Federal Court of Appeal  Cour d'appel fédérale

Date: 20171117

Docket: A-479-15

Citation: 2017 FCA 225

CORAM: **PELLETIER J.A.**
RENNIE J.A.
WOODS J.A.

BETWEEN:

CIBA SPECIALTY CHEMICALS WATER TREATMENTS LIMITED

Appellant

and

SNF INC.

Respondent

Heard at Toronto, Ontario, on February 14, 2017.

Judgment delivered at Ottawa, Ontario, on November 17, 2017.

REASONS FOR JUDGMENT BY: PELLETIER J.A.

CONCURRED IN BY: RENNIE J.A.
CONCURRING REASONS BY: WOODS J.A.

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REASONS FOR JUDGMENT

PELLETIER J.A.

INTRODUCTION

[1] This is an appeal from a decision of the Federal Court, reported as 2015 FC 997 (Reasons), in which the Court found that Ciba Specialty Chemicals Water Treatments Limited's (Ciba) Canadian Patent CA 2 515 581 (the '581 patent) was invalid due to

obviousness. The action for a declaration of invalidity was brought by SNF Inc. (SNF), Ciba's competitor in the industrial chemical business.

[2] SNF's action for a declaration of invalidity of the '581 patent was brought on the basis of obviousness, anticipation by prior art and prior use, insufficiency, overbreadth and the presence of false and misleading statements in the application for the patent. The Federal Court found that the allegations of anticipation, insufficiency and overbreadth were not made out. The Court also found that the patent application contained false and misleading statements but because they were not material, the patent was not void pursuant to section 53 of the *Patent Act*, R.S.C. 1985, c. P-4 (the Act) on that account. As a result, the only successful ground of invalidity was obviousness.

[3] I believe that the Federal Court erred in its articulation and application of the *Windsurfing/Pozzoli* framework but it nonetheless came to the right conclusion on the question of obviousness. As this conclusion is sufficient to dispose of the appeal, I do not propose to deal with the other grounds raised by the parties.

FACTS

[4] Like most industries, the mining industry must deal with the waste created by its operations. One of those waste products is a water-borne stream of dispersed particulate matter, commonly referred to as slurry. Mine operators have economic and environmental incentives to recycle the water and to minimize the land area required to dispose of the particulate matter. The '581 patent addresses these issues.

[5] Water can be separated from the particulate matter in a slurry using a device known as a paste thickener, a cone-shaped vessel into which slurry is pumped and allowed to stand. The particulate matter settles out leaving a liquid at the surface which can be removed and reused. The settled particles at the bottom of the vessel together with the remaining water (the underflow) can then be pumped out to a deposition area where the water will escape through sedimentation, drainage and evaporation. The dewatered particulate matter, known as tailings, can then be managed on the site.

[6] This process can be improved by the use of a class of chemicals known as flocculants. The flocculants in issue in the case are water-soluble polymers. Flocculants cause particles to aggregate into flocs (essentially, larger particles) which can further aggregate into permeable structures which allow water to escape. Flocculants added to the slurry in a paste thickener can accelerate the separation of water from the particulate matter and improve the quality of the recovered water.

[7] The ‘581 patent deals with the treatment of the underflow during its transfer from its initial treatment, in a paste thickener for example, to a deposition area. The lower the amount of particulate matter in that water, the more suitable it is for reuse in mining operations and the less harmful it is if it escapes into the surrounding area. The less water there is mixed with the particulate matter, the faster it will consolidate and solidify.

[8] The objectives of dewatering and solidification can be achieved if upon discharge in the deposition area, the slurry solidifies (“rigidifies”) quickly (by the escape of water), and if fine

and coarse particles form a homogeneous mixture. This homogeneous mixture improves the quality of the released water because fine particles are retained in the homogenous mixture. It is also better adapted to support the weight of subsequent deposits. The rapid solidification of the material minimizes the extent to which it flows so that stacks of material can be created which reduce the amount of land required to accommodate tailings.

[9] The patent teaches that attempts have been made to achieve these objectives through the treatment of the feed to the tailings dam using a flocculant. However, these attempts were unsuccessful as these treatments were applied at conventional doses which produced little or no benefit. The ‘581 patent describes the prior art, in particular patent no. WO-A-0192167 (the Gallagher patent) which teaches the introduction of particles of water-soluble polymer into the tailings feed. This allows the treated slurry to retain its fluidity while being pumped to a deposition area but to “rigidify” i.e. solidify upon standing. The ‘581 patent states that the Gallagher patent emphasizes the use of water-soluble polymer particles and alleges that the use of aqueous solutions of dissolved polymer is ineffective. The latter statement, which the Federal Court found to be untrue, was the basis of the claim that the ‘581 patent was void because of false and misleading statements in the application for the patent.

