Federal Court of Appeal | Cour d'appel fédérale

**Date: 20130924**

**Docket: A-74-12**

**Citation: 2013 FCA 219**

**CORAM:** **NOËL J.A.**
**TRUDEL J.A.**
**MAINVILLE J.A.**

**BETWEEN:**

**BELL HELICOPTER TEXTRON CANADA LIMITÉE**

**Appellant**

**and**

**EUROCOPTER, société par actions simplifiée**

**Respondent**

Heard at Montréal, Quebec, on May 27 and 28, 2013.

Judgment delivered at Ottawa, Ontario, on September 24, 2013.

REASONS FOR JUDGMENT BY: MAINVILLE J.A.

CONCURRED IN BY: NOËL J.A.
TRUDEL J.A.

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## REASONS FOR JUDGMENT

**MAINVILLE J.A.**

[1] This concerns an appeal by Bell Helicopter Textron Canada Ltée ("Bell Helicopter") and a cross-appeal by Eurocopter from a judgment of Martineau J. of the Federal Court (the "Judge") dated January 30, 2012, bearing citation number 2012 FC 113 (the "Reasons"), which:

> (a) declared that Bell Helicopter had infringed claim 15 of Canadian Patent No. 2,207,787 (the '787 Patent) owned by Eurocopter by using a helicopter landing gear known as the "Legacy landing gear";

> (b) declared that Bell Helicopter had not infringed claim 15 of the '787 Patent by using and selling a helicopter landing gear known as the "Production landing gear";
>
> (c) enjoined Bell Helicopter from manufacturing, using or selling the Legacy landing gear or any similar landing gear until the '787 Patent expires or is otherwise held to be invalid;
>
> (d) declared that Eurocopter was entitled to all damages, including punitive damages, as a result of its infringement of claim 15 of the '787 Patent, the quantum of which to be determined in subsequent hearings following a bifurcation order requested by both litigants; and
>
> (e) invalidated all the other claims of the '787 Patent.

[2] Bell Helicopter appeals principally on the grounds that claim 15 of the '787 Patent is invalid, that its Legacy landing gear does not infringe the '787 Patent, and that, in any event, the finding that punitive damages could be awarded was inappropriate.

[3] Eurocopter cross-appeals principally on the grounds that all the claims of the '787 Patent are valid, and that Bell Helicopter's Production landing gear infringes those claims.

[4] For the reasons further set out below, I would dismiss both the appeal and the cross-appeal.

## GENERAL BACKGROUND

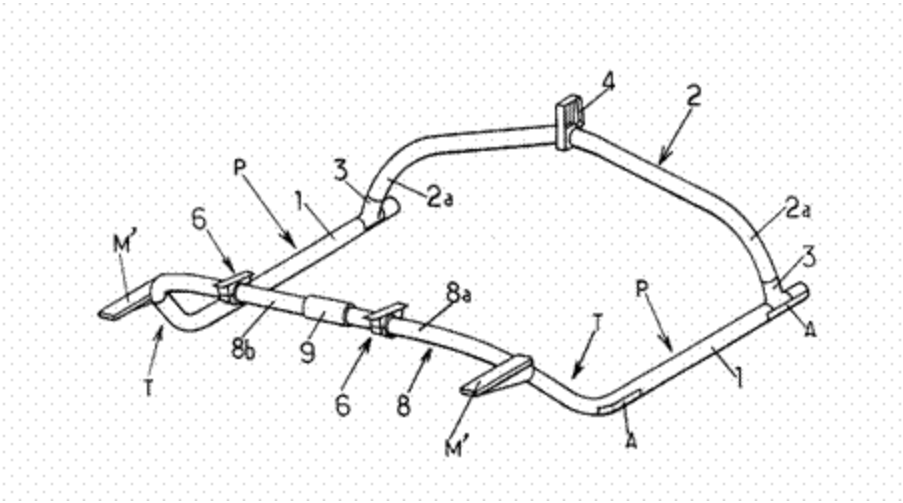
[5] The background to the litigation and the pertinent facts are extensively set out in the 464 paragraphs of the judgment of Martineau J., and need not be repeated here. For the purposes of this appeal, it is sufficient to simply highlight some salient aspects.

[6] Both Eurocopter and Bell Helicopter are major manufacturers of helicopters, which they both market and sell to clients worldwide. Helicopters incorporate very complex pieces of machinery to achieve amazing flight capabilities. They require highly specialized technical and engineering skills to build, maintain and operate.

[7] An important feature of a helicopter is its landing gear, which presents special technical challenges. One of these challenges is known as ground resonance instability, a dangerous phenomenon. The Judge described this technical challenge at paras. 218 to 221 of the Reasons. It results from an energy exchange between the main rotor of the helicopter and the helicopter structure on the ground. Typically, the regressive in-plane mode of the rotor couples with the pitch, roll or lateral motion of the helicopter on its landing gear, and ground resonance occurs. Ground resonance instability is traditionally resolved through mechanical anti-ground resonance systems, such as dampers.

[8] While working on a new light helicopter design in the mid-1990's, Eurocopter developed a landing gear known as the "Moustache", which is a "sleigh type" landing gear that advantageously addresses ground resonance instability issues. This landing gear formed the basis of the '787 Patent, which was filed in Canada on June 5, 1997, with a priority date of June 10, 1996 based on a patent application filed in France. The Moustache landing gear has since had a very large commercial success, with no reports of ground resonance instability associated with its use. It is principally sold with Eurocopter's EC120 and EC130 helicopters.

[9] Figure 1 of the '787 Patent is an isometric view of the Moustache type landing gear:



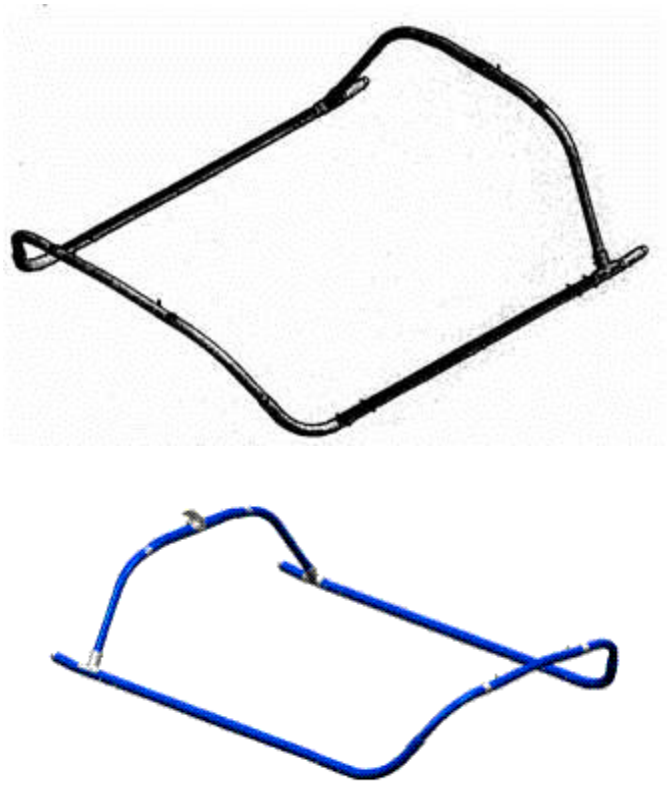

[10] In the early 2000's, Bell Helicopter had two separate helicopter programs: the Bell 427i program, and the Modular Affordable Products Line ("MAPL") program. Elements of these two programs were combined in September of 2004 to eventually lead to the development of the Bell 429 helicopter. The landing gear for this helicopter was a sleigh type landing gear taken from the MAPL program and which is known as the "Legacy landing gear": Reasons at paras. 169-170.

[11] As Bell Helicopter had never designed a helicopter with a sleigh type landing gear, it studied the performance of an EC120 helicopter. It leased and operated an EC120 from approximately March to June 2003 and performed various tests on that helicopter. Bell Helicopter employees received training on the EC120 helicopter in March 2003: Reasons at para. 172.

[12] The Judge found (at para. 172 of the Reasons) that Bell Helicopter's internal documents suggest that the tests it conducted on the EC120 were to acquire better knowledge in order "to

reduce the risk in the MAPL program regarding the ground resonance issues" and that "[t]he data obtained during the ground shake test could be used to design better landing gears for future Bell products".

[13] The sleigh type Legacy landing gear was made or assembled by Bell Helicopter in March of 2003: Reasons at para. 171. The Judge reproduced the following isometric views of the Legacy landing gear at paras. 23 and 394 of the Reasons:

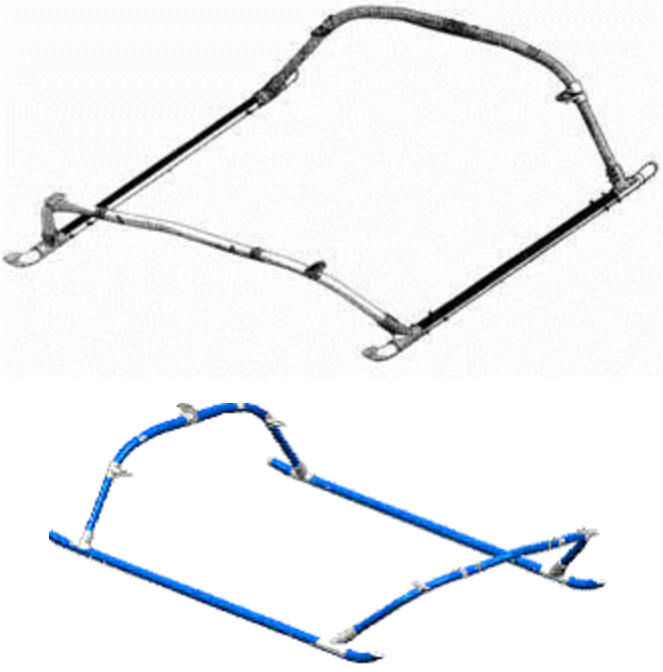


[14] The Bell 429 helicopter equipped with the Legacy landing gear achieved its first flight on February 27, 2007 at Bell Helicopter's facilities in Mirabel, Quebec. However, certification of the

Bell 429 with the Legacy landing gear was never completed in light of the action for patent infringement launched by Eurocopter in May of 2008.

[15] Following the initiation of these proceedings, Bell Helicopter quickly developed a modified landing gear for the Bell 429, now known as the Production landing gear. As found by the Judge (at paras. 179 to 184 of the Reasons), the general idea was to modify the Legacy landing gear sufficiently to eliminate any alleged infringement to the '787 Patent.

[16] The Judge reproduced the following isometric views of the Production landing gear at paras. 25 and 395 of the Reasons:



[17] The Production landing gear is sold by Bell Helicopter with the Bell 429 helicopter. No helicopter equipped with the Legacy landing gear has been sold, though helicopters equipped with that gear were used in the early marketing efforts for the Bell 429.

THE JUDGMENT OF THE FEDERAL COURT

[18] After setting out the legal principles which applied (paras. 39 to 80 of the Reasons), the Judge extensively reviewed the abundant evidence which had been submitted by the litigants throughout the lengthy trial, including profuse reports and testimony from numerous experts (paras. 81 to 184 of the Reasons).

[19] The Judge then considered the principal issues before him, notably (a) the construction of the '787 Patent (paras. 185 to 249); (b) whether Bell Helicopter's Production landing gear infringed the patent (paras. 251 to 263), (c) whether Bell Helicopter's Legacy landing gear also infringed (paras. 264 to 292), and (d) whether the claims in the '787 Patent were invalid on the grounds of obviousness (paras. 294 to 311), insufficient disclosure (paras. 312 to 332), or lack of utility or of sound prediction (paras. 333 to 376).

[20] The Judge completed his analysis with a discussion of the appropriate remedies, including the declarations and injunctions he intended to issue (paras. 389 to 405), the option between damages and accounting for profits (paras. 406 to 416), and the availability of punitive damages (paras. 417 to 456).

*Construction of the '787 Patent*

[21] The Judge organized his analysis of the construction of the patent around the following four issues: (1) the skilled person; (ii) the common general knowledge of the skilled person; (iii) the promised utility of the invention; and (iv) claims construction.

*(i) The skilled person*

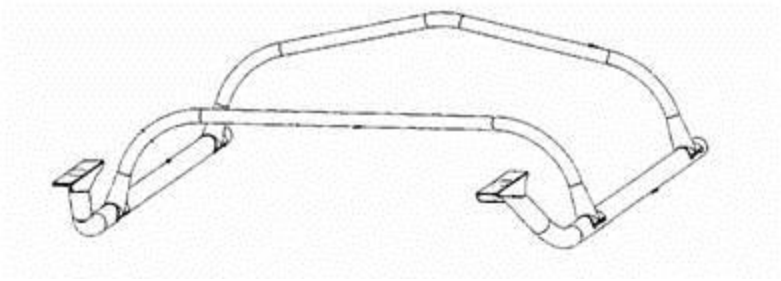
[22] The Judge construed the patent though the eyes of a person skilled in the art or science to which the invention pertains (herein referred to as the "skilled person"), which he extensively defined at paras. 187 to 198 of the Reasons. The skilled person would be someone with at least a Bachelor's degree in engineering, typically in aerospace or mechanical engineering, and who would be familiar with the design of landing gears and the overall aircraft system, as well as with skills in related technical calculations, and an understanding of related scientific principles. The skilled person would also be knowledgeable about ground resonance and the ways which are known in the art to control or prevent this phenomenon.

