nobel Prize winner,¹⁰ nor is she/he an aesthete or designer.¹¹

II. Humans & Machines

In any case, the skilled “person” (so far?) is – even though a fictional character – one thing for sure: a human being. It is therefore subject to the limitations of human thought and action, in particular the skilled person lacks the attribute of omniscience. As briefly touched upon above, the key limitations regarding the awareness of the skilled person are the following:

- (i) The skilled person has only average knowledge and skills and is only aware of what belongs to the generally accepted state of knowledge at a certain point in time.
- (ii) On the other hand, even this knowledge is limited to a certain area of technology and includes, where appropriate, general knowledge of adjacent or overlapping areas of technology.

1. Human Knowledge

The linchpin for understanding the skilled person is therefore the general expertise and the specific knowledge of his or her field. The general technical expertise consists of the basic technical knowledge acquired by a skilled person during training¹² and includes knowledge that every technician has, regardless of his or her field of expertise.¹³

⁹ E.g. German Federal Court of Justice, dec. of 14 Nov. 1961, I ZR 146/59 = GRUR 1962, 290 – *Brieftauben-Reisekabine*; dec. of 19 Jun 1990, X ZR 43/89 – *Haftverband*; dec. of 4 Oct. 1988, X ZB 25/87 – *Gurtumlendung*; EPO T 641/00; cf. Haedicke, M./Timmann, H./Naegerl, J., loc. cit.

¹⁰ German Federal Court of Justice, dec. of 19 Jun 1990, X ZR 43/89 – *Haftverband*; EPO T 39/93 and T 60/89.

¹¹ German Federal Court of Justice, dec. of 12 Feb. 2003, X ZR 200/99 = GRUR 2003, 693 – *Hochdruckreiniger*; cf. Haedicke, M./Timmann, H./Naegerl, J., loc. cit.

¹² German Federal Court of Justice, dec. of 4 Oct. 1988, X ZB 25/87 – *Gurtumlendung*.

¹³ Cf. EPO T 195/84 and T 206/83; Haedicke, M./Timmann, H./Naegerl, J., loc. cit.

In addition, the skilled technician may use common and easily obtainable **tools** such as reference books, standard manuals, encyclopedias, encyclopedias, textbooks, guides or compendiums.¹⁴ Databases can be sources of general expertise if

- (i) they are known to the professional as a suitable source for the information sought,
- (ii) they can be searched for this information without unreasonable effort,
- (iii) they provide the information sought in a clear and unambiguous manner; and
- (iv) without the need for further research.¹⁵

Anything beyond these sources of knowledge is outside of the skilled person's relevant expertise and remains unconsidered if the scope of assessment is defined by the "skilled person", e.g. specialized books, articles in professional journals, chemical abstracts or patent specifications.¹⁶

2. Machines and "AI": Tools or a new point of reference?

In the course of the last decade, tools based on artificial intelligence (AI), machine-learning, deep learning or neural networks (hereinafter merely referred to as "AI") have made their triumphant advance in almost all areas of automated knowledge processing – including Intellectual Property and especially in patent law. While the discussion in the IP community is currently focused on the questions whether AI and machine-learning algorithms themselves are a patent-eligible subject matter,¹⁷ or whether an AI can be an inventor,¹⁸ this article is more interested in exploring how this ground-breaking

¹⁴ See summary in Haedicke, M./Timmann, H./Naegerl, J., loc. cit., Fn. 17, e.g. EPO T 1641/11, T 766/91, T 295/00, T 206/83, T 234/93 and T 890/02.

¹⁵ Haedicke, M./Timmann, H./Naegerl, J., loc. cit., Fn. 17 with reference to EPO T 890/02 and T 206/83.

¹⁶ Cf. EPO T 206/93, T 307/11, T 1641/11, T 571/12.

¹⁷ According to Art. 52 (2) and (4) EPC computer programs are not considered to be patentable inventions to the extent that protection is sought for them "as such" and Art. 54 EPC requires a technical contribution to the object to be solved that is determined by technical conditions outside the data processing system itself; cf. German Federal Court of Justice, dec. of 22 Apr. 2010, Xa ZB 20/08 = GRUR 2010, 613 – *Dynamische Dokumentengenerierung*; EPO, T 26/86; US Supreme Court, *Alice Corp. Pty. v CLS Bank*, 134 S. Ct. 2347, 189 Ls. Ed. 2 d 296 (2014); see short summary in *Hetmank, S./Lauber-Rönsberg, A.*, "Künstliche Intelligenz – Herausforderungen für das Immaterialgüterrecht", GRUR 2018, 574.