[10] The ‘581 patent describes a process which is said to be an improvement on the prior art. The invention is described under various aspects, one of which is sufficient to illustrate the nature of the invention:

> […] there is provided a process of rigidifying a material whilst retaining the fluidity of the material during transfer, in which the material comprises an aqueous fluid with dispersed particulate solids that is transferred as a fluid to a deposition area, then allowed to stand and rigidify, by combining with the

> material during transfer an effective rigidifying amount of an aqueous solution of a water-soluble polymer, said water-soluble polymer having an intrinsic velocity of at least 5 dl/g [5 daltons/gram] (measured in 1 M NaCl at 25° C).
>
> '581 patent at page 7b lines 3-10.

[11] The patent recites that it has been unexpectedly found that the addition of an aqueous solution of polymer to the slurry mixture during transfer does not cause instant rigidification or any substantial settling of the particulate matter while it is being transferred.

[12] The patent also states that the flow characteristics of the treated material as it rigidifies are important:

> […] since once the material is allowed to stand it is important that flow is minimised and that solidification of the material proceeds rapidly. If the material is too fluid then it will not form an effective stack and there is also a risk that it will contaminate water released from the material. It is also necessary that the rigidified material is sufficiently strong to remain intact and withstand the weight of subsequent layers of rigidified material being applied to it.
>
> '581 patent at page 15 lines 12-19.

[13] The patent goes on to state that it is not possible to achieve the objectives sought by adapting the flocculation step in the paste thickener and that it is essential to treat the material formed as an underflow in the paste thickener. This allows the treated material to rigidify effectively without compromising the fluidity during transfer.

[14] That, in summary form, is the nature of the invention described in the '581 patent and the relevant teachings of the patent.

THE DECISION UNDER APPEAL

[15] Unlike the usual scenario in which a patent holder sues a competitor for infringement of its patent and is met by a counterclaim alleging invalidity of the patent, this proceeding began as an action for a declaration of invalidity of the ‘581 patent. Ciba counterclaimed alleging infringement but that allegation was settled along the way so that the only issue before the Federal Court was the validity of the ‘581 patent.

[16] In order to avoid repetition, I will deal with the details of the Federal Court’s analysis in the course of my own analysis. At this stage, I will simply highlight the Court’s conclusions on various issues so as to provide an overview of its reasoning.

[17] The Federal Court began its reasons by providing the factual context of the invention. It then provided a summary of the evidence of the witnesses, both lay witnesses and experts. In the course of doing so, it offered its critique of the witnesses’ evidence. In particular, the Federal Court compared the evidence of SNF’s experts, Dr. Klein and Mr. Hyatt, to Ciba’s expert, Dr. Farrow. In the end, the Court found that it would treat Dr. Farrow’s evidence with caution for reasons which will be explained later in these reasons.

[18] The next step in the Federal Court’s analysis was the identification of the person skilled in the art to which the invention pertains (the Skilled Person). The Court then set out the common general knowledge which the Skilled Person would have at their disposal. The key issue in that area was whether in-line addition of polymer was part of the common general knowledge. Based upon the Court’s view that SNF’s experts “were closer to the Common General Knowledge [than Dr. Farrow] given their greater field experience”, it found that in-line

polymer addition was part of the common general knowledge at the material time: Reasons at paragraph 123. The Court concluded this part of its analysis by itemizing a number of other aspects of the common general knowledge of the Skilled Person.

[19] The Court then construed the patent, more particularly Claim 1 upon which all other claims are dependent, either directly or indirectly. Claims 32 and following are indirectly dependent on Claim 1 in the sense that they are dependent upon earlier claims which are themselves dependent upon Claim 1.

[20] The principal issue in the construction of Claim 1 was the meaning of the words "rigidify" and "rigidification", coined words which are neither scientific nor technical. After canvassing the evidence of the experts, the Federal Court concluded that rigidification meant "increasing the yield stress of a mineral deposit rapidly whereby the flow of the deposit is minimized and the weight of subsequent layers of like deposit is supported": Reasons at paragraph 163.

[21] The Court then considered the issue of anticipation—which I do not propose to address—before turning its attention to obviousness. The Court set out the four-step obviousness analysis (the *Windsurfing/Pozzoli* framework) adopted by the Supreme Court in *Apotex Inc. v. Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61, [2008] 3 S.C.R. 265 (*Plavix*). Since it had already completed step 1 by identifying the Skilled Person and the common general knowledge, the Court went on to the second step, namely the identification of the inventive concept. In the Court's view, the inventive concept was the insight "that an effective amount of solution

addition of water soluble polymer can result in a rigidification analogous to the deposit of a paste thickener": Reasons at paragraph 191.