[23] Owing to the sophisticated knowledge required to design helicopter landing gears, the Judge found (at para. 190) that no more than a few hundred engineers, either employed or retired, would qualify as a skilled person to whom the '787 Patent was addressed.

*(ii) The common general knowledge of the skilled person*

[24] The Judge then went on to define the scope of the general common knowledge of the skilled person in relation to the field of the patent, which he defined (at paras. 199 to 210 of the Reasons) as

skid type helicopter landing gears. He found that the common general knowledge in this field included prior art that would generally be regarded as a good basis for further action in the design of skid-type helicopter landing gears. The common general knowledge in the field of conventional skid-type landing gears was thus defined under prior art by an orthogonal design having long, straight and usually circular tubes oriented longitudinally, ending with a short ski type protrusion at the front end, similar to the general design shown on the isometric view set out at para. 209 of the Reasons, and here reproduced:



In this conventional design, the front and rear cross pieces are parallel with respect to each other and they are perpendicular or substantially perpendicular to the ground skids. Both cross pieces are attached to the ground skids by way of a saddle or "tee" attachment.

*(iii) The promised utility*

[25] The Judge also found (at paras. 215 to 223) that the promised utility of the '787 Patent was to reduce significantly the drawbacks of prior art involving (a) elevated acceleration factors upon landing (load factors); (b) difficult frequency adaptation with respect to ground resonance; and (c) high landing gear weight. In particular, the elimination of mechanical anti-ground resonance systems (*i.e.* dampers) was found to be an important advantage flowing from the design of the Moustache landing gear.

*(iv) Claims construction*

[26] Reviewing the patent through the eyes of the skilled person, the Judge found that the invention was principally embodied in claim 1 of the '787 Patent. He further found (at para. 212) that "what distinguishes the Moustache landing gear from a conventional landing gear is that 'each of said skids has at the front an inclined transition zone with double curvature orienting itself transversely in relation to said longitudinal ground support surfaces, above the plane of the latter, the two transition zones together constituting, in this way, an integrated front cross piece, offset in relation to the front delimitation of the plane of contact of the longitudinal support surfaces of the skids on the ground' (claim 1 of the '787 Patent)." [Emphasis added.]

[27] The Judge also concluded (at para. 228 of the Reasons), from the abundant expert testimony before him that the "double curvature" of the transition zone is obtained first by a "fairly large" bend when the skid's cross piece bends upwards (C1 of the figures reproduced below), and then a second bend where the cross piece extends horizontally to meet the fuselage (C2 of the figures reproduced below) as shown in figures 4a, 4b and 10 of the '787 Patent here reproduced:

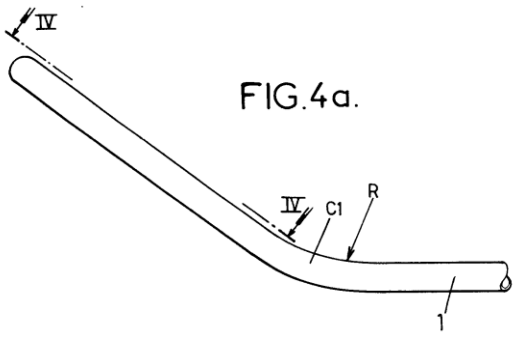


FIG.4b.

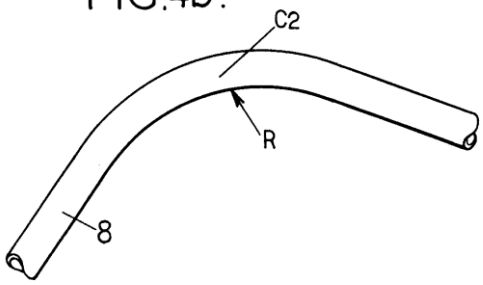
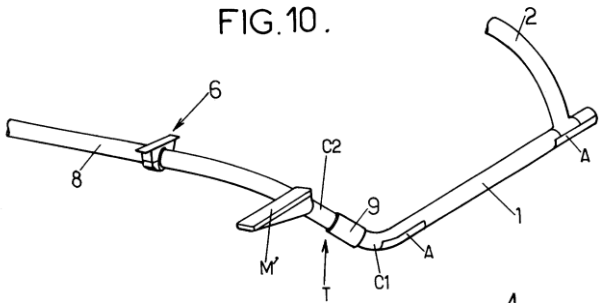



FIG.10.




[28] He further found (at paras. 229 to 246) that all the elements of claim 1 of the '787 Patent were essential components of the invention, including the "double curvature" constituting "an integrated front cross piece". He noted in particular (at paras. 234, 235 and 245) that a stiff saddle connection between the inclined transition zone and the longitudinal support surface of the skid on the ground was not part of the invention, concluding rather that the skilled person (at para. 245) "would have obviously appreciated that the manner in which loads are distributed through a stiff saddle connection will be different than the manner in which loads are distributed through the double curvature of the Moustache landing gear."

[29] The Judge also found (at para. 247) that the other claims of the '787 Patent (claims 2 to 16) were all dependent claims, meaning that they build on the claims that come before, including notably claim 1.

*Bell Helicopter's Production landing gear does not infringe the '787 Patent*

[30] Turning his mind to the issue of infringement, the Judge concluded from the evidence that Bell Helicopter's Production landing gear did not infringe the '787 Patent. Though he considered whether the Production landing gear may be somewhat functionally equivalent to the landing gear disclosed in the patent, he was of the view (at para. 253), that "a patent is not infringed merely because the defendant's product accomplishes the same function as the patented invention. What matters is whether the defendant's product incorporated all the essential elements of the claim, not whether the parties' products function similarly."

[31] The Judge was satisfied (at para. 259) that since "the front cross piece of the Production gear is attached to the skids by means of saddle joints", that "gear does not feature the 'double curvature', which, as aforementioned, is one of the essential elements of claim 1." He further concluded (at para. 263) that "the Production gear does not have the integrated front cross piece required by claim 1" in that it "consists of a straight front cross piece connected to a straight skid via a saddle connection, with the skid continuing forward of the saddle and terminating in a ski tip." Thus, a skilled person "would understand that the '787 Patent contrasts two different means of attachment, and thus that a cross piece attached with a saddle is, by definition, not integrated."

*Bell Helicopter's Legacy landing gear infringes the '787 Patent*

[32] The Judge however found otherwise with respect to Bell Helicopter's Legacy landing gear. He concluded (at para. 264) that there was "no debate" on whether all the essential elements of claim 1 of the '787 Patent were found on the Legacy landing gear, and that there was "clear

evidence" that the Legacy landing gear fell within the scope of claims 1 to 5, 7, 9, 10 and 15 of the '787 Patent.

[33] The issue, therefore, was whether Bell Helicopter could defeat the infringement action in relation to the Legacy landing gear by successfully raising a defence based (a) on the exception set out under subsection 55.2(1) of the *Patent Act*, R.S.C. 1985, c. P-4 (the regulatory or experimental exception), or (b) on a prior art defence.

[34] Subsection 55.2(1) of the *Patent Act* provides that it is not an infringement of a patent for any person to make, construct, use or sell the patented invention solely for uses reasonably related to the development and submission of information required under any law of Canada, a province or a country other than Canada that regulates the manufacture, construction, use or sale of any product. Bell Helicopter submitted to the Judge that twenty of the twenty-one Legacy landing gears manufactured were used for fatigue tests, drop tests and float kit development and testing, all in relation to certification. The remaining gear was used for a static display at a trade show.

[35] However, the Judge found (at para. 268) that, on the totality of the evidence, Bell Helicopter did not construct, use or sell the Legacy landing gear solely for uses reasonably related to the development and submission of information required by law, thus making it "ineligible for the regulatory or common law experimental exception." He based this finding largely on his conclusion (at para. 267) that by soliciting orders for new helicopters with the Legacy landing gear, signing

related agreements with clients, and promoting a new helicopter equipped with such a landing gear at trade shows, Bell Helicopter went well beyond the regulatory or experimentation exception.

[36] Bell Helicopter also submitted to the Judge that the '787 Patent had been disclosed by prior art, and it relied on *Gillette Safety Razor Co. v. Anglo-American Trading Co.* (1913), 30 R.P.C. (2d) 465 (HL) ("*Gillette*"). The Judge however rejected this defence on various grounds.

[37] First, he noted (at paras. 272-273) that in 2008 Bell Helicopter itself had promoted the Legacy landing gear as a "first time" design. Nevertheless, Bell Helicopter still maintained before the Judge that all the features of the Legacy landing gear could be found in prior art, particularly in prior art dealing with obstacle strike designs for landing gears and in certain NASA documents.

[38] The Judge reviewed (at para. 277) prior art publications dealing with obstacle strikes which were relied upon by Bell Helicopter and which he referred to as the "Obstacle strike documents". Some of these documents were co-authored by Mr. Bharat P. Gupta, who had been working as a project engineer for Bell Textron in Texas. These documents disclosed a method whereby a skid landing gear could be protected from entanglement with suspended wires and cables by eliminating the forward protruding ski tubes (which the Judge called the "first concept") or by placing fairings (which the Judge called the "second concept").

[39] He found (at para. 280) the second concept (use of fairings) of no pertinence to the *Gillette* defence. As for the first concept, Bell Helicopter simply relied on drawings of helicopters equipped

with a landing gear presenting no protruding skids at the front. The Judge found these drawings ambiguous and the accompanying text "unhelpfully terse" (at paras. 282 to 286). In any event, he found (at para. 287) that "the double curvature which is an essential element of claim 1 of the '787 Patent is missing" and that "[t]here is no transition zone within the meaning of the '787 Patent." This led him to conclude (at para. 288) that Bell Helicopter "had failed to prove that the disclosure and the enablement conditions are met in the case of the Obstacle strike documents."

[40] As for the other prior art relied upon by Bell Helicopter, and referred to as the NASA documents, the Judge found (at paras. 289-290) that Bell Helicopter had failed to establish that they were publicly available at the pertinent time. He further found (at paras. 291-292) that even assuming that these NASA documents were available, they failed to disclose the invention set out in the '787 Patent.

[41] The Judge then addressed the challenges to the '787 Patent which had been raised by Bell Helicopter on the grounds of anticipation, obviousness, insufficient specification and lack of utility.

*The '787 Patent was not anticipated*

[42] The Judge concluded (at paras. 50, 52 and 294) that Bell Helicopter's challenge to the '787 Patent on the ground of anticipation was closely related to its *Gillette* defence which he had already rejected. He consequently dismissed Bell Helicopter's anticipation submissions for the same reasons.

*The '787 Patent is not obvious*

[43] Using (at paras. 78-79) the four-step test set out in *Apotex Inc. v. Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61, [2008] 3 S.C.R. 265 ("*Sanofi*"), the Judge concluded (at para. 298) that none of the claims set out in the '787 Patent were obvious.

[44] Specifically, after describing the inventive concept of the '787 Patent (in para. 300), and reviewing the prior art which Bell Helicopter's experts had submitted (in paras. 301 and 303 to 307), the Judge concluded (at para. 302) that none revealed the inventive concept contained in the patent. He also found that the landing gear disclosed by the patent "was neither known nor obvious" to a skilled person, and that invention was necessary to make the leap towards the inventive concept of the landing gear described in the '787 Patent. He further found (at para. 310) that the new landing gear disclosed by the patent was not "obvious to try".

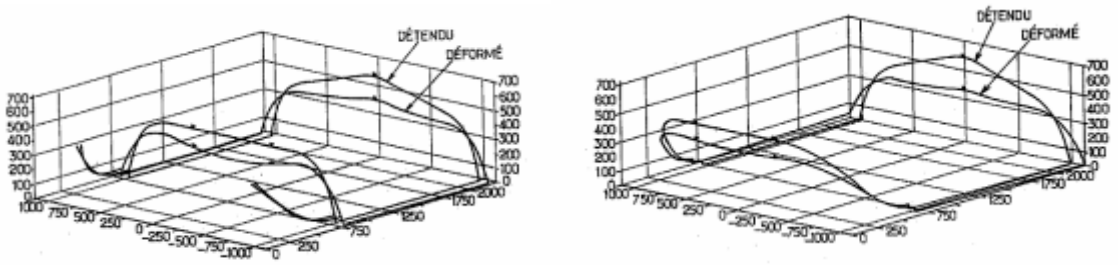
*The '787 Patent provides sufficient disclosure of the invention*

[45] The Judge then dealt with Bell Helicopter's challenge to the '787 Patent on the ground that it did not disclose the invention sufficiently, contrary to paragraph 27(3)(*b*) of the *Patent Act*, and that it did not indicate the best mode contrary to paragraph 27(3)(*c*) thereof.

[46] Based on his assessment of the evidence from the expert witnesses (at paras. 316 to 319), the Judge found (at para. 315) that a skilled person who read the description set out in the patent and who wanted to produce the disclosed landing gear "would know to size the landing gear in relation to specific aircraft, would know to choose the best angle for inclination, and would not have

difficulty determining whether the landing gear had best be attached to the fuselage at three or four points, in function of the weight of the aircraft."