¹⁸ Cf. EPO, dec.s of 27 January 2020 on EP 18 275 163 and EP 18 275 174; *Thaler v The Comptroller-General of Patents, Designs And Trade Marks*, [2020] EWHC 2412 (Pat).

technology can and will impact the expert fiction of the skilled person in patent law and what the consequences will be.

a) Room for AI among humans?

The first question is whether the fiction of the skilled person as human in nature precludes any use of the – theoretically unlimited – faculties of an AI. The idea of a skilled person as a human seems intuitive and before the advent of AI no reason for contemplating this issue existed. As patent law seeks to incentivize technological advances, it aims to expand the body of humanity's shared technological prowess. It follows that inventors should be granted an incentive (i.e., exclusivity) only where they substantially build upon this body of knowledge. This leads to the requirements of novelty and inventive step, but also explains why the skilled person must be human – as humans are the objects of the incentive to innovate. No AI can be granted rights to an invention and exploit such rights (yet).¹⁹

Against the background of these general innovation-political considerations, however, the authors do not ask the question of whether to use AI systems when considering the skilled person in patent law, but how:

- (i) the AI could replace the "skilled person", or
- (ii) the AI could be regarded as a tool available to the skilled person.

b) AI as the skilled "person"

The reason for shifting the perspective completely away from a human individual and towards an AI could be AI's hallmark attribute: omniscience. An AI system can consider every available data point in its underlying database(s) within fractions of a second. This means that whatever data point is available globally at the relevant point in time and has been ingested into the database(s) on which the AI is working, can and will be used for the AI's assessment and conclusions. Thus, if an unsupervised AI system were to be used as the legal point of reference for the assessment of the global data sources, it would no longer be limited to specific technology areas or sources of information. It would always

¹⁹ If AI-generated art cannot be patented for formal or substantive reasons, AI-systems will be generating "orphan" prior art and could create a thicket of AI-generated prior art (a phenomenon we call "chasm of innovation" below, cf. III. 1. lit. b).

consider everything available (unless instructed otherwise). This would shift the point of reference away from the relative limitations of human conscience and towards an absolute assessment as it is e.g. applied for the assessment of a claim's novelty. What is published at the relevant point in time, is considered.

c) AI as a tool

On the other hand, one should understand that – at least for the time being – an AI is not a “magic answering machine” that answers any query on a super-human level. Rather, an AI is a powerful tool²⁰ that is designed and suited to help the skilled person to cut through the gigantic amounts of data that are produced and published by the world's inhabitants daily. It carries the humans through the labor-intensive phase to obtain an overview over the relevant documents and thereby enables the human to effectively focus on sources that require the kind of high-end thinking and creativity that are (at least so far) only immanent in humans.

From a legal perspective, the fiction of the skilled person includes the idea that the person has at their disposal the means and capacity for routine work and experimentation which are normal for the field of technology in question.²¹ And as AI as a tool becomes more and more prevalent in a variety of technological fields, it should be considered as a means available to the skilled person.²² This raises the abilities of the skilled person immensely. A human equipped with AI tools is able to research well beyond her/his technical realm.²³ The borders between areas of technical expertise will be blurred as the following example illustrates:

Nowadays one can assume that a skilled person who wants to develop or improve an implantable screw – e.g. for surgery to stabilize the spine – will explore mainly the field of medical technology and especially implants. She/He would currently not consider screws from distant patent classifications and, for example, will not in any obvious way think of adopting the basic structure of a light metal screw from aircraft construction. With the help of an AI based search tool the limitations of the patent classification system are no longer relevant. If a technical solution can be suitable in the beginning, the

²⁰ Cf. Block, P., “The inventor's New Tool: Artificial Intelligence – How does it fit in the European patent system?” (2017) 39 E.I.P.R., Issue 2, 2017, Thomson Reuters.

²¹ EPO Guidelines for Examination, G-VII.3.

²² EPO Comments to WIPO Conversation on IP and AI, Second Session July 7 to 9, 2020, Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence, pp. 7-8.

²³ Haedicke, M./Timmann, H./Naegerl, J., loc. cit., Fn. 24.

expert should at least consider it and weigh the technical advantages and disadvantages against each other.