[22] The Court then asked itself if it would be obvious to the Skilled Person that the addition of an effective amount of the polymers listed in the patent would result in rigidified deposits. It concluded that the Skilled Person would go directly and without difficulty to the solution of adding a minimum dose of polymer to a tailings feed and then increasing the dosage to achieve the desired outcome. In that sense, applying an effective amount of polymer would have been obvious.

[23] The Court went on to say that "an effective amount of solution addition of a water soluble polymer would have been obvious to try": Reasons at paragraph 196. The Court then reviewed the list of non-exhaustive factors proposed by the Supreme Court in *Plavix* in relation to the "obvious to try" test and concluded that they were met so that the "obvious to try" test was also met. On that basis, the Court found that '581 patent was invalid for obviousness.

[24] The Court then addressed the other grounds of invalidity raised by SNF even though its conclusion on obviousness was sufficient to dispose of the action. As I do not intend to deal with those grounds, I will say no more about them.

ISSUES

[25] Ciba argues that the Federal Court committed a series of cascading errors, the earlier errors leading to subsequent errors, culminating in the erroneous conclusion that the invention

disclosed in the ‘581 patent was obvious. Ciba alleges first that the Federal Court erred in preferring the evidence of SNF’s experts over the evidence of its expert, Dr. Farrow. This in turn caused the Federal Court to err in its determination of the common general knowledge of the Skilled Person. This led to an erroneous conclusion as to the inventive concept which in turn led to the mistaken conclusion that the ‘581 patent was invalid for obviousness. I will address each of these in turn.

[26] Since this is an appeal from a decision of the Federal Court sitting as a trial court, the appellate standard of review applies: palpable and overriding error for questions of fact and questions of mixed fact and law, except for extricable questions of law for which the standard of review is correctness: *Housen v. Nikolaisen*, 2002 SCC 33, [2002] 2 S.C.R. 235 (*Housen*).

ANALYSIS

Preference for some experts over others

[27] Ciba alleges that the Federal Court erred in preferring the evidence of SNF’s experts, Dr. Klein and Mr. Hyatt, to that of its expert, Dr. Farrow. The assessment of expert evidence is a question of fact, reviewable on the standard of palpable and overriding error: *Eurocopter v. Bell Helicopter Textron Canada Ltée*, 2013 FCA 219 at paragraph 74, 120 C.P.R. (4th) 394, *Halford v. Seed Hawk Inc.*, 2006 FCA 275 at paragraph 11, 54 C.P.R. (4th) 130. A court will fall into palpable and overriding error when it comes to a conclusion for which there is no factual basis, or when its reasoning is illogical or unrelated to the evidence: *Mahjoub v. Canada*

(Minister of Citizenship and Immigration), 2017 FCA 157 at paragraph 62, [2017] F.C.J. No. 726 (QL).

[28] Ciba argues that the Federal Court's preference for SNF's experts because they had "greater field experience" is a palpable and overriding error. Ciba invites us to compare the experts' qualifications and to come to our own conclusion. That is not the role of an appellate court. Our role is to determine if there was a factual basis for the Federal Court's conclusion. In my view, there was such a basis.

[29] Beginning at paragraph 62 of its reasons, the Federal Court considered the academic qualifications and the practical experience of the experts tendered by the parties. It touched upon Dr. Klein's practical experience, without setting it out in detail. It found that "Klein brought an element of practicality to what was a practical patented process": Reasons at paragraph 71. The Court also summarized Mr. Hyatt's 30-year career as a vendor of process chemicals and consultant to the mining industry. There was a basis upon which the Federal Court could find as it did on the issue of SNF's experts' practical experience.

[30] Quite apart from the issue of practical experience, at paragraphs 83 to 87 of its Reasons, the Court explained why it preferred the evidence of SNF's experts to Dr. Farrow's. The Court found Dr. Farrow's evidence "less persuasive, consistent, objective and balanced than one would reasonably expect." It noted that on a major issue in the construction of the patent, Dr. Farrow "advanced different and shifting meanings" and supplied "a result oriented interpretation": Reasons at paragraphs 83-84.

[31] Overall, the Court found that Dr. Farrow was more of an advocate for the patent's validity than was appropriate, given his status as an expert. As a result, the Court approached his evidence with grave caution.

[32] The Federal Court's stance is consistent with the Supreme Court's teachings on expert witnesses:

> Expert witnesses have a special duty to the court to provide fair, objective and non-partisan assistance. A proposed expert witness who is unable or unwilling to comply with this duty is not qualified to give expert opinion evidence and should not be permitted to do so. Less fundamental concerns about an expert's independence and impartiality should be taken into account in the broader, overall weighing of the costs and benefits of receiving the evidence.
>
> *White Burgess Langille Inman v. Abbott and Haliburton Co.*, 2015 SCC 23 at paragraph 2, [2015] 2 S.C.R. 182.