[47] The Judge also found (at paras. 322 and 329) that the '787 Patent disclosed the best mode of the invention and was clear enough to allow a skilled person "to understand the general functioning of the claimed invention and its main features." He found that Figures 12 and 13 set out in the patent were particularly enlightening to show how the Moustache landing gear's integrated front cross piece will contribute to the overall energy balance and will play, thanks to the bending of the transition zones, a leading role for the absorption of those forces generated during rough and running landings. These figures are reproduced below and show perspective views of the deformations of a conventional landing gear (left) as compared to the Moustache landing gear (right):

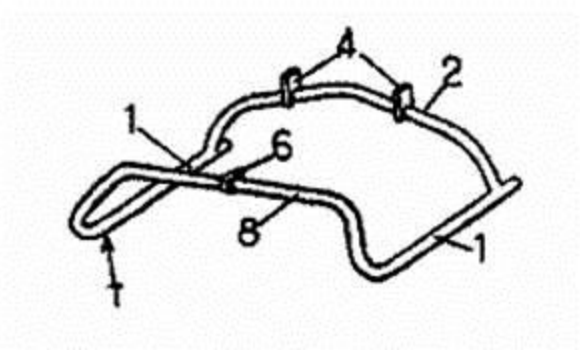



*Fifteen of the claims in the '787 Patent are invalid for lack of evidence as to their utility*

[48] After reviewing the evidence, the Judge found (at para. 350) that, on a balance of probabilities, Bell Helicopter did not prove that the invention set out in the '787 Patent did not work in the manner the specification promised it will do. He was particularly satisfied (at paras. 354 to

360) that in light of the actual testing that had been carried out, the inventors had clearly demonstrated the usefulness of the embodiment included in claim 15 of that patent in which the integrated front cross piece is offset forwards in relation to the front delimitation of the plane of contact of the longitudinal support surfaces of the skids on the ground.

[49] However, the Judge was not convinced that there was sufficient evidence or data to support a prediction with respect to the promised utility of the embodiment of the invention set out in claim 16 of the '787 Patent. That claim provides for an embodiment in which the integrated front cross piece of the landing gear is offset backwards in relation to the front delimitation of the plane of contact of the longitudinal support surfaces of the skids on the ground. That embodiment is illustrated in Figure 11e of the patent, reproduced below:




[50] The Judge found (at para. 363) that "there was no particular demonstration in the patent, nor testimonial or documentary evidence that, at the Canadian filing date, the inventors had made and tested a Moustache landing gear whose front cross piece was offset backwards." He further found (at paras. 364 to 368) that there was no evidence that a backward inclination had any resonance advantage, nor any data or information upon which the inventors could have soundly predicted that

the backward inclination embodiment procured the specific advantages claimed in the '787 Patent. He consequently concluded (at para. 369) that "[t]he utility of a helicopter landing gear according to claim 16 had not been demonstrated at the Canadian filing date, namely, June 5, 1997. Moreover, relevant data available prior to June 5, 1997, did not permit the inventors to soundly predict the behaviour of a Moustache landing gear with a front crosspiece which is offset backwards and in any event, there is no line of reasoning described in the '787 Patent in that respect."

[51] Since the Judge had found (at para. 334) that claim 1 of the '787 Patent included the embodiment of the invention whereby the front cross piece is offset backwards, and since claims 2 to 14 were dependent on claim 1, the Judge concluded (at para. 371) that "[t]o the extent that claims 1 and 16 cover any embodiment whereby the front cross piece is offset backwards, all dependent claims, except claim 15, must be held invalid." The Judge thus declared (at para. 371) "that claims 1 to 14 and claim 16 of the '787 Patent are invalid and void on the basis of lack of demonstrated utility (or sound prediction) and/or overbreadth."

*Remedies*

[52] Turning to the remedies resulting from his findings, the Judge declared (at paras. 392 to 394) (a) claim 15 of the '787 Patent to be valid and enforceable; (b) claims 1 to 14 and 16 to be invalid, null, void and of no force and effect; (c) that Bell Helicopter infringed claim 15 by using of the Legacy landing gear; and (d) that Bell Helicopter did not however infringe claim 15 by using and selling the Production landing gear. The Judge (at para. 403) also granted an injunction enjoining Bell Helicopter from manufacturing, using or selling the Legacy landing gear or any

similar landing gear, or any helicopter comprising such landing gear, until the '787 Patent expires or is otherwise found to be invalid. He also ordered (at para. 405) Bell Helicopter to destroy (subject to certain timelines) all the Legacy landing gears in its possession or under its authority or control.

[53] Turning to the issue of monetary compensation, the Judge denied to Eurocopter an election between damages or accounting for profits on the ground that such an election was not appropriate in light of the complexity of an accounting for profits in this case. The Judge found (at para. 412) "that a landing gear, although essential for the proper functioning and security of a helicopter, represents just a small part of the total costs of a helicopter" and that it was thus "questionable whether an accounting of profits should be permitted" in such circumstances (at para. 415). He also found (at para. 414) that Eurocopter could not recover profits flowing from the sale of the Bell 429 helicopter equipped with the non-infringing Production landing gear, and that any calculation of the profits gained from the 21 Legacy landing gears manufactured by Bell Helicopter (but never sold) would "be a highly complex and controversial exercise."

[54] The Judge consequently found (at para. 416) that Eurocopter would be entitled to general compensatory damages, which may comprise the loss of profits from sales, or perhaps, loss of royalty payments as an alternative.

[55] The Judge however determined that punitive damages could also be awarded against Bell Helicopter. He found (at para. 420) that punitive damages can be "awarded when a party's conduct has been malicious, oppressive and high-handed, or offends the court's sense of decency, or

represents a marked departure from ordinary standards of decent behaviour", while recognizing that such damages "should only be awarded in those circumstances where the combined award of general and aggravated damages would be insufficient to achieve the goal of punishment and deterrence."

[56] The Judge (at para. 425 of the Reasons) found inappropriate behaviour in Bell Helicopter's "assertion that it had no knowledge whatsoever of the '787 Patent prior to May 2008" which was "simply not plausible and contrary to the evidence." After carefully reviewing the available evidence (at paras. 426 to 432 and 437 to 442), and finding serious credibility issues with certain officers of Bell Helicopter (at para. 428), the Judge concluded (at para. 433) "that there is clear evidence of bad faith and egregious conduct on the part of Bell [Helicopter]. This is not a case where the infringement is small, trivial or isolated, or where the defendant is unsophisticated or ignorant. This is a case of wilful blindness or intentional and planned misappropriation of the claimed invention." He also found (at para. 434) that Bell Helicopter actively promoted sales of the Bell 429 helicopter equipped with the Legacy landing gear, and showed "no remorse and offered no excuse for its behaviour."

[57] He consequently concluded (at para. 436) that "[p]unitive damages are required in this case not only to punish Bell [Helicopter] but to deter others from acting in a similar manner." He added (at para. 436) that "Bell [Helicopter]'s overall conduct is highly reprehensible and constitutes a callous disregard for the rights of Eurocopter who was forced to institute the present action. Bell

[Helicopter] well knew how much time, research, testing and money expenditures were behind the development of the Moustache landing gear."

[58] The Judge also dismissed Bell Helicopter's submission that it was premature to make a determination to award punitive damages before the quantum of the general compensatory damages had been established. He found (at paras 446 and 449) that this case presented an unusual situation arising from the parties prior request that the determination of the quantum of damages be bifurcated, which joint request had been granted through an order issued on October 2, 2009.

[59] The Judge concluded (at paras. 450 to 453) that accepting Bell Helicopter's submission would entail that the amount of ordinary damages would first have to be calculated, with the possibility of resulting appeals and cross-appeals leading to years of delays before the issue of the availability of punitive damages could be decided. He concluded (at para. 453) that this approach would "run contrary to the just, most expeditious and least expensive determination" of the proceedings.

[60] The Judge thus decided to declare (at paras. 456 and 459) that Eurocopter "is entitled to punitive damages as a result of the infringement by Bell [Helicopter] of the '787 Patent and the deliberate and outrageous conduct of Bell [Helicopter] in this case." However, he left the quantum of the punitive damages to be determined with the quantum of the general damages in the subsequent hearings on quantum resulting from the bifurcation order.

THE ISSUES IN THIS APPEAL

[61] Both Bell Helicopter and Eurocopter allege that the Judge committed numerous errors in respect of a long list of issues. Their respective submissions are best reviewed by regrouping the issues under the following questions:

a. Did the Judge err in construing the common general knowledge?

b. Did the Judge err in construing the claims of the '787 Patent?

c. Did the Judge err in finding that the claims of the '787 Patent were not invalid on the ground of anticipation and in rejecting Bell Helicopter's *Gillette* defence?

d. Did the Judge err in finding that the claims of the '787 Patent were not invalid on the ground of obviousness?

e. Did the Judge err in finding that claim 15 was not invalid on the ground of lack of demonstrated utility or of sound prediction? Did he err in finding otherwise with respect to claims 1 to 14 and 16?

f. Did the Judge err in finding that punitive damages could be awarded?

DID THE JUDGE ERR IN CONSTRUING THE COMMON GENERAL KNOWLEDGE?

[62] Bell Helicopter submits that the Judge erred in limiting the relevant common general knowledge to an orthogonal design skid type of landing gear. By so doing, Bell Helicopter submits that the Judge dismissed prior art that would have assisted him in properly construing the claims of the '787 Patent, and in determining whether the invention disclosed by that patent was anticipated or obvious.

[63] Determining what constitutes the common general knowledge is a factual finding which cannot be set aside on appeal unless a palpable and overriding error can be found: *Apotex Inc. v. ADIR (sub. nom. Laboratoires Servier v. Apotex Inc.)*, 2009 FCA 222, 75 C.P.R. (4th) 443 at par. 73; *General Tire & Rubber Company v. Firestone Tyre and Rubber Company Ltd.* (1972), 17 R.P.C. 457 (UKCA) ("*General Tire*") at p. 484.

[64] Common general knowledge does not amount to all information in the public domain. While the common general knowledge of the skilled person certainly includes knowledge of patents, it does not include knowledge of <u>all</u> patents: *General Tire* at pp. 481 to 484. Nor does it include knowledge of all journal articles or other technical information: *British Acoustic Films Ltd. v. Nettleford Productions* (1935), 53 R.P.C. 221, at p. 250, cited approvingly in *General Tire* at pp. 482-483.

[65] Rather, it is well established that the common general knowledge is limited to knowledge which is generally known at the relevant time by skilled persons in the field of art or science to which the patent relates: *Sanofi* at para. 37; *Free World Trust v. Électro Santé Inc.*, 2000 SCC 66, [2000] 2 S.C.R. 1024 ("*Free World Trust*") at para. 31. Thus, accordingly, the common general knowledge is with respect to the subset of patents, journal articles and technical information which is generally acknowledged by skilled persons as forming part of the common general knowledge in the field to which the patent relates: *Abbot Laboratories v. Canada (Minister of Health)*, 2010 FCA 168, 85 C.P.R. (4th) 279 at para. 27; *Janssen-Ortho Inc. v. Novopharm Ltd.*, 2007 FCA 217, 59 C.P.R. (4th) 116 at para. 25 (citing factors developed in *Janssen-Ortho Inc. v. Novopharm Ltd.*, 2006

FC 1234); *Eli Lilly and Company v. Apotex Inc.*, 2009 FC 991, 80 C.P.R. (4th) 1 at paras. 95 to 100, aff'd 2010 FCA 240, 90 C.P.R. (4th) 327.

[66] In this case, the Judge found that the field of common general knowledge from which the skilled person would draw upon was that of a "conventional landing gear", which he defined at paras. 209 and 210 of the Reasons as a skid-type landing gear of orthogonal design, with parallel front and rear cross pieces that are either perpendicular or substantially perpendicular to the ground skids, and attached to the skids by way of a saddle or "tee", as illustrated in the Reasons at para. 209, which illustration is reproduced above at para. 24.

[67] The Judge did not state expressly with which expert he agreed in defining as he did the field of the patent and the common general knowledge which relates to that field. However, he is not required to do so. For an appellate court reviewing evidentiary findings of a trial judge, the applicable standard is not whether the judge described every minute detail from the evidence on which his findings rest, but rather whether the trial judge's reasons show that the judge has seized the substance of the matter: *R. v. R.E.M.*, 2008 SCC 51, [2008] 3 S.C.R. 3 at para. 43; *Corlac Inc. v. Weatherford Canada Ltd.*, 2011 FCA 228, 95 C.P.R. (4th) 101 ("*Weatherford*") at para. 87.

[68] In this instance, the Judge met that standard. He clearly considered all of the expert reports (at para. 141 of the Reasons), and he carefully described (at paras. 101 to 153 of the Reasons) his impressions of those reports. Further, it is apparent from the evidence that, with respect to the common general knowledge, the Judge relied on the expert report of Mr. Andrew Logan dated

August 31, 2010, since all the characterizations set out at paras. 209 and 210 of the Reasons are found at paras. 55 to 57 of this expert's report, reproduced in the Appeal Book ("AB"), Vol. 4 Tab 62 at pp. 919-920.