Thus, AI – even if it is only a tool – has a significant effect on the general knowledge of the skilled person and her/his horizon of understanding and helps to shape it.²⁴ It will not only support the expert in his state of the art research, but will also help him to recognize structures, patterns, connections and technical teachings that were previously hidden from the "conventional" expert.²⁵

d) Comment

It may well be that – over time – it does not make much of a difference whether a human wields AI as a tool or whether the AI itself becomes the frame of reference for the fiction of the skilled person. We will show in the subsequent sections that as the AI's ability to capture and process the world's information increases, the distinction between a human and an AI becomes less meaningful for the assessment of the skilled person. Only in some highly specific instances – like the assessment of the inventive step/non-obviousness – the essence of human innovation through creativity should persist.

III. AI, Skilled Person and Patent Validity

AI already plays an important role in the assessment of novelty, inventive step and other considerations of validity.

1. Novelty

An invention is novel if it cannot be found by a skilled person among the state of art.²⁶ The state of the art, or prior art, is everything made available to the public before the priority date.²⁷ AI technology has an effect of what exactly falls under this idea of "everything".

²⁴ *Hetmank, S./Lauber-Rönsberg, A.*, loc. cit.

²⁵ *Haedicke, M./Timmann, H./Naegerl, J.*, loc. cit., mn. 18.

²⁶ Cf. Art. 54(1) EPC; EPO Guidelines of Examination, G-VI.1-2.

²⁷ Cf. Art. 54(2) EPC; EPO Guidelines of Examination, G-IV.1; 35 U.S.C. § 102(a).

a) Accessing everything

As set out above, it is not decisive for the novelty assessment whether an AI is the skilled person or whether the AI is merely the skilled person's tool – as the novelty assessment is an absolute one. The amount of information encompassed by "everything made available to the public" becomes a vast, all-encompassing picture of humanity's technological knowledge at any given point in time – and it is not relevant whether this information was in the general knowledge of a skilled person; it just needs to be pre-published.

Even before AI tools took the stage, prior art research sought to cover all available information worldwide. AI helps to match this body of information to an actual target document (e.g. through a cosine similarity assessment). There may be some small limitations in terms of the media containing such information and whether it allows machine-readability (e.g. currently: computer vision of figures). But such limitations will recede with the decline of analogue media. Already today there seems to be little information published which is both available to the public and not machine-readable. At the same time, existing analogue media is subjected to digitization – think only of the Google Books project –, reducing the amount of information unavailable to processing with AI tools.

b) AI-generated prior art

It is important to note that AI is not intended to increase the body of prior art as such: it is either designed to reveal sources of information and match them to targets (research tool), or to extract new inventive ideas from the body of prior art (innovative tool)²⁸. While the latter use case lies outside the focus of this article, inclined readers may find the following brief observation interesting: Irrespective of whether exclusive rights can and should be granted for AI-generated innovations, such innovation constitutes prior art if published.

The concept of prior art is not limited to patentable inventions but includes everything that would allow a skilled person to practice an invention. An AI-generated document disclosed to the public at a given time would therefore become part of the prior art

²⁸ Ory, S./Sorge, C., Schöpfung durch künstliche Intelligenz?, NJW 2019, 710; Hetmank, S./Lauber-Rönsberg, A., loc. cit.

available on that date, regardless of whether the invention is granted patent protection or not.

An AI's capability of generating prior art could have significant implications for the patent system besides patentability issues. For instance, it is conceivable that AI technology may be used to generate and publish prior art in a certain technical field to prevent patentable inventions to be made in that field (e.g. genetic resources under the Nagoya Protocol²⁹). As AI technology progresses and AI's capability to innovate increases, technological innovation no longer requires substantial financial commitments. There may be interest groups who will employ innovation-generating AI technology simply to prevent other stakeholders from patent applications, for political, economic, ecological, or other reasons.

Inventors would be confronted with a widening "chasm of innovation", which they would have to bridge to generate anything novel (and, for that matter, inventive). While the current state of AI technology may let such a scenario seem remote, legislators will do well to take it into consideration.