[33] The Federal Court was entitled to treat Dr. Farrow's evidence with the caution it did on the basis of its conclusions as to the latter's partiality.

The content of the common general knowledge

[34] Ciba's primary concern in raising the issue of the expert evidence was the difference between the parties' experts on the question of whether the common general knowledge attributable to the Skilled Person at the material date included the concept of introducing polymer to a slurry "in-line" or "in-pipe", i.e. while it is being pumped or transferred to a tailings deposition area.

[35] At paragraph 121 of its Reasons, the Federal Court noted that SNF's experts were of the view that "in-line polymer treatment of tailings was part of the Skilled Person's Common General Knowledge", while Ciba's expert Dr. Farrow disagreed. The major reason for Dr. Farrow's disagreement was the absence of references to in-line polymer treatment in two publications: "The 2002 Paste and Thickened Tailings – A Guide" and "Mineral Processing Plant Design, Practice and Control Proceedings (2002)".

[36] The Federal Court held that the absence of a reference to a particular fact in one or more publications does not disprove that fact. This is a very context-specific observation, but in the context of the whole of the evidence which the Federal Court had before it, it is an observation which it was entitled to make. This did not prove that in-line polymer treatment was part of the common general knowledge but it was sufficient to set aside the position taken by Dr. Farrow and which continues to be advanced by Ciba.

[37] As this Court noted in *Janssen-Ortho Inc. v. Novopharm Ltd.*, 2007 FCA 217 at paragraph 25(3):

> Not all knowledge is found in print form. On the other hand, not all knowledge that has been written down becomes part of the knowledge that a person of ordinary skill in the art is expected to know or find.

[38] In this case, the Federal Court had before it the evidence of Dr. Klein and Mr. Hyatt to the effect that in-line polymer treatment was part of the common general knowledge and Dr. Farrow's evidence that it was not. The Court assessed that evidence in the context of all the evidence and its assessment of the witnesses' credibility and concluded that it preferred the evidence of Dr. Klein and Mr. Hyatt.

[39] In *Housen*, while discussing the many reasons why appellate courts should defer to trial courts on questions of fact, the Supreme Court quoted with approval the following passage from R. D. Gibbens, "Appellate Review of Findings of Fact" (1992) 13:4 Advocates' Q. 445, at page 446:

> The trial judge is said to have an expertise in assessing and weighing the facts developed at trial. Similarly, the trial judge has also been exposed to the entire case. The trial judge has sat through the entire case and his ultimate judgment reflects this total familiarity with the evidence. The insight gained by the trial judge who has lived with the case for several days, weeks or even months may be far deeper than that of the Court of Appeal whose view of the case is much more limited and narrow, often being shaped and distorted by the various orders or rulings being challenged.
>
> *Housen* at paragraph 14.

[40] This passage was distilled into one of the three basic principles which the Supreme Court put forward as justifying deference to the trial judge's findings of fact:

> The trial judge is better situated to make factual findings owing to his or her extensive exposure to the evidence, the advantage of hearing testimony *viva voce*, and the judge's familiarity with the case as a whole. Because the primary role of the trial judge is to weigh and assess voluminous quantities of evidence, the expertise and insight of the trial judge in this area should be respected.
>
> *Housen* at paragraph 18.

[41] The debate on the issue of the content of the common general knowledge demonstrates the wisdom of this principle. It is very difficult for this Court to acquire the familiarity with the evidence which a trial judge has developed over the course of the trial. As a result, it is unwise for us to interfere with a trial judge's conclusions of fact on the basis of isolated elements of the evidence brought to our attention by counsel. These debates seldom occur in a context in which there is no evidence on a given point. They almost always occur where, as here, there is

conflicting evidence. It is not our function, absent exceptional circumstances, to resolve conflicts in the evidence. That is the role of a trial judge and, so long as there is evidence to support the conclusion and the reasoning is sound and anchored in the evidence, this Court should not intervene.

[42] Therefore, I would not interfere with the Federal Court's determination that the in-line polymer treatment was part of the common general knowledge at the material time.

Obviousness

[43] Ever since the Supreme Court adopted the *Windsurfing/Pozzol*i framework for the analysis of obviousness in *Plavix*, it has been at the centre of discussions of obviousness. The *Windsurfing/Pozzoli* framework was elaborated in two U.K. cases, *Windsurfing International Inc. v. Tabur Marine (Great Britain) Ltd*, [1985] R.P.C. 59 (C.A.), (*Windsurfing*), and *Pozzoli SPA v. BDMO SA*, [2007] F.S.R. 37, [2007] EWCA Civ 588 (*Pozzoli*).