[69] Furthermore, in his various reports, Mr. Logan discarded the prior art referred to by Bell Helicopter, either on the ground that the documents referred to did not involve helicopters with ground resonance problems, belonged to technical fields other than landing gears, or were otherwise irrelevant: Logan's response to validity issues, served November 12, 2010, at paras. 104 to 110 (reproduced in AB Vol. 9 Tab 113 at pp. 2199-2200); Logan's rebuttal expert report, served December 10, 2010, at paras. 6 to 11 (reproduced in AB Vol. 7 Tab 93 at pp. 1802 to 1805).

[70] In defining the scope of the common general knowledge of the skilled person, the Judge thus relied on the expertise of Mr. Logan, preferring his expert conclusions over those submitted by the experts retained by Bell Helicopter. The Judge was entitled to rely on one expert over another in defining the common general knowledge. An appellate court is only permitted to interfere with factual findings of a trial judge where it is shown that he committed a palpable and overriding error or made findings of fact that are clearly wrong, unreasonable or unsupported by the evidence: *F.H. v. McDougall*, 2008 SCC 53, [2008] 3 S.C.R. 41 at para. 55, referring approvingly to *H. L. v. Canada (Attorney General)*, 2005 SCC 25, [2005] 1 S.C.R. 401 at paras. 4 and 56-57. Where, as in this case, there is evidence to support a finding or inference drawn by a trial judge, an appellate court will be hard pressed to find a palpable and overriding error: *F.H. v. McDougall*, above, at para. 55.

[71] Bell Helicopter is unsatisfied with the result of the Judge's analysis of the expert evidence with respect to the common general knowledge and it is, in essence, asking this Court to reassess that evidence so as to substitute the findings of the Judge by our own findings. However, appellate courts do not "retry" or "rehear" cases: *H.L. v. Canada (Attorney General)*, above, at para. 52.

[72] In conclusion, Bell Helicopter has not convinced me that the Judge committed a palpable and overriding error in defining the common general knowledge as he did, or in overlooking or excluding prior art as part of that common general knowledge.

DID THE JUDGE ERR IN CONSTRUING THE CLAIMS OF THE '787 PATENT?

[73] Claims construction is a question of law: *Whirlpool Corp. v. Camco Inc.*, 2000 SCC 67, [2000] 2 S.C.R. 1067 ("*Whirlpool*") at para. 76.

[74] As noted in *Whirlpool* at para. 53, the words used in a patent must be looked at and understood "through the eyes and with the common knowledge of a worker of ordinary skill in the field to which the patent relates." This enables the reader to appreciate the nature and description of the invention on a technical level. Consequently, in construing the claims, a judge may be assisted by expert witnesses. However, a judge is not bound by the opinion of any expert. A judge's assessment of the expert evidence will not be reversed on appeal absent palpable and overriding error: *Halford v. Seed Hawk Inc.* 2006 FCA 275, 54 C.P.R. (4th) 130 at para. 11; *Weatherford* at para. 24.

*First issue: Did the Judge err in holding that the rear cross piece of the landing gear disclosed in the '787 Patent must be vertical or substantially vertical?*

[75] Bell Helicopter holds that though the Judge's construction of the '787 Patent was largely correct, he nevertheless erred in imposing limitations on the rear cross piece of the landing gear disclosed in the patent. This erroneous construction would have led the Judge to dismiss prior art that would have anticipated the invention or rendered it obvious, particularly with regard to claim 15, the only patent claim found valid by the Judge. Bell Helicopter submits that the patent should not have been construed such that (a) the landing gear rear cross piece is vertical or substantially vertical, and (b) the landing gear front and rear cross pieces are non-parallel to each other.

[76] The Judge explained and justified his construction of the claim as follows (at para. 241 of the Reasons):

> Another area of contention relates to the inclination, if any, of the rear cross piece. At first blush, claim 1 does not indicate that the rear cross piece has to be vertical, let alone substantially vertical. That said, having reviewed the totality of the expert evidence, the Court finds that it would be clear to a [skilled person] that "rear cross piece" can only mean a conventional, substantially vertical cross piece, meaning 90 degrees, plus or minus a few degrees. The Court dismisses Bell [Helicopter]'s experts' suggestion (notably Mr. Toner) that the [skilled person] would not know that the rear cross piece has to be vertical (or substantially vertical). This is clearly contrary to what the '787 Patent teaches. The Court also accepts that a landing gear with a rear cross piece parallel to the front cross piece, both of them vertical or substantially vertical, is not included in claim 1.

[77] In my opinion, the Judge committed no reviewable error by construing the patent claim in this manner.

[78] Indeed, the specification of the ‘787 Patent, clearly provides (at p. 4 lines 24 to 26 of the original French version) that the rear cross piece may be connected in a conventional manner. As found by the Judge at paras. 209 and 210 of the Reasons, the vertical or substantially vertical nature of the rear cross piece, as well as the parallel nature of the front and rear cross pieces, were both well-known characteristics of conventional helicopter landing gears included in the common general knowledge of the skilled person. Consequently, the skilled person would readily understand that the “conventional” rear cross piece of the landing gear disclosed by the patent would be vertical or substantially vertical, as in other “conventional” landing gears forming part of the common general knowledge. Indeed, an informed and purposive construction of the claim language must be made with regard to the patent specification and to the common general knowledge of the skilled person as of the date of publication of the patent: *Whirlpool* at paras. 48 and 52-53; *Free World Trust* at para. 31.

[79] For the same reason, the skilled person would also easily understand that by placing the front and rear cross pieces non-parallel, the inventors were signalling a clear distinction from the prior art, and that consequently claim 1 of the patent would not include a landing gear with a rear cross piece parallel to the front cross piece with both of them vertical or substantially vertical.

[80] In my opinion, the Judge’s construction of the patent claim as set out above is entirely consistent with the principles of patent construction, and is both logical and cogent.

*Second issue: Did the Judge err in construing the essential elements of the landing gear disclosed in the '787 Patent?*

[81] For its part, Eurocopter submits that the Judge erred in construing the essential elements of the '787 Patent. The elements which Eurocopter says are not essential are (a) the "double curvature" of the transition zones; (b) the positioning of the transition zones at the very end of the skid forward of the ground contact point; and (c) the design type integration of the front cross piece into the skids, which does not allow for the substitution of the first curvature by a saddle or "tee" connection.

[82] For Eurocopter, what is important is the concept of the invention. It submits that any helicopter landing gear which is functionally equivalent to the Moustache landing gear infringes the '787 Patent. This would be so whether the landing gear is equipped with a stiff saddle or other joint to replace the lower curvatures of the front transition zones, or whether it has protruding skids at the front of the transition zones. Eurocopter adds that had the Judge properly construed the essential elements of the claims, he would have been compelled to find that the Production landing gear infringed the '787 Patent.

[83] In my view, these submissions are wholly inconsistent with the language of the '787 Patent.

[84] The key to a purposive construction of patent claims is the identification by the court of what the inventor considered to be the "essential" elements of the invention, while distinguishing what is non-essential: *Whirlpool* at paras. 45 to 47; *Free World Trust* at para. 31. The onus is on the patentee to establish that an element is non-essential and thus substitutable. If the patentee fails to

discharge that onus, the descriptive word or expression is to be considered essential unless the context of the claim language otherwise dictates: *Free World Trust* at para. 57.

[85] For an element to be considered non-essential and thus substitutable, it must be shown either (a) that on a purposive construction of the words of the claim it was clearly not intended to be essential, or (b) that at the date of publication of the patent, the skilled person would have appreciated that a particular element could be substituted without affecting the working of the invention, *i.e.* had the skilled person at that time been told of both the element specified in the claim and the variant, and asked whether the variant would obviously work in the same way (meaning that the variant would perform substantially the same function in substantially the same way to obtain substantially the same result), the answer would be yes: *Free World Trust* at para. 55.

[86] In *Free World Trust*, at paras. 55 and 56, Binnie J. elaborated on the test by referring approvingly to the three questions or steps developed by Hoffman J. in *Improver Corp. v. Remington Consumer Products Ltd.*, [1990] F.S.R. 181, at p. 182 for determining whether an element of a patent claim is essential:

(i) Does the variant have a material effect upon the way the invention works? If yes, the variant is outside the claim. If no: -

(ii) Would this (i.e.: that the variant had no material effect) have been obvious at the date of publication of the patent to a reader skilled in the art? If no, the variant is outside the claim. If yes: -

(iii) Would the reader skilled in the art nevertheless have understood from the language of the claim that the patentee intended that strict compliance with the primary meaning was an essential requirement of the invention? If yes, the variant is outside the claim.

[87] The original French language version of claim 1 and its translation into English read as follows:

> 1. Train d'atterrissage pour hélicoptère, comprenant deux patins présentant chacun une plage longitudinale d'appui au sol et reliés à une traverse avant et à une traverse arrière elles-mêmes assujetties à la structure de l'hélicoptère par des organes de liaison, la traverse arrière étant fixée par les extrémités de ses branches descendantes à la partie arrière desdites plages longitudinales d'appui, caractérisé en ce que chacun desdits patins présente à l'avant une zone de transition inclinée à double courbure s'orientant transversalement auxdites plages longitudinales d'appui au sol, au-dessus du plan de ces dernières, les deux zones de transition constituant ensemble, de la sorte, une traverse avant intégrée, décalée par rapport à la délimitation avant du plan de contact des plages longitudinales d'appui des patins sur le sol.
>
> [Je souligne.]
>
> 1. Helicopter landing gear, comprising two skids each having a longitudinal ground support surface and connected to a front cross piece and rear cross piece which are themselves attached to the structure of the helicopter by connecting devices, the rear cross piece being attached by the ends of its descending branches to the rear part of said longitudinal support surface, characterized in that each of the said skids has at the front an inclined transition zone with double curvature orienting itself transversely in relation to said longitudinal ground support surfaces, above the plane of the latter, the two transition zones together constituting, in this way, an integrated front cross piece, offset in relation to the front delimitation of the plane of contact of the longitudinal support surfaces of the skids on the ground.
>
> [Emphasis added.]

[88] These characteristics of the invention disclosed in this claim are repeated throughout the specification of the '787 Patent. I note in particular the following extract from the specification (at p. 3 lines 9 to 12):

> On comprend que la forme générale de cette traverse avant intégrée, et située en porte-à-faux à l'avant des patins, ou en retrait vers l'arrière, résulte principalement de cintrages des tubes, dans deux plans différents, des deux
>
> It is understood that the overall shape of this integrated front cross pièce, which is situated such that it protrudes in front of the skids, or such that it is offset backwards, results mainly from the bending of the tubes, in two

| | |
|---|---|
| côtés du train (droit et gauche).<br><br>[Je souligne.] | different planes, on both sides of the gear (right and left).<br><br>[Emphasis added.] |

[89] Figures 4a, 4b and 10 of the '787 Patent (reproduced above at para. 27 of these reasons) show this double curvature in greater detail. The specification sets out the following explanation of these figures (at p. 10 line 26 to p. 11 line 7):

| | |
|---|---|
| A l'avant, chacun des patins P présente, à la suite de la plage longitudinale d'appui 1 correspondante, une zone de transition T à double courbure, avant de constituer la traverse avant intégrée 8. Cette zone de transition T est obtenue par un premier cintrage C1 de rayon R, redressant la plage d'appui 1 vers le haut (figure 4a), et par un second cintrage C2, par exemple également de rayon R, faisant suite au cintrage C1 et à la suite duquel s'étend transversalement la traverse avant proprement dite 8.<br><br>[Je souligne.] | At the front, each of the skids P has, after the corresponding longitudinal support surface 1, à transition zone T with double curvature before constituting the integrated front cross piece 8. This transition zone T is obtained by a first bend C1 of radius R, bending the support stretch 1 upwards (figure 4a), and by a second bend C2, for example also of radius R, following the bend C1 and after which the actual front cross piece 8 extends transversely.<br><br>[Emphasis added.] |

[90] The expert witnesses were all of the view (a) that the double curvature was essential; (b) that the transition zones must be found at the very end of the skid, forward of the ground contact point; and (c) that the integrated front cross piece refers to an integration of both function and design, such that the integration of shape allows the landing gear to perform as promised.

[91] The only expert who held a contrary view was Mr. Logan. However, his opinion on these matters was discarded by the Judge. As noted by the Judge (at para. 243 of the Reasons): "Mr. Logan's bare assertion that the double curvature is a non-essential element is unconvincing, not only when compared to the more compelling explanations of its essential nature by Dr. Hodges, but even as per the language and the illustrations of the '787 Patent itself."

[92] The Judge (at para. 226 of the Reasons) further agreed with Dr. Hodges' interpretation that "at the front" means "at the very end of the skid, forward of the ground contact point." He also explicitly discarded Mr. Logan's interpretation that it means "in the front part", thus allowing for the possibility of a protruding ski tip forward of the first curve of the transition zone. Rather, the Judge found (at para. 226) "that the general wording of the '787 Patent does not naturally allow for the latter interpretation. Mr. Logan's view is purely oriented by the result Eurocopter seeks rather than by what a [skilled person] would understand in reading the '787 Patent."