2. Inventive Step/Non-obviousness

Even where an invention is not part of the state of the art, to be patentable it must still be non-obvious to a skilled person. This non-obviousness or inventive step requirement fundamentally depends on the exact characteristics of the skilled person fiction, which in turn rest on the idea of the means, tools and knowledge available in the respective technical field at the priority date. As anything is "obvious" which follows from prior art without the exercise of skills or knowledge beyond what can be expected of the skilled person, the description of that skilled person's skills and knowledge is imperative.

a) Simulating human research

As we have pointed out above, the question whether an AI system can be a skilled person or whether it is merely a tool used by a human person becomes decisive in the assessment of the inventive step. While an AI would basically consider any improvement

²⁹ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity of 29 Oct. 2010.

that advances the assessed technology area or makes the production/deployment of devices and services more cost-effective – independent from where it derived this conclusion –, a human would only consider and explore thought-provoking impulses within her/his area of technical expertise.

We think that this problem can be mitigated if the AI's performance resembles the capabilities of a human. Where an AI is used in a prior art search and detects two pieces of prior art challenging an invention's inventiveness, the debate as to whether a human was also incentivized to combine these documents becomes obsolete if it can be shown (and evidenced in court) that a skilled person would have combined the same two pieces of prior art even without the aid of an AI.

This would suggest the development of AI able to mimic the steps a human would perform in prior art search. To that end, an AI could work along nodes in the patent citation/classification network, allowing it to measure the distance between the prior art documents to be combined and to the targeted patent document. The closer the distance between documents is, the likelier it is that a human expert in that technical field would have known and combined the teachings of these documents to reach the targeted teaching (classification/citation-based proximity assessment).

b) Which AI tools are available when?

The follow-up question is related to the temporal assessment of patent documents: Independent from the question whether an AI is a skilled person or whether it is merely a tool, it needs to have been available at the relevant point in time for a validity assessment (priority or filing date).

AI technology is very flexible and rapidly improving and it is difficult to evidence which iteration of an AI system has been available at what point in time. For instance, where an opposition to a patent argues that two specific pieces of prior art would have been combined by or with the support of an AI, it would have to be determined whether this AI had been available at the priority date as well. The fact that the current iteration of the system would have done so does not evidence the allegation and represents a potential hindsight bias.

A potential solution could be executable, time-stamped snapshots of AI systems being stored at any given time to later determine the knowledge available in the respective field at that time. However, it is difficult to see how such an approach would be implemented in practice. Theoretically, commercial users of AI technology may have an incentive to document the progress of the AI available to them at any given time. Doing so would potentially allow them to attack their competitor's patent applications in the future. But the amount of data generated by this documentation of AI progress could prove to be too much for any one entity to handle.

A legal fiction that projects the present state of AI into the past could be used to approach this problem. In cases of infringement under the doctrine of equivalence, a variant on a patented invention is considered to fall under the patent's scope if a skilled person would have recognized the variant as equivalent to the patent's literal technical teaching. This becomes crucial in cases where the equivalent element had not been available to the skilled person at the priority date but came on at a later time through general technological progress. In such cases, courts have found for equivalent infringement.³⁰ It is their reason that an infringer should not be allowed to use a variant of a patented invention where such a variant follows simply from society's technological progress and through no innovative effort of the infringer. Therefore, the present state of the art is projected back to the priority date and the test for equivalent infringement then uses a modified fiction of the skilled person possessing knowledge which has only become available in the future.

Transferring this fiction to the problem of AI progress described above, the result would be that the test for non-obviousness would assume a level of AI technology existent not at the priority date, but at the time of reviewing the non-obviousness requirement. However, as AI technology progresses over time, this would in turn lead to an increasingly high standard for non-obviousness not just for current applications, but also for applications in the past, as the high standard of a present skilled person would continuously be projected back in time.

³⁰ Higher Regional Court Düsseldorf, dec. of 7 Jul. 2016, I-2 U 5/14 = GRUR-RS 2016, 21120 – *Ceroxid-Nanodispersionen*.

This approach would run into several issues. First, examining no-obviousness generally excludes any ex-post facto analysis.³¹ Second, the effect would be adverse to what the patent systems seeks to achieve. In terms of infringement, one could argue that an inventor should not be denied the fruits of her innovative efforts simply because general technological innovation allows infringers to use that invention by exchanging one element with another element not available to the skilled person at the priority date. This ensures adequate compensation for the inventor irrespective of technological innovation affecting the patent's scope of protection "by chance". In terms of validity, however, the effect would be the opposite. As future advances in AI technology would affect the test for non-obviousness in the past, an inventor today could not be sure that her effort to cross the inventive step threshold would still be recognized in the future. As a result, a legal fiction of modifying the fiction of the skilled person by supplementing the AI tools available at the priority date with the level of AI technology available later on does not seem a viable solution.