[44] In this case, the Federal Court misstated and misapplied the *Windsurfing/Pozzoli* framework; in particular, it did not properly identify the proper roles of the prior art and the common general knowledge. In the end, however, it came to the right conclusion so that this Court's intervention is not warranted.

[45] The elements of the *Windsurfing/Pozzoli* framework, as set out in *Plavix*, are as follows:

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?

Plavix, at paragraph 67.

[46] In the decision before us, the Federal Court did not refer to the Supreme Court's elaboration of the *Windsurfing/Pozzoli* framework but relied instead on the Federal Court's summary of the latter in *Eli Lilly Canada Inc. v. Mylan Pharmaceuticals ULC*, 2015 FC 125 at paragraph 158, 130 C.P.R. (4th) 116:

1) Identify the notional "person skilled in the art" and the relevant common general knowledge of that person;
2) Identify the inventive concept claimed in the patent;
3) Identify the differences between the common general knowledge and the inventive concept;
4) Do those differences require a degree of invention, or are they more or less self-evident?

Reasons, at paragraph 182.

[47] This formulation introduces an error in the framework when it substitutes "the common general knowledge" for "the matter cited as forming part of the 'state of the art'". The error is that, at step 3, the inventive concept is not to be compared to the common general knowledge but to the prior art.

[48] One of the advantages of the *Windsurfing/Pozzoli* framework is that it has brought to the fore the distinct conceptual steps in assessing obviousness. It will be recalled that section 2 of

the Act defines an invention as a something new and useful. Patent law has different ways of addressing "newness" or novelty such as anticipation and double patenting. Obviousness is not concerned with novelty as a stand-alone ground of invalidity; on the other hand, if a patent does not contain something new, there can be no invention. This is why step 3, of the *Windsurfing/Pozzoli* framework begins "Identify what, if any, differences…". If there are no differences, the inquiry is at an end.

[49] This logic was applied in *In re I. G. Farbenindustrie A. G.'s Patents*, (1930), 47 R.P.C. 289 (Ch. D.) (*Farbenindustrie*) quoted with approval in *Apotex Inc. v. Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61 at paragraph 9, [2008] 3 S.C.R. 265, a case dealing with selection patents which, as was noted there, are subject to the same principles as any other patent. In the course of his analysis, Maugham J. noted that if the compounds claimed in the selection patent had been made before, the latter would fail "would fail for want of novelty" : *Farbenindustrie* at p. 322.

[50] So the exercise at step 3 involves an assessment of whether the patent in suit has novel elements but this does not answer the question of "Novel relative to what, the common general knowledge or the prior art?" In principle, novelty should be determined relative to the prior art since it comprises all of what has been done before. The common general knowledge is merely a subset of the prior art: see *Eli Lilly Canada Inc. v. Mylan Pharmaceuticals ULC*, 2016 FCA 119 at paragraphs 23-25, [2017] 2 F.C.R. 280.

[51] In Anglo-Canadian jurisprudence, the comparison at step 3 is to the prior art. In Canada, this position is reflected in section 28.3 of the Act.

[52] Step 3 of the *Windsurfing/Pozzoli* framework asks what 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." The expression the 'state of the art' is a term of art in English law.

[53] At the time *Windsurfing* was decided, the *Patent Act, 1949*, 12, 13 & 14 Geo. 6 Ch. 87, was in force. It dealt with obviousness in the following terms:

> 32.-(1) Subject to the provisions of this Act, a patent may, on the petition of any person interested, be revoked by the court any of the following grounds, that is to say,-
>
> …
>
> > (f) that the invention, so far as claimed in any claim of the complete specification, is obvious and does not involve any inventive step *having regard to what was known or used*, before the priority date of the claim, in the United Kingdom; (my emphasis)

[54] In *Windsurfing*, at page 73, Oliver L.J. described step 3 in his framework in the following way:

> The third step is to identify what, if any differences exist between the matter cited as being "known and used" and the alleged invention.

[55] In the course of his restatement of the framework in *Pozzoli*, Lord Jacob reformulated step 3. At paragraph 22 of his reasons Lord Jacobs says:

> The third step also requires a little reformulation - *Windsurfing* was a case under the 1949 Act where the statutory words for the prior art were "known or used". The European Patent Convention uses the words "state of the art".