[93] The Judge also rejected Mr. Logan's opinion that the front cross piece need only be functionally integrated into the skids, such as to act as a single structurally integrated piece or element, thus allowing a saddle or "tee" connection to connect the front piece of the skid. He found (at para. 233) that "the '787 Patent simply does not allow for Mr. Logan's interpretation." He rather preferred (at paras. 233 to 237) Dr. Hodges' interpretation which allows for joints in areas of low curvature, but not for a still saddle or other joint in areas of high curvature, and which is entirely consistent with the language used in the patent.

[94] Eurocopter has not convinced me that the Judge committed an error in reaching these findings.

*Third issue: Did the Judge err by not considering the functional equivalency of the landing gear disclosed by the '787 Patent?*

[95] However, Eurocopter's submissions go far beyond the construction of the claims. It is also of the view that a party can be found to infringe a patent even though it omitted or changed an element that the patent itself identifies as essential. It submits that the invention should be considered and compared, for infringement purposes, from the perspective of its functional equivalence with other landing gears, such as Bell Helicopter's Production landing gear: Eurocopter's Memorandum at paras. 114 to 117, 123 and 129.

[96] This approach is clearly inconsistent with the teachings of *Free World Trust* since it fails to recognize the primacy of the language of the claims in determining the essential elements, which the Supreme Court has clearly indicated as the foundation of claims construction: *Free World Trust* at paras. 31, 40 and 51; see also *Easton Sports Canada Inc. v. Bauer Hockey Corp.*, 2011 FCA 83, 92 C.P.R. (4th) 103 ("*Bauer Hockey*") at paras. 51 to 53; *Bridgeview Manufacturing Inc. v. 9314409 Alberta Ltd. (Central Alberta Hay Centre)*, 2010 FCA 188, 87 C.P.R. (4th) 195 at paras. 35-36; *Canamould Extrusions Ltd. v. Driangle Inc.*, 2004 FCA 63, 30 C.P.R. (4th) 129 at para. 25.

[97] As aptly noted by Binnie J. in *Free World Trust* at para. 32:

> As stated, the ingenuity of the patent lies not in the identification of a desirable result but in teaching one particular means to achieve it. The claims cannot be stretched to allow the patentee to monopolize anything that achieves the desirable result. It is not legitimate, for

> example, to obtain a patent for a particular method to grow hair on bald men and thereafter claim that *anything* that grows hair on bald men infringes.

[98] Eurocopter's functional equivalency submissions are not only incorrect in law. They also largely ignore the factual findings of the Judge.

[99] With respect to load factors, the experts agreed that the stiffer the suspension, the higher the load factor, with resulting higher stress on the structure and additional discomfort on the passengers. The Judge concluded (at para. 262 of the Reasons) that "it goes without saying that replacing one of the curves with a stiff saddle connection will increase the overall stiffness of the landing gear, as confirmed by Mr. Logan himself. Thus the [skilled person] would not be in a position to say that such a replacement would obviously not affect the flexible nature of the landing gear." He added (at para. 245) that "[f]rom a load perspective, the [skilled person] would have obviously appreciated that the manner in which loads are distributed through a stiff saddle connection will be different than the manner in which loads are distributed through the double curvature of the Moustache landing gear."

[100] With respect to weight, the Judge further concluded (at para. 245 of the Reasons) that the skilled person "would have obviously appreciated that a stiff saddle connection will be heavier than the double curvature described in the '787 Patent." The Judge also concluded (at para. 245) from the expert analysis of Dr. Gandhi "that a saddle joint is stiffer and works differently than the double curvature of the inclined transition zone on a Moustache landing gear as described in the '787

Patent." He consequently found that the double curvature landing gear and the Production landing gear do not work in the same way.

[101] At paras. 119 and 120 of its Memorandum, Eurocopter submits that the certification documents for the Bell 429 helicopter establish a functional equivalency between the Production landing gear and the Legacy landing gear. Yet this submission ignores the Judge's clear finding (at para. 256) that "the evidence does not support such an argument".

[102] From a ground resonance perspective, Eurocopter further submits (at paras. 121 and 122 of its Memorandum) that the Production landing gear is dynamically similar to the landing gear disclosed in the '787 Patent, relying in this respect on an analysis carried out by one of its experts, Dr. Wood. However, contrary to Eurocopter's submissions on this point, the Judge accepted (at para. 255 of the Reasons) "the evidence of Dr. Hodges and Dr. Gandhi that the additional stiffness of the saddle joint in the Production gear has been undervalued [by Dr. Wood]. Nonetheless, his [Dr. Wood's] analysis showed differences in the pitch and roll frequencies between the two landing gears. Dr. Wood admitted that if the saddle stiffness had been properly modeled, the differences in frequencies would have been even greater."

[103] I would therefore reject Eurocopter's submissions pertaining to the alleged errors committed by the Judge in construing the patent claims. As a result, I would also dismiss Eurocopter's submissions that the Judge erred in finding that the Production landing gear did not infringe the '787

Patent. In light of these conclusions, I need not address Eurocopter's related submissions seeking an accounting for profits on the sales of the Production landing gear.

DID THE JUDGE ERR IN FINDING THAT THE CLAIMS OF THE '787 PATENT WERE NOT INVALID ON THE GROUND OF ANTICIPATION AND IN REJECTING BELL HELICOPTER'S *GILLETTE* DEFENSE?

[104] Anticipation of an invention raises issues of mixed fact and law: *Weatherford* at para. 36; *Calgon Carbon Corporation v. Corporation of North Bay (City)*, 2008 FCA 81, 64 C.P.R. (4th) 337 at para. 6; *Baker Petrolite Corp. v. Canwell Enviro-Industries Ltd.*, 2002 FCA 158, [2003] 1 F.C. 49 at para. 46. Questions of mixed fact and law involve applying a legal standard to a set of facts. Where an error in the anticipation analysis can be attributed to the application of an incorrect legal standard, a failure to consider a required element of the legal test, or similar error in principle, it may be characterized as an error of law and reviewed under a standard of correctness. However, where the issue on appeal involves the interpretation of evidence, or when the legal issues cannot be extricated from the evidentiary issues, the finding should not be overturned absent a palpable and overriding error.

[105] The party claiming invalidity of the patent through anticipation bears the burden of proof on the standard of the balance of probabilities: *Weatherford* at paras. 45-46; *Diversified Products Corp. and Brown Fitzpatrick Lloyd Patent Ltd. v. Tye-Sil Corp.* (1991), 125 N.R. 218, 35 C.P.R. (3d) 350 (FCA) at para. 26 of the N.R. ed.

[106] Anticipation is assessed under an objective test in order to determine if two essential requirements have been met: (a) prior disclosure has occurred, and (b) that disclosure allowed the enablement of the invention. These two requirements should usually be considered separately: *Sanofi* at para. 28.

[107] The first requirement, whether prior disclosure has occurred, must be assessed from the perspective of the skilled person, who must be in a position to understand the invention from the disclosure, with no room for trial or experimentation: *Sanofi* at paras. 24-25, citing *Synthon B.V. v. SmithKline Beecham plc*, [2005] UKHL 59, [2006] 1 All E.R. 685. At this stage, the skilled person is reviewing the disclosure to understand the invention and to determine its special advantages: *Sanofi* at paras. 25 and 32.

[108] The second requirement, enablement, is assessed once it has been determined, on an objective basis, that the subject matter of the invention has indeed been disclosed. For the purposes of enablement, the question is no longer what the skilled person understands from the disclosure, but whether that person would be able to work the invention without undue burden: *Sanofi* at paras. 26 and 37. When considering whether there is undue burden, the nature of the invention must be taken into account. Some trials and experiments are allowed at this stage. But these are not to be prolonged, even in the fields of technology in which trials and experiments are generally carried out: *Sanofi* at paras. 27 and 33 to 37.

[109] Anticipation may occur by prior publication, oral communication, or use. In this case, Bell Helicopter only raises anticipation by prior publication. Anticipation by prior publication requires

that the invention be in fact disclosed in written documentation made available to the public, such as patents, journal articles, and trade literature, including instruction and repair manuals and brochures. The objective test for disclosure by prior publication is set out as follows in *Beloit Canada Ltée/Ltd. v. Valmet Oy* (1986), 8 C.P.R. (3d) 289, 64 N.R. 287, at para. 30 of the N.R. ed.:

> One must, in effect, be able to look at a prior, single publication and find in it all the information which, for practical purposes, is needed to produce the claimed invention without the exercise of any inventive skill. The prior publication must contain so clear a direction that a skilled person reading and following it would in every case and without possibility of error be led to the claimed invention. Where, as here, the invention consists of a combination of several known elements, any publication which does not teach the combination of all the elements claimed cannot possibly be anticipatory.

[110] This test for anticipation was cited with approval in *Free World Trust* at para. 26, where it was further noted that it was a difficult test to meet. Subject to the distinction between disclosure and enablement, this test for anticipation by publication still applies: *Sanofi* at para. 28.

[111] Bell Helicopter submits that the Judge erred in rejecting its anticipation submissions based on the Obstacle strike documents, and it principally relies on those Obstacle strike documents co-authored by Mr. Bharat P. Gupta (JB-204, AB Vol. 21 Tab 336; JB-493, AB Vol. 28 Tab 463; JB-497, AB Vol. 28 Tab 464).

[112] The Judge found (at para. 282 of the Reasons) that the illustrations in the Obstacle strike documents, including the illustrations in the material co-authored by Mr. Gupta, were "easily subject to misinterpretation". He also found (at para. 286) that the text accompanying the illustrations was unhelpfully terse and required the experts to draw inferences from other drawings.

He further found (at para. 287) that "the double curvature which is an essential element of claim 1 of the '787 Patent is missing."

[113] The Judge concluded (at paras. 286 and 288) that since the test for anticipation leaves no place for guesswork, the Obstacle strike documents did not allow a skilled person to arrive at the invention disclosed in the '787 Patent, and that Bell Helicopter had consequently failed to discharge its burden of proving that the disclosure and enablement requirements for anticipation were met with respect to the Obstacle strike documents.

[114] After reviewing the Obstacle strike documents found in the record, Bell Helicopter has failed to convince me that the Judge committed a palpable and overriding error in his assessment of these documents.

[115] I note in particular that even the experts retained by Bell Helicopter "admitted that several different angles are necessary in order to properly appreciate a landing gear configuration, something which the Obstacle strike documents do not provide": Reasons at para. 285. Since the illustrations in these documents are not conclusive, and since the accompanying text is unhelpful as to the configuration of the landing gears they disclose, Bell Helicopter's anticipation submissions are largely based on speculation. Consequently, these submissions clearly fail to meet the test for anticipation discussed above. As a logical consequence, Bell Helicopter's *Gillette* defense also fails.

DID THE JUDGE ERR IN FINDING THAT THE CLAIMS OF THE '787 PATENT WERE NOT INVALID ON THE GROUND OF OBVIOUSNESS?

[116] Bell Helicopter also submits that the '787 Patent is invalid on the ground of obviousness. The party alleging the invalidity of a patent on the ground of obviousness bears the burden of proof: *Proctor & Gamble Co. v. Beecham Canada Ltd.* (1982), 40 N.R. 313; 61 C.P.R. (2d) 1 (FCA) at paras. 75 and 84 to 87 of the N.R. ed.; *671905 Alberta Inc. v. Q'Max Solutions Inc.*, 2003 FCA 241; 305 N.R. 137 at para. 44.

[117] The identification of the proper legal test for obviousness is a question of law to be reviewed on a standard of correctness, while factual findings in applying the test are to be reviewed on a standard of palpable and overriding error: *Bauer Hockey* at para. 35.

[118] While anticipation considers whether the invention has previously been made available to the public, obviousness considers whether the invention was obvious and hence did not involve any inventive step. The test for obviousness was stated as follows in the decision of this Court in *Beloit Canada Ltée/Ltd. v. Valmet Oy* (1986), above, at para. 18 of the N.R. edition:

> The test for obviousness is not to ask what competent inventors did or would have done to solve the problem. Inventors are by definition inventive. The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right. The question to be asked is whether this mythical creature (the man in the Clapham omnibus of patent law) would, in the light of the state of the art and of common general knowledge as at the claimed date of invention, have come directly and without difficulty to the solution taught by the patent. It is a very difficult test to satisfy. [Emphasis added.]

[119] This test was considerably refined in 2008 by the Supreme Court of Canada in *Sanofi*. Adopting the framework for obviousness put forward for the United Kingdom in *Windsurfing International Inc. v. Tabur Marine (Great Britain) Ltd.* (1984), 1985 R.P.C. 59 (C.A.) and updated in *Pozzoli SPA v. BDMO SA*, [2007] F.S.R. 37, [2007] EWCA Civ 588 (C.A.), the following four step approach to obviousness was put forward by Rothstein J. at para. 67 of *Sanofi* for the purposes of bringing structure, objectivity, and clarity to the obviousness inquiry:

> (1) (a) Identify the notional "person skilled in the art";
>
> (b) Identify the relevant common general knowledge of that person;
>
> (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
>
> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
>
> (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

[120] In *Sanofi* at para. 69, Rothstein J. further found that when it is warranted, an "obvious to try" test should be taken into consideration at the fourth step of the obviousness inquiry. That test comprises the following factors:

> i. Is it more or less self-evident that what is being tried ought to work? Are there a finite number of identified predictable solutions known to persons skilled in the art?
>
> ii. What is the extent, nature and amount of effort required to achieve the invention? Are routine trials carried out or is the experimentation prolonged and arduous, such that the trials would not be considered routine?

iii. Is there a motive provided in the prior art to find the solution the patent addresses?