We thus return to the need for an evidence-based assessment of what the means available to the skilled person where at any given point in time. As the documentation required may be difficult for individual inventors, centralized databases of generally available AI technology could be a useful starting point of discussion.

IV. AI, Skilled Person and Infringement Litigation

1. Claim construction

As we have set out above, the rapid development of AI supplements the means and tools available to the skilled person, augmenting the skilled person's capabilities to find prior art (novelty) and combining the technical teaching disclosed in different pieces of prior art to new teachings without significant effort (non-obviousness). But the notion of the skilled person also plays a key role in claim construction, i.e. determining a patent's scope of protection. How the skilled person would interpret a specific set of patent claims is at the heart of any infringement test.

³¹ EPO Boards of Appeal, dec. of 15 Sept. 2004, T0970/00.

At first glance, there seems to be little news brought about by AI's arrival in the world of patent infringement. However, one item that should be commented upon in terms of claim construction is the understanding of a specific term used in the claim and which is not defined in the patent specification itself.³² In these cases, the claim construction focusses on knowledge that belonged to the skilled person's general expertise at the priority/filing date – only this knowledge can be used to interpret the claim.³³ If such evidence is to be provided in infringement proceedings and an AI-extracted understanding of the term is to be used, then the procedure described above for the inventive step must be followed to normalize the assessment down to the level of human cognition.

2. Doctrine of equivalents

If a device or process does not practice the claims of a patent but uses means equivalent to the invention, a court may find for infringement under the doctrine of equivalents. The idea behind the doctrine of equivalents is that a patent applicant, on the one hand, cannot be expected to put all possible iterations of a technical teaching in the words of a patent application, and, on the other, must be protected from infringers using the technical teaching by employing those iterations that were not included.³⁴

As described above, the employment of AI technology could unearth new equivalents to the literal disclosure of a technical teaching.³⁵ As a result, patent owners could benefit substantially from the use of AI in determining infringement under the doctrine of equivalence.

Generally, to increase the scope of protection during claim construction is to increase the risk of a successful validity attack. A broader scope of protection could put the disclosed invention within the reach of prior art, harming novelty or inventive step. However, transferring this problem to the test for equivalent infringement, there is a temporal difference between the scope of protection concerning infringement and the patent's validity. The latter rests on the skilled person's knowledge and capabilities at the

³² German Federal Court of Justice, dec. of 2 Mar. 1999, X ZR 85/96 = GRUR 1999, 909 – *Spannschraube*.

³³ Cf. Kühnen, T., "Handbuch der Patentverletzung", Chap. A, Fn. 108, 12th ed. (2020).

³⁴ U.S. Supreme Court, *Graver Tank & Mfg Co. v. Linde Air Prods. Co.*, 339 U. S. 605, 608 (1950): "The essence of the doctrine is that one may not practice a fraud on a patent."

³⁵ Cf. supra, III 2 b).

priority date. In terms of equivalent infringement, however, there is a strong argument for projecting present technological knowledge to the skilled person at the priority date.³⁶ As a consequence, if specific means equivalent to the literal practicing of a patent's technical teaching are found by the use of AI technology not present at the time of the patent application, it should be legitimate to assume that the skilled person at that time would have had access to the same level of AI technology. As a result, the use of an AI in claim construction may also lead to semantic results that go beyond the literal meaning disclosed by a patent but may substantiate an argument for infringement under the doctrine of equivalents.

V. Conclusion

We have come to the conclusion that AI systems can and should be applied in the context of patent law. While some use cases, like a prior art search for novelty-destroying documents can be undertaken without applying any technical throttles on the AI engine, others require a more seasoned use, and an awareness of the evidence required to be presented to the examiner/judge. These different angles of assessment need to be considered in the overall architecture of AI engines to make them as effective as possible and to harvest the most from these cutting-edge tools that will shape patent law during the next decades, and to take patent-related knowledge assessment to a whole new level.

³⁶ Cf. *supra*, III 2 b); Higher Regional Court Düsseldorf, dec. of 7 July 2016, I-2 U 5/14 = GRUR-RS 2016, 21120 – *Ceroxid-Nanodispersionen*.