[56] As a result, the words "state of the art" in step 3 of the *Windsurfing/Pozzoli* framework are a reference to the prior art. In *Plavix*, the Supreme Court did not specifically comment on the meaning of "the state of the art", but in the course of its discussion of the *Lundbeck* factors it said the following:

> It is true that obviousness is largely concerned with how a skilled worker would have acted *in the light of the prior art*. … if the inventor and his or her team reached the invention quickly, easily, directly and relatively inexpensively, *in light of the prior art* and common general knowledge, that may be evidence supporting a finding of obviousness. … Their course of conduct would suggest that a skilled person, using his/her common general knowledge and *the prior art*, would have acted similarly and come up with the same result.
>
> *Plavix*, at paragraphs 70-71

[57] I conclude from this that the Supreme Court took the same view of the role of the prior art in the obviousness analysis as the English Courts. It would be surprising if it were otherwise given the provisions of section 28.3 of the Act which provides as follows:

28.3The subject-matter defined by a claim in an application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to	28.3 L'objet que définit la revendication d'une demande de brevet ne doit pas, à la date de la revendication, être évident pour une personne versée dans l'art ou la science dont relève l'objet, eu égard à toute communication :
(a) information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant	a) qui a été faite, plus d'un an avant la date de dépôt de la demande, par le demandeur ou un tiers ayant obtenu de lui l'information à cet égard de façon directe ou autrement, de manière telle qu'elle est devenue

in such a manner that the information became available to the public in Canada or elsewhere; and	accessible au public au Canada ou ailleurs;
(b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.	b) qui a été faite par toute autre personne avant la date de la revendication de manière telle qu'elle est devenue accessible au public au Canada ou ailleurs.

[58] Section 28.3 is essentially to the same effect as the legislation in effect in the U.K. except that it specifically excludes certain elements of prior art, that is, those elements disclosed or made known by specified persons less than 1 year from the material date.

[59] In the end, the jurisprudence and the Act confirm that step 3 requires a comparison between the inventive step (or the claim as construed) and the prior art. To the extent that I said otherwise at paragraph 48 of *Bristol-Myers Squibb Canada Co. v. Teva Canada Ltd*., 2017 FCA 76, I misspoke. The correct position is found at paragraphs 44, 65 and 67.

[60] To conclude, a word about "the matter cited as forming part of the prior art", the phrase used in Pozzoli and Plavix. The matter cited as forming part of the prior art is simply the prior art relied upon by the person alleging obviousness. Obviousness is not determined by reference to the prior art at large. The person alleging obviousness must point to one or more elements of prior art which make the impugned invention obvious. The choice of those elements of prior art is entirely in the hands of the party alleging obviousness, limited only by section 28.3 of the Act which sets out the cut-off date for opposable prior art. In fact, the challenger may rely on a

combination of pieces of prior art under the "mosaic" theory of obviousness: *Wenzel Downhole Tools Ltd. v. National-Oilwell Canada Ltd.*, 2012 FCA 333 at paragraph 87, [2014] 2 F.C.R. 459.

[61] The Federal Court's paraphrase of step 4 of the *Windsurfing/Pozzoli* framework also introduces, if not an error, then an oversimplification of the original statement of that step. At step 4, Lord Jacob inquired if the differences identified at step 3 constituted steps "which would have been obvious to the person skilled in the art or do they require any degree of invention?": Pozzoli, at paragraph 23. The Federal Court's formulation asks whether those differences require a degree of invention i.e. inventiveness or whether they are more or less self-evident. The error or ambiguity arises in the reference to "self-evident".

[62] As has previously been pointed out, if the difference between the inventive step (or the claim as construed) and the prior art can be bridged by the Skilled Person using only the common general knowledge of such a person, the "invention" is obvious: *Bristol-Myers Squibb Canada Co. v. Teva Canada Ltd*., 2017 FCA 76 at paragraph 65, 146 C.P.R. (4th) 216. It is at this point that the common general knowledge is relevant. The Skilled Person can have recourse to their common general knowledge supplemented by those pieces of prior art which could be discovered by a reasonably diligent search: see, for example, *Uponor AB v. Heatlink Group Inc.*, 2016 FC 320 at paragraph 46, 139 C.P.R. (4th) 393; *Hoffmann-La Roche Ltd. v. Apotex Inc.*, 2011 FC 875 at paragraph 55, 104 C.P.R. (4th) 233. In my view, this inquiry goes beyond asking whether the relevant differences are self-evident or not.

[63] I conclude from this that the Federal Court erred in its formulation of the *Windsuring/Pozzoli* framework and, as we shall see, it applied that erroneous formulation to the facts of the case before it.

[64] The reasoning which led the Court to its articulation of the inventive concept is found in the following paragraph:

> Considering the Common General Knowledge, it is apparent that the invention is the effective rigidifying amount of an aqueous solution of water soluble polymer that leads to rigidification as defined by the Court. The Patent is argued to be an advancement over what was known and part of the Common General Knowledge as to the potential result of a solution addition of water soluble polymers to a mineral slurry. Thus, the difference and the inventive concept is that an effective amount of solution addition of water soluble polymer can result in a rigidification analogous to the deposit of a paste thickener. It is noted that this type of deposit is only one of several claimed by the Patent under the disguise of rigidification.
>
> Reasons at paragraph 191.