[121] Bell Helicopter submits (at paras. 34 to 36 of its Memorandum) that the Judge erred in his obviousness analysis by defining the inventive concept of the '787 Patent with reference to the specification, and by incorporating advantages related to ground resonance behaviour and load factor reduction which are mentioned in the specification but not specifically set out in the patent claims themselves.

[122] Bell Helicopter purportedly relies (at para. 37 of its Memorandum) on *Sanofi* at para. 67, on *Sanofi Aventis Canada Inc. v. Apotex Inc.*, 2009 FC 676, 77 C.P.R. (4th) 99 at para. 267, and on *Ratiopharm Inc. v. Pfizer Ltd.*, 2009 FC 711, 76 C.P.R. (4th) 241 at para. 157 to advance its proposition that the construction of the inventive concept must flow from the claims (not the specification) using the same approach as for the initial claim construction. Consequently, in its view, the Judge made an error of law in his construction of the inventive concept of the claims. This error would therefore call for a *de novo* assessment by this Court of the four step *Sanofi* test for obviousness.

[123] I disagree with Bell Helicopter's submissions. In *Sanofi*, the Supreme Court of Canada held that when the inventive concept is not apparent from the patent claims, recourse can be had to the specification. Rothstein J. expressed this as follows at paras. 76 to 78 of *Sanofi*:

> [76] The construction of the claims in the '777 patent is not an issue. It is agreed that they constitute the dextro-rotatory isomer of the racemate and its pharmaceutically acceptable salts and processes for obtaining them.

> [77] The inventive concept of the claims is not readily discernable from the claims themselves. A bare chemical formula in a patent claim may not be sufficient to determine its inventiveness. In such cases, I think it must be acceptable to read the specification in the patent to determine the inventive concept of the claims. Of course, it is not permissible to read the specification in order to construe the claims more narrowly or widely than the text will allow.
>
> [78] In the present case, it is apparent that the inventive concept of the claims in the '777 patent is a compound useful in inhibiting platelet aggregation which has greater therapeutic effect and less toxicity than the other compounds of the '875 patent and the methods for obtaining that compound.
> [Emphasis added.]

[124] This Court also held in *Apotex v. ADIR (sub. nom. Laboratoires Servier v. Apotex Inc.)*, above at para. 58, that "the inventive concept need not be readily discernable from the claims, even in circumstances where construction of the claims is not in issue." This Court has further recently held in *Allergan v. Canada (Minister of Health)*, 2012 FCA 308, 105 C.P.R. (4th) 371 at paras. 22, 23, 50 and 74, that the utility of the invention as disclosed in the specification may be considered in determining the inventive concept.

[125] Moreover, the cases relied upon by Bell Helicopter are not authority for the proposition it advances. In *Ratiopharm Inc. v. Pfizer Ltd.*, above, the identification of the inventive concept, which occurs at step 2 of the *Sanofi* analysis for obviousness, was not at issue. Rather, in that case at issue was step 4 of the analysis, i.e. whether it would have been obvious to a skilled person in that case to test a variety of salts in looking for the solution taught by the patent: *Ratiopharm Inc. v. Pfizer Ltd.*, above, at paras. 157 to 172. In addition, neither is *Sanofi Aventis Canada Inc. v. Apotex Inc.*, above, authority on the issue since, on appeal of that judgment, this Court specifically refused to endorse

the *obiter* reasons of the trial judge on obviousness: *Sanofi Aventis Canada Inc. v. Apotex Inc.*, 2011 FCA 300 at para. 13.

[126] Consequently, I conclude that the Judge made no error of principle in identifying the inventive concept as he did.

[127] Since the *de novo* obviousness analysis proposed by Bell Helicopter requires first accepting that the Judge erred with respect to identifying the inventive concept, I do not find it necessary to consider Bell Helicopter's submissions with respect to that *de novo* analysis. I will simply note that Bell Helicopter essentially relies again on the Obstacle strike documents referred to above and which were properly discarded by the Judge with respect to its anticipation arguments.

[128] I add that in the context of the MAPL program, the design of the Legacy landing gear was not obvious at all to Bell Helicopter, leading it to study and analyze for many months a leased EC120 helicopter equipped with the Moustache landing gear. In such a context, Bell Helicopter's assertions of obviousness lack traction and ring quite hollow.

## DID THE JUDGE ERR IN FINDING THAT CLAIM 15 WAS NOT INVALID ON THE GROUND OF LACK OF UTILITY OR OF SOUND PREDICTION? DID HE ERR IN FINDING OTHERWISE WITH RESPECT TO CLAIMS 1 TO 14 AND 16?

[129] Challenges to patents claims on the ground of lack of utility generally raise issues of mixed fact and law. The findings of fact, and of mixed fact and law, by a trial judge on the issue of patent utility will consequently not be overturned on appeal unless it can be showed that the judge

committed a palpable and overriding error or unless the judge applied a wrong legal principle in reaching these findings: *Apotex Inc. v. Wellcome Foundation Ltd.*, 2002 SCC 77, [2002] 4 S.C.R. 153 ("*Wellcome*") at paras. 4, 44 and 71.

[130] The definition of "invention" found in section 2 of the *Patent Act*, requires that an invention be useful in order to be patented. In *Consolboard Inc. v. MacMillan Bloedel (Sask.) Ltd.*, [1981] 1 S.C.R. 504 ("*Consolboard*") at p. 525, quoting from *Halsbury's Laws of England*, (3rd ed.), vol. 29 at p. 59, the Supreme Court of Canada held that utility does not exist if "the invention will not work, either in the sense that it will not operate at all or, more broadly, that it will not do what the specification promises that it will do." It also held at p. 526, quoting from *Unifloc Reagents, Ld. v. Newstead Colliery, Ld.* (1943), 60 R.P.C. 165, that "[i]f when used in accordance with the directions contained in the specification the promised results are obtained, the invention is useful in the sense that the term is used in patent law."

[131] Utility is established as at the time the patent is applied for. It cannot be supported by evidence occurring after the filing date: *Wellcome* at para. 46. Utility in this context means useful for the purpose claimed, not commercial acceptance: *Wellcome*, at para. 54.

[132] As noted in *Consolboard* at p. 525, the promise of the patent is the standard against which the utility of the invention is measured. If the inventor does not make in the patent an explicit promise of a specific result, the threshold to find utility will be low; if, on the other hand, the

inventor makes an explicit promise of a specific result, then utility will be assessed by reference to the terms of the explicit promise: *Sanofi-Aventis v. Apotex Inc.*, 2013 FCA 186 at paras. 48-49.

[133] A patent claim may be rejected or set aside if: (1) there is evidence of lack of utility; or failing which, (2) there is no sound prediction of the utility: *Monsanto Company v. Commissioner of Patents*, [1979] 2 S.C.R. 1108 at p. 1117, referred to approvingly in *Wellcome* at para. 62.

[134] The second reason is referred to as the doctrine of "sound prediction". This doctrine holds that the utility of an invention may be established by showing that it is soundly predicted. The doctrine of sound prediction has three components described in *Wellcome* at para. 70: (1) first, there must be a factual basis for the prediction; (2) second, the inventor must have at the date of the patent application an articulate and sound line of reasoning from which the desired result can be inferred from the factual basis; and (3) third, there must be proper disclosure.

*First Issue: Did the Judge err in finding that claim 15 of the '787 Patent was not invalid on the ground of lack of utility or of sound prediction?*

[135] Bell Helicopter submits that the Judge should have set aside claim 15 of the '787 Patent for lack of demonstrated utility. That claim provides for an embodiment of the landing gear with an integrated front cross piece offset forwards in relation to the front delimitation of the plane of contact of the longitudinal support surfaces of the skids on the ground. In Bell Helicopter's view, Eurocopter should have been required to demonstrate the utility of that embodiment across all inclinations of the offset: Bell Helicopter's Memorandum at para. 45. Bell Helicopter further

submits that no evidence of improved ground resonance was provided prior to the Canadian filing date (June 1997): Bell Helicopter's Memorandum at paras. 46 to 52.

[136] There is no substance to these submissions, which completely ignore the factual findings of the Judge and the abundant evidence concerning the utility for improved ground resonance performance of the embodiment of the invention with the front cross piece offset forwards.

[137] It was not necessary for Eurocopter to test every minute variant of the inclination of the integrated front cross piece which was offset forwards in order to establish utility. Indeed, the Judge found (at paras. 329 and 354 of the Reasons) that once a skilled person had chosen a design where the front cross piece is offset forwards, he would have no difficulty choosing which inclination will provide the best result, depending on the general design and weight of the structure of the helicopter. He further found (at para. 349) that Bell had failed to show that any particular variant did not work, the evidence of its expert witnesses in this regard being "highly speculative".

[138] Moreover, the Judge also found (at paras. 164-165 and 355 to 358 of the Reasons) that in June of 1996 a successful handshake test had been performed on an EC120 helicopter equipped with the Moustache landing gear, and the first flight test of an EC120 helicopter equipped with that landing gear occurred in early July of 1996 with no problems of ground resonance. He also noted (at para. 359) that the Moustache landing gear "is used on all of the EC120 and EC130 helicopters (over 1200 aircraft) and … no ground resonance problems have been experienced."

[139] In light of these findings, which are supported by the evidence, I would dismiss Bell Helicopter's submissions related to lack of demonstrated utility of claim 15 of the '787 Patent.

[140] Bell Helicopter also submits, as a closely related but distinct question of law, that claim 15 is also invalid for overbreadth. Since I would dismiss Bell Helicopter's related submissions concerning lack of demonstrated utility, it's related overbreadth submission should also fail.

*Second Issue: Did the Judge err in finding that claims 1 to 14 and 16 of the '787 Patent were invalid on the ground of lack of utility or of sound prediction?*

[141] Eurocopter challenges the Judge's finding that claims 1 to 14 and 16 of the '787 Patent are invalid on the ground of lack of proven utility or of sound prediction. This finding of invalidity was with respect to the embodiment of the landing gear with an integrated front cross piece offset backwards in relation to the front delimitation of the plane of contact of the longitudinal support surfaces of the skids on the ground, as described in claim 16 of the '787 Patent.

[142] Eurocopter does not dispute that it had not built and tested a landing gear following the embodiment with an integrated front cross piece offset backwards. In addition to not building and testing this embodiment, the Judge found (at para. 365 of the Reasons) that as of the Canadian filing date, the inventors had no evidence that the embodiment with the front cross piece inclined backwards had any ground resonance advantage. He further found (at para. 368) no evidence of any data as of the Canadian filing date which could support a sound prediction of the utility of that embodiment with respect to ground resonance. He thus concluded (at para. 369) that the "utility of a helicopter landing gear according to claim 16 had not been demonstrated at the Canadian filing date,

namely June 5, 1997. Moreover, relevant data available prior to June 5, 1997 did not permit the inventors to soundly predict the behavior of a Moustache landing gear with a front cross piece which is offset backwards and in any event, there is no line of reasoning described in the '787 Patent in that respect."

[143] Eurocopter submits that the Judge erred in law in reaching these conclusions by ignoring the presumption of validity set out in subsection 43(2) of the *Patent Act* and thus misdirecting himself as to the burden of evidence. Eurocopter thus claims that the Judge erroneously imposed on it the burden of proving the utility of the embodiment with the backwards offset, when he should have recognized that the burden was on Bell Helicopter to establish that the embodiment lacked utility: Eurocopter's Memorandum at paras. 140-141.

[144] Eurocopter further submits (at para. 144 of its Memorandum) that the Judge erred in law by applying the doctrine of sound prediction, developed within the context of patents in the field of pharmaceutical inventions, to a patent within the field of mechanical inventions. In Eurocopter's view, results in chemistry and biology are difficult to predict and the scientific models used in those fields are not always reliable; this inherent uncertainty in the concerned science had led to the development of the doctrine of "sound" prediction (rather than proven demonstration) to establish patent utility in those fields. However, in Eurocopter's view, the utility of mechanical inventions can be demonstrated through mathematical calculations relying on the known rules of the science of physics. Eurocopter concludes from this that the doctrine of sound prediction does not apply to the field of mechanical inventions.

[145] Eurocopter further submits (at paras. 142-143 of its Memorandum) that it had demonstrated the utility of the embodiment of the landing gear with a front cross piece inclined backwards as of the Canadian patent filing date by means of calculations and mathematical models, and that the Judge made a palpable and overriding error in finding otherwise. It adds that even if this Court finds that the doctrine of sound prediction applies to the mechanical invention at issue here, the embodiment of the invention with a front cross piece inclined backwards had been soundly predicted through mathematical calculations and a sound line of reasoning.

[146] I disagree with Eurocopter's submission that the doctrine of sound prediction cannot apply to the field of mechanical inventions. As noted by Binnie J. in *Wellcome* at para. 69: "Once it is accepted that in appropriate circumstances utility can be predicted in advance of complete testing (whether of untested chemical compounds or otherwise), there seems no reason in principle why the doctrine should not be applied more generally, depending, of course, on the expert evidence" [emphasis added]. There is also authority that the doctrine of sound prediction is not limited to pharmaceutical inventions: see notably *Cabot Corp. v. 318602 Ontario Ltd.* (1988), 17 F.T.R. 54, 20 C.P.R. (3d) 132, at p. 162 of the C.P.R. ed.; *Westaim Corporation v. Royal Canadian Mint*, 2002 FCT 1217, 23 C.P.R. ($4^{th}$) 129 at paras. 157-158.

[147] Eurocopter takes the position that a mathematical demonstration through calculations and mathematical modeling is evidence *per se* of utility. In the circumstances of this case, I disagree. Utility means useful for the purpose claimed in the patent: *Consolboard* at p. 525; *Wellcome* at para. 54. Here the specifications of the '787 Patent provides that the embodiment with the integrated front

piece offset backwards procures the specific advantages claimed for the invention. Thus, what amounts to demonstrated utility would be evidence that establishes that the embodiment at issue does in fact work in a manner that gives rise to the advantages stated in the patent. It follows then that calculations to the effect that the embodiment should work in the manner claimed in the patent, or should give rise to the advantages, amounts to a prediction and not a demonstration of that utility.

[148] It seems to me that calculations and mathematical modeling are, by their very essence, a *prediction* of a given utility. I however recognize that there may be situations where a mathematical *prediction* of utility may be equivalent to a *demonstration* of utility, depending on the nature of the technology being mathematically modeled and the degree of reliability which experts would afford to such models for such purposes. I need not however address this issue in this case.

[149] The difficulty faced by Eurocopter is not really with a mathematical *prediction* of utility. Rather, its difficulty lies in the fact that if it accepts that a mathematical prediction may not be a demonstration of utility, it must then meet the legal requirements of the doctrine of sound prediction which, contrary to the doctrine of demonstrated utility, requires (1) a factual basis for the prediction; (2) an articulate and sound line of reasoning from which the desired result can be inferred from the factual basis; and (3) proper disclosure.

[150] In *Wellcome* at para. 70, Binnie J. noted that it "is generally not necessary for an inventor to provide a theory of *why* the invention works", while also noting that "the sound prediction is to some extent the *quid pro quo* the applicant offers in exchange for the patent monopoly." However,

since the precision of the disclosure did not arise in *Wellcome* because both the data and line of reasoning were in fact disclosed in the patent at issue, Binnie J. therefore decided to "say no more about it."

[151] In *Teva Canada Ltd. v. Pfizer Canada Inc.*, 2012 SCC 60, [2012] 3 S.C.R. 625 ("*Teva*"), LeBel J. recently noted (at para. 37) that "[t]he lack of certainty that comes from predicting rather than demonstrating an invention's utility has led some courts to conclude that there is a 'heightened' or 'enhanced' disclosure requirement in cases in which a claim of utility is based on sound prediction: see e.g. *Eli Lilly Canada Inc. v. Apotex Inc.*, 2009 FCA 97, 78 C.P.R. (4th) 388 (F.C.A.), at paras. 14-15." However, LeBel J. refused to address the question since the issue did not arise in that case (*Teva* at para. 43). He nevertheless made comments (at paras. 38 to 40 of *Teva*) suggesting that nothing in the *Patent Act* requires that the utility of the invention be disclosed, and he referred approvingly to the comments of Dickson J. in *Consolboard*, at p. 521, "that s. 36(1) [now s.27(3)] [of the *Patent Act*] does not impose upon a patentee the obligation of establishing the utility of the invention." In *Sanofi-Aventis v. Apotex Inc.*, 2013 FCA 186 at paras. 47-49, Pelletier J.A. recently also noted that while an inventor need not describe the utility of his invention in the patent, if he does so, he will be held to the promise he made.

[152] In my opinion, the factual basis, the line of reasoning and the level of disclosure required by the doctrine of sound prediction are to be assessed as a function of the knowledge that the skilled person would have to base that prediction on, and as a function of what that skilled person would understand as a logical line of reasoning leading to the utility of the invention.

[153] Where the factual basis can be found in scientifically accepted laws or principles or in information forming part of the common general knowledge of the skilled person, then no disclosure of such factual basis may be required in the specification. On the other hand, where the factual basis is reliant on data which does not form part of the common general knowledge, then disclosure in the specification may indeed be required to support a sound prediction.

[154] As noted in the *Manual of Patent Office Practice* issued by the Canadian Patent Office (at paras. 12.08.04*b* and 12.08.04*c*), since a sound line of reasoning is directed to a skilled person, those elements of the doctrine of sound prediction that would be self-evident to that person in view of the common general knowledge need not be explicitly disclosed in the specification. The soundness of a line of reasoning can also be effectively assessed by asking whether the skilled person would accept the logic presented in the specification and derive from the sound prediction as a whole an expectation that the invention will provide the promised utility.

[155] As a result, where the sound prediction is based on knowledge forming part of the common general knowledge and on a line of reasoning which would be apparent to the skilled person (which is often the case in mechanical inventions), the requirements of disclosure may readily be met by simply describing the invention in sufficient detail such that it can be practiced. A contextual approach is thus appropriate in each case.

[156] In this case, the inventive concept of the invention is described in the ‘787 Patent as a particular geometry (inclined offset front cross piece and an integrated transition zone) which

creates a cantilever, allowing the front cross piece to work in both flexion and torsion modes: Reasons para. 300. Further, the specification of the patent is clear enough to allow a skilled person to understand the general functioning of the invention and its main features: Reasons at para. 322.

[157] However, the specification also sets out that it is the embodiment of the invention in which the front cross piece is offset forwards (as provided in claim 15) which "has the advantage of allowing the roll operation of the assembly to cause the front piece to work both in torsion and in bending rather than in pure bending": Reasons at para. 351.

[158] As noted by the Judge (at para. 352 of the Reasons) a skilled person reading the specification would understand from this that the landing gear under the embodiment of a front cross piece forward inclination would improve the ground resonance behavior of the helicopter, notably in the roll mode. However, by reading the specification, a skilled person would not readily come to the same conclusion with respect to the embodiment of a front cross piece backward inclination, since there is no demonstration or explanation to this effect in the specification (Reasons at para. 363).

[159] In this case, Eurocopter did not provide evidence that it had either demonstrated or soundly predicted the utility of the backward inclination embodiment prior to the pertinent date. Eurocopter did not do so in the patent specification and it failed to do so at trial. In its Memorandum, it points to the testimony of Mr. Pierre Prud'homme Lacroix, but fails to identify any specific aspect of this

testimony which provides cogent evidence of any sound prediction based on the backward inclination embodiment.

[160] Eurocopter however submits that it was not required to submit any evidence of utility or of sound prediction with respect to the backward inclination embodiment since Bell Helicopter had the burden of demonstrating invalidity on this ground.

[161] I agree that Bell Helicopter was required to bring evidence that the inventors had not demonstrated or soundly predicted the promised utility of the embodiment of the invention with the front cross piece offset backwards. Such evidence was in fact submitted by Bell Helicopter and obviously accepted by the Judge: Expert Statement of Dr. Hodges at paras. 132 and 171 (AB Vol. 11 Tab 149 at pp. 2876 and 2886); Expert Statement of Dr. Gandhi at para. 124 (AB Vol. 12 Tab 162 at p. 3126). As noted by Dr. Hodges, there were no documents supplied by Eurocopter with respect to the embodiment with the front cross piece offset backwards, and that embodiment appeared more susceptible to buckling on impact.

[162] It was incumbent on Eurocopter to submit evidence to rebut Bell Helicopter's experts. In light of the lack of any evidence of testing or of any calculations supporting a sound line of reasoning for this embodiment at the time the '787 Patent was applied for, Eurocopter's submissions must fail.

DID THE JUDGE ERR IN FINDING THAT PUNITIVE DAMAGES COULD BE AWARDED?

[163] Punitive damages may be awarded in exceptional cases of high-handed, malicious, arbitrary or highly reprehensible misconduct that represents a marked departure from ordinary standards of decent behaviour: *Hill v. Church of Scientology of Toronto*, [1995] 2 S.C.R. 1130 at para. 196; *Whiten v. Pilot Insurance Co.*, 2002 SCC 18, [2002] 1 S.C.R. 595 ("*Whiten*") at para. 36.

[164] In *Whiten* (at para. 94) Binnie J. set out the following points with respect to punitive damages:

> (a) they are very much the exception rather than the rule;
>
> (b) they are awarded only if there has been high-handed, malicious, arbitrary or highly reprehensible misconduct that departs to a marked degree from ordinary standards of decent behaviour;
>
> (c) they are to be assessed in an amount reasonably proportionate to such factors as the harm caused, the degree of misconduct, the relative vulnerability of the plaintiff and any advantage or profit gained by the defendant, having regard to any other fines or penalties suffered by the defendant for the misconduct in question;
>
> (d) they are generally given only where the misconduct would otherwise be unpunished or where other penalties are or are likely to be inadequate to achieve the objectives of retribution, deterrence and denunciation;
>
> (e) their purpose is not to compensate the plaintiff, but to give the defendant its just retribution, to deter the defendant and others from similar misconduct in the future, and to mark the community's collective condemnation of what has happened;
>
> (f) they are awarded only where compensatory damages are insufficient to accomplish these objectives, and are consequently to be given in an amount that is no greater than necessary to rationally accomplish their purpose;
>
> (g) moderate awards of punitive damages are generally sufficient since they inevitably carry a stigma in the broader community which serves their purpose; and
>
> (h) they take the form of a "windfall" add-on to the compensatory damages awarded to the plaintiff.

[165] The level of blameworthiness of the defendant's conduct may be influenced by many factors, which include (a) whether the misconduct was planned or deliberate; (b) the intent and motive of the defendant; (c) whether the defendant persisted in the outrageous conduct over a lengthy period of time; (d) whether the defendant concealed or attempted to cover up its misconduct; (e) the defendant's awareness that what it was doing was wrong; (f) whether the defendant profited from its misconduct; and (g) whether the interest violated by the misconduct was known to be deeply personal to the plaintiff: *Whiten* at para. 113.

[166] Punitive damages may also be awarded under the civil law applicable in Quebec, notably in cases of intentional infringement of intellectual property rights, insofar as the stringent conditions for an award of such damages have been met. This was found to be the case with respect to copyright in *Construction Denis Desjardins inc. c. Jeanson*, 2010 QCCA 1287, [2010] R.J.Q. 1600 at paras. 46 to 48 and *France Animation, s.a. c. Robinson*, 2011 QCCA 1361, [2011] R.J.Q. 1415 at paras. 229 to 232 and 236-237. The reasoning set out in these cases with respect to copyright logically extends to patents. This reasoning flows from article 1621 of the *Civil Code of Quebec* and sections 6 and 49 of the *Charter of human rights and freedoms*, R.S.Q. c. C-12 where an intentional infringement to an intellectual property right may be seen as a breach of the owner's right to the peaceful enjoyment of his or her property giving rise to punitive damages.

[167] In this case, Bell Helicopter submits that the Judge erred in law by granting punitive damages before assessing the quantum of general damages: Bell Helicopter's Memorandum

para. 57. It further submits that punitive damages should not be available, as a matter of law, for intentionally infringing a patent: *ibid.* at paras 68 to 71. It finally submits that the Judge made palpable and overriding errors in assessing the evidence and otherwise erred in law in awarding such damages since, in its view, the underlying facts do not support an award of punitive damages as a rational and measured response: *ibid.* at paras. 58 to 67 and 72 to 79.

*First issue: Awarding punitive damages before the quantum of general damages is finally determined*

[168] The Judge did not award any quantum of punitive damages in this case. Rather, he declared that Eurocopter was entitled to an award of such damages, leaving the exact quantum to be determined in a subsequent hearing with the quantum of compensatory damages. The context in which this declaration was made is important to consider here.

[169] Prior to the trial, the parties had agreed to bifurcate solely the issue of the calculation of the quantum of profits, of compensatory damages and of punitive damages that may eventually result from the infringement by Bell Helicopter of the '787 Patent: Bifurcation Order of Prothonotary Morneau dated October 2, 2009. The issue of any entitlement to such awards (including punitive damages) was not bifurcated. This was further confirmed in the "Parties Joint List of Issues" dated December 2009 submitted to the Federal Court, and in which both litigants specifically identified the following issue to be decided at trial: "Is Eurocopter entitled to punitive damages?": AB Vol. 2 Tab 22 pp. 446 and 449.

[170] After the trial, on July 12, 2011, the Judge issued confidential interim reasons for judgment on the infringement and validity of the '787 Patent. He concurrently ordered a stay of the proceedings and reserved jurisdiction with respect to remedies and costs. He also invited the parties to submit additional evidence on these issues should they not reach a settlement. This stay order was subsequently extended to January 13, 2012.