[65] The Court's reasons on the issue of the inventive concept are somewhat elliptical but it appears that it first defined the invention, then referred to the fact that the invention is an advance over the common general knowledge, and concluded that the difference between the two is the inventive concept.

[66] This methodology appears to conflate steps 2 and 3 of the *Windsurfing/Pozzoli* framework as it was paraphrased by the Federal Court but instead of comparing the inventive step to the common general knowledge, it compares the invention to the common general knowledge to arrive at the inventive step.

[67] The final step of the Federal Court's analysis is ambiguous. Having previously identified the invention as:

> "the effective rigidifying amount of an aqueous solution of water soluble polymer that leads to rigidification as defined by the Court" and the inventive concept as:

and the inventive concept as:

> "an effective amount of solution addition of water soluble polymer can result in a rigidification analogous to the deposit of a paste thickener",

it asked itself if:

> "it was obvious to the Skilled Person that an effective addition of the polymers listed in the 581 Patent would result in rigidified deposit."
>
> Reasons at paragraphs 191-192.

[68] It is not apparent if the Federal Court was asking whether the invention or the inventive concept was obvious. In either case, from the point of view of the *Windsurfing/Pozzoli* framework, the Federal Court was asking itself the wrong question. The inquiry at step 4 is whether the difference between the inventive concept (or the claim as construed) and the prior art can be bridged by the Skilled Person using only their common general knowledge and other information which they could have found by making a reasonably diligent search. If it can, then the claimed invention is obvious. From the point of view of the ultimate issue, the question is, in fact, whether the invention is obvious but the point of the *Windsurfing/Pozzoli* framework is to break that question down into the discrete elements found at steps 3 and 4.

[69] The Federal Court erred in applying the wrong legal test to the facts of the case before it which, as taught in *Housen v. Nicolaisen*, 2002 SCC 33 at paragraph 27, [2002] 2 S.C.R. 235,

is an extricable error of law reviewable on the correctness standard. Rather than return the matter to the Federal Court to enable it to re-do its analysis, I intend to undertake that analysis myself.

Application of the correct legal test

[70] The identification of the skill set of the Skilled Person is contentious only to the extent that Ciba alleges that the Federal Court erred when it "approached the Skilled Person in this case as being relatively akin to SNF's expert witness Mr. Hyatt, and the co-inventor of the 581 Patent Mr. Scammell": Ciba's Memorandum of Fact and Law at paragraph 33. I agree with SNF's response to this argument: "The Judge was merely observing that the skilled person was 'much more like Scammell and Hyatt that a white coat lab technician', appreciating that in the context of this practical process, the skilled person had hands-on 'on the ground' experience, like Mr. Hyatt and Mr. Scammell": SNF's Memorandum of Fact and Law at paragraph 23.

[71] The identification of the common general knowledge was contentious with respect to one particular issue, namely whether it included in-line polymer treatment of tailings. Ciba challenges this finding, but there is evidence which supports the Federal Court's decision. Without reviewing the evidence at length, I note the following excerpt from Dr. Farrow's report which the Federal Court quoted in its Reasons:

> Flocculation of the particles within the tailings slurry is achieved in various ways, sometimes by adding flocculant into the tailings pipe prior to discharge into the tailing pond or dam, or by adding flocculant into the tailings pond or dam in the vicinity of the discharge point.
>
> Reasons at paragraph 124.

[72] The next issue is the identification of the inventive concept. We can find some guidance as to how to approach the inventive concept in *Pozzoli*. At paragraph 17 of the Court of Appeal's reasons, Lord Jacob quoted from his reasons in the Court of Appeal's decision in *Unilever v. Chefaro*, [1994] R.P.C. 567 (*Unilever*) at page 580:

> It is the inventive concept of the claim in question which must be considered, not some generalised concept to be derived from the specification as a whole. Different claims can, and generally will, have different inventive concepts. The first stage of identification of the concept is likely to be a question of construction: what does the claim mean? It might be thought there is no second stage - the concept is what the claim covers and that is that. But that is too wooden and not what courts, applying *Windsurfing* stage one, have done. It is too wooden because if one merely construes the claim one does not distinguish between portions which matter and portions which, although limitations on the ambit of the claim, do not. One is trying to identify the essence of the claim in this exercise.

[73] This passage anticipates the Supreme Court's teaching on patent construction in *Whirlpool Corp. v. Camco Inc.*, 2000 SCC 67 at paragraph 45, [2000] 2 S.C.R. 1067, where it said:

> The key to purposive construction is therefore the identification by the court, with the assistance of the skilled reader, of the particular words or phrases in the claims that describe what the inventor considered to be the "essential" elements of his invention.

[74] The reminder in *Unilever* that it is inventive concept of the claim which is in issue, "not some generalised concept to be derived from the specification as a whole," is very apt: *Unilever* at page 569. Part of the difficulty in the search for the inventive concept is the use made, or to be made, of the disclosure portion of the specification of the patent. In *Connor Medsystems Inc v. Angiotech Pharmaceuticals Inc.* [2008] UKHL 49, [2008] R.P.C. 28 (*Connor*), Lord Hoffman wrote at paragraph 19 that "[t]he patentee is entitled to have the question of

obviousness determined by reference to his claim and not to some vague paraphrase based upon the extent of his disclosure in the description."

[75] This emphasis on the claims is consistent with section 28.3 of the Act which stipulates that it is "the subject-matter defined by a claim" which must not be obvious.

[76] Lord Jacob was alive to the possibility that difficulties in the identification of the inventive concept could lead to "unnecessary satellite debate". His counsel was that "if a disagreement about the inventive concept of a claim starts getting too involved, the sensible way to proceed is to forget it and simply to work on the features of the claim": *Pozzoli* at paragraph 19. Lord Hoffman wrote, once again in *Connor* at paragraph 20, that the inventive concept "is a distraction almost as soon as there is an argument as to what it is."

[77] There may be cases in which the inventive concept can be grasped without difficulty but it appears to me that because "inventive concept" remains undefined, the search for it has brought considerable confusion into the law of obviousness. That uncertainty can be reduced by simply avoiding the inventive concept altogether and pursuing the alternate course of construing the claim. Until such time as the Supreme Court is able to develop a workable definition of the inventive concept, that appears to me to be a more useful use of the parties' and the Federal Court's time than arguing about a distraction or engaging in an unnecessary satellite debate.

[78] As a result, I turn to the construction of Claim 1 upon which, either directly or indirectly, all other claims depend. For ease of reference, I reproduce Claim 1 below:

> A process of rigidifying a material whilst retaining the fluidity of the material during transfer, in which the material comprises an aqueous liquid with dispersed particulate solids that is transferred as a fluid to a deposition area, then allowed to stand and rigidify, by combining with the material during transfer an effective rigidifying amount of an aqueous solution of a water-soluble polymer, said water-soluble polymer having an intrinsic viscosity of at least 5 dl/g (measured in 1 M NaCl at 25 °C).
>
> '581 patent at page 40.

[79] The remaining 49 claims of the patent add various qualifications to this basic outline, specifying, for example, the characteristics of the dispersed particulate solids, the characteristics of the water-soluble polymer, and the source of the original aqueous liquid.

[80] The Federal Court's construction of Claim 1 is largely focussed the words "rigidify" and "rigidification". The Court noted that "rigidify" and "rigidification" were coined words which were neither scientific nor technical terms. In the end, the Federal Court held that "rigidification" meant "increasing the yield stress of a mineral deposit rapidly whereby the flow of the deposit is minimized and the weight of subsequent layers of like deposits is supported": Reasons at paragraph 163.

[81] The Court's references to minimizing the flow of the deposit and to supporting subsequent layers of like deposits are both taken from page 15 of the patent which teaches that the rheological (flow) characteristics of the treated slurry or tailings are important because once those materials are allowed to stand, flow must be minimized and solidification of the material

must proceed rapidly so that they can withstand the weight of subsequent layers of treated material.

[82] Minimizing flow must not be confused with the requirement that treated materials must be capable of being transferred without solids settling out during transfer. The flow referred to in the Court's construction of rigidification is the flow of material once it is discharged at the deposition site and not its fluidity in the course of transfer to that area.

[83] Claim 1 describes a process for rigidifying a material which comprises an aqueous liquid with dispersed particulate solids - a slurry - by adding an effective amount of an aqueous solution of a water-soluble polymer to the material while it is being transferred as a fluid i.e. in-line addition. At the deposition area, the material is allowed to stand and rigidify, which means that the flow of the deposit is minimized and the weight of subsequent layers of like deposits is supported. The polymer solution must have an intrinsic viscosity of at least 5 dl/g (measured at 1 M Na Cl at 25° C).

[84] The expression "effective rigidifying amount" is ambiguous, which allows reference to the disclosure to understand what is meant. In the course of a discussion as to the problems associated with the treatment of tailings slurry, the patent refers to the fact that attempts have been made to solve those problems "by treating the feed to the tailings dam using a coagulant or a flocculant" but that these attempts were unsuccessful "as these treatments have been applied at conventional doses […]": '581 patent at page 3, lines 21-25. The disclosure portion

of the patent identifies preferred ranges of doses of flocculant which it claims have a beneficial effect.

[85] The conclusion to be drawn from this is that while conventional doses of flocculant were ineffective in solving the problems to which the invention was