[171] The parties were given an opportunity to submit motion materials prior to the expiration of the stay, and were heard by the Judge on January 12, 2012 on the issue of remedies. At that hearing, both parties extensively canvassed the issue of the entitlement to punitive damages.

[172] Bell Helicopter submits that the Judge could not determine any entitlement to punitive damages before the quantum of the compensatory damages was itself determined under the bifurcation order. In its view, entitlement and quantum are inextricably linked where punitive damages are concerned. It notes that in *Hill v. Church of Scientology of Toronto*, above, Cory J. stated (at para. 196) "that punitive damages should only be awarded in those circumstances where the combined award of general and aggravated damages would be insufficient to achieve the goal of punishment and deterrence." It deduces from this statement that the entitlement to punitive damages cannot be determined until the compensatory damages have been quantified. It relies for this proposition on *Apotex Inc. v. Merck & Co.*, 2003 FCA 291, 26 C.P.R. (4th) 278 ("*Merck*") at para. 34, where Sharlow J.A. noted that, until ordinary civil remedies are finally ascertained, it is not possible to determine whether punitive damages are required.

[173] I agree with the general proposition that the entitlement and quantum of punitive damages should, as a general rule, be determined after the quantum of compensatory damages has been established: *Lubrizol Corp. v. Imperial Oil Ltd.*, [1996] 3 F.C. 40, 67 C.P.R. (3d) 1 ("*Lubrizol*") at p. 20 of the C.P.R. ed. This general proposition flows from the requirement that for punitive damages to serve their purpose, they may be awarded only where the compensatory damages are insufficient to accomplish the objectives of retribution, deterrence and denunciation: *Whiten* at para. 94.

[174] However, this general proposition must be understood and applied with regard to the actual situation before the court and in a manner which facilitates the just and expedient resolution of the litigation in which the issue is raised. Consequently, in appropriate circumstances and depending on the context, it may be sometimes possible to ascertain an entitlement (or a non-entitlement) to punitive damages before the exact quantum of compensatory damages has been established. Such would be the case where the compensatory damages, though not precisely quantified, will nevertheless be likely insufficient (or, conversely, likely sufficient) to accomplish the objectives of retribution, deterrence and denunciation. This is precisely the situation identified by the Judge in this case.

[175] The Judge noted that since the infringement of the '787 Patent was limited to the Legacy landing gear, which was never sold, the quantum of ordinary damages will be limited and likely minimal. Consequently, and as a logical result, he also found (at para. 455 of the Reasons) that it is likely that compensatory damages "will simply not be enough to achieve the goal of punishment

and deterrence." In light of these findings, it was open to him to determine the entitlement to punitive damages as he did.

[176] I also have other concerns with respect to the submissions advanced by Bell Helicopter. As a logical consequence of Bell Helicopter's submissions, there would be three distinct phases to the punitive damages issue:

a. First, the quantum of compensatory damages would be determined under the bifurcation order since, under the terms of that order, the judge determining the quantum would not have the authority to decide an entitlement to punitive damages. There would presumably be a possible appeal from this determination.

b. Second, the Judge would thereafter determine the issue of entitlement to punitive damages in light of the decision on the quantum of compensatory damages. However, in light of the bifurcation order, the Judge would not set the quantum of such damages. Again, there would presumably be a possible appeal.

c. Third, in the event that punitive damages are eventually awarded by the Judge (presumably many years from now), the parties would then need to seek an additional hearing under the bifurcation order to ascertain the quantum of the punitive damages. An appeal would again be possible.

This is a nightmarish approach which, if accepted, would place the administration of justice in disrepute. The Judge acknowledged this at paras. 450 to 453 of the Reasons.

[177] Finally, the decision of this Court in *Merck* must be understood within the particular context of the proceedings at issue in that case. In *Merck*, both parties had brought motions for summary judgment on the issue of infringement, resulting in a *de facto* bifurcation between the liability and the remedy phase: *Merck* at paras. 17 and 23. The issue before the trial judge in *Merck* was whether to allow the remedy phase to proceed by way of a reference or by way of a trial. The trial judge declared that Merck Co. would be entitled to either damages or an accounting for profit, and that the

quantum would be decided in a reference: *Merck* at para. 20. He also ordered that the issues of entitlement to and quantum of punitive damages would be decided through the reference, noting that though, in principle, Merck Co. would be entitled to punitive damages, the reference may decide otherwise by not awarding any quantum for such: *Merck* at paras. 20 and 35.

[178] It is in this very unusual context, where neither party had conducted examinations for discovery on remedy (*Merck* at para. 23), that Sharlow J.A. found that all the remedies should be determined by a judge on a continuance of the trial rather than through a reference, together with the matters of the entitlement to and the quantum of the punitive damages (*Merck* at paras. 38 to 42).

[179] This case contrasts with *Merck* in that, prior to trial, both litigants specifically agreed that the issue of entitlement to punitive damages (as well as to an accounting for profits and compensatory damages) would be determined at trial prior to and separately from the issue of quantum. In addition, and contrary to the situation in *Merck*, there are no evidentiary gaps raised in this case with respect to entitlement to compensatory damages, to an accounting for profits or to punitive damages, as these issues were extensively canvassed during the long trial. Moreover, as noted above, the Judge in this case found that the compensatory damages would likely not be enough to accomplish the objectives of retribution, deterrence and denunciation. This case is thus quite different from *Merck*.

*Second issue: Can punitive damages be awarded in patent infringement cases?*

[180] Bell Helicopter submits that, as a matter of principle, punitive damages should not be awarded against a party that intentionally infringes a patent since "policy principles favour the

removal of improper monopolies through the challenge of an invalid patent": Bell Helicopter's Memorandum at para. 68. This is a misconception of the law.

[181] First, the attempt to limit punitive damages to certain categories of claims was rejected by the Supreme Court of Canada in *Vorvis v. Insurance Corporation of British Columbia*, [1989] 1 S.C.R. 1085 ("*Vorvis*") at pp. 1104-1105. As noted by Binnie J. in *Whiten* at para. 67, the control mechanism for punitive damages lies not in restricting the category of case in which they may be awarded, but in rationally determining circumstances that warrant the addition of punishment to compensation in a civil action.

[182] Consequently, punitive damages have been found to be available in all types of cases, notably intentional torts (*Hill v. Church of Scientology of Toronto*, above), breach of fiduciary duty (*M. (K) v. M. (H.)*, [1992] 3 S.C.R. 6), contract (*Vorvis*), insurance (*Whiten*), and negligence (*Robitaille v. Vancouver Hockey Club Ltd.*, (1981) 124 D.L.R. (3d) 228 (BCCA)).

[183] Punitive damages have also been specifically found to be available in patent cases. As noted in *Lubrizol* at p. 20 of the C.P.R. ed., there is "no reason why, in appropriate circumstances, punitive or exemplary damages could not be available in a copyright or patent infringement case, a type of statutory tort claim". In *Whiten* at para. 44, the Supreme Court also acknowledged that punitive damages may be available in patent cases.

[184] The submission that patent infringers should be immunized from punitive damages for public policy reasons consequently has no legal foundation. However, not all patent infringement cases, even in voluntary infringement circumstances, will necessarily attract punitive damages. Indeed, punitive damages "are very much the exception rather than the rule" and "should be resorted to only in exceptional cases and with restraint": *Whiten* at paras. 94 and 69. Such damages should only be awarded were the evidence shows that there has been high-handed, malicious, arbitrary or highly reprehensible conduct that departs to a marked degree from the ordinary standards of decent behaviour. This is a high threshold which considerably limits the circumstances in which punitive damages may be awarded. However, where such circumstances have been established in the context of a patent infringement case, there is no policy or other reason for a court not to award punitive damages.

*Third issue: Was an award of punitive damages appropriate in this case?*

[185] Bell Helicopter also submits that even if punitive damages are available in patent infringement cases, they were not appropriate in this case. It submits that infringing a patent is not conduct which intrinsically merits punishment where the infringer did not know of the existence of the patent or reasonably held that the patent was invalid. I agree that it would be difficult to uphold a punitive damages award in such circumstances. However, these are not the circumstances applicable to this case.

[186] The Judge in this case found (at para. 425 of the Reasons) that Bell Helicopter's assertion that it had no knowledge whatsoever of the '787 Patent prior to May 2008 to be "simply not

plausible and contrary to the evidence", adding that "there is no evidence supporting any genuinely held belief that Bell was the first to develop a sleigh type of landing gear having the features of claim 15 of the '787 Patent." He further found (at para. 428) numerous credibility concerns with respect to key aspect of the testimonies of senior officials of Bell Helicopter. He also found (at para. 431) that Bell Helicopter knew that the Legacy landing gear closely resembled the Moustache landing gear, and that the evidence revealed that concerns were raised by Bell Helicopter employees about these similarities, but brushed away by management. He also found (at para. 431) that Bell Helicopter's conduct "represented a marked departure from ordinary standards of decent behaviour." He concluded (at para. 433) "that there is clear evidence of bad faith and egregious conduct on the part of Bell", "willful blindness or intentional and planned misappropriation of the claimed invention" and "that the infringement of the '787 Patent by the making and use of the Legacy gear was not innocent or accidental."

[187] This is strong language from a trial judge, which is however supported by the evidence.

[188] To challenge these findings, Bell Helicopter essentially relies on the testimonies of two of its executives: Eurocopter's Memorandum at paras. 61, 63 to 65. Both these witnesses had raised "credibility concerns" with the Judge: Reasons at para. 425, 428 and 429. Bell Helicopter seeks to have these credibility findings overturned in this appeal through a reading of the transcript. The credibility of a witness is a matter for which a trial judge is in a special position to assess and to which an appellate court should show great deference: *R. v. W. (R.)*, [1992] 2 S.C.R. 122 at pp. 131-132. Owing to the special position of the trial judge, who has the advantage of having heard and

seen the witnesses, findings on credibility in civil cases may only be overturned in appeal in circumstances demonstrating palpable and overriding error where the appellant can explain why or in what respect the impugned finding is unreasonable or unsupported by the evidence: *H.L. v. Canada (Attorney General)*, above at para. 56.

[189] In this case, Bell Helicopter has failed to convince me that the Judge erred in his credibility findings, particularly when considering the testimony of other witnesses and the evidence considered as a whole.

[190] Indeed, Bell Helicopter's staff raised early on concerns about the similarities between the Legacy landing gear and the Moustache landing gear, yet nothing was done to alleviate these concerns: Trial transcripts, AB Vol. 3 Tab 48 pp. 624 to 630 (questions 121 to 153) and response to undertaking 34, AB Vol. 3 Tab 48 p. 828. Moreover, it simply defies belief that a large and sophisticated corporation such as Bell Helicopter would not verify intellectual property rights prior to embarking, as it did, on a research program directly involving the study of the landing gear of a leased EC120 helicopter. At the very least, this would be willful blindness.

[191] The evidence also shows that Bell Helicopter promoted the infringing Legacy landing gear as its own invention through an article by one of its senior technical staff specialists. That article (JB-224, AB Vol. 21 Tab 342 p. 5754) sets out that a "sleigh type skid landing gear <u>has been designed for the first time by Bell Helicopter</u> for use on its Model 429 civil helicopter. This type of landing gear was chosen for its improved dynamic behavior (ground resonance) and low weight"

(emphasis added). Bell Helicopter also promoted the sale of its Bell 429 helicopter with the infringing Legacy landing gear: Reasons at para. 267.

[192] Where a person infringes a patent which it knows to be valid, appropriates the invention as its own, and markets it as its own knowing this to be untrue, punitive damages may be awarded when an accounting for profits or compensatory damages would be inadequate to achieve the objectives of retribution, deterrence and denunciation of such conduct. Indeed, such conduct departs to a marked degree from ordinary standards of decent behaviour. It must be denounced in a manner that deters similar misconduct in the future and marks the community's collective condemnation.

[193] Taking into account all of the circumstances, and considering that Bell Helicopter has failed to convince me that the Judge committed an overriding and palpable error in assessing the evidence before him, I would not disturb the Judge's findings concerning punitive damages.

CONCLUSIONS

[194] I would consequently dismiss the appeal and the cross-appeal. In light of the mixed result, each party should assume its own costs in the appeal and the cross-appeal.

"Robert M. Mainville"

J.A.

"I agree.
Marc Noël J.A."

"I agree.
Johanne Trudel J.A."

**FEDERAL COURT OF APPEAL**

**NAMES OF COUNSEL AND SOLICITORS OF RECORD**

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| **DOCKET:** | A-74-12 |
| **AN APPEAL FROM A JUDGMENT THE HONOURABLE JUSTICE MARTINEAU DATED JANUARY 30, 2012, NO. 2012 FC 113** | |
| **STYLE OF CAUSE:** | Bell Helicopter Textron Canada Limitée v. Eurocopter, société par actions simplifiée |
| **PLACE OF HEARING:** | Montréal, Quebec |
| **DATE OF HEARING:** | May 27 and 28, 2013 |
| **REASONS FOR JUDGMENT BY:** | MAINVILLE J.A. |
| **CONCURRED IN BY:** | NOËL J.A.<br>TRUDEL J.A. |
| **DATED:** | September 24, 2013 |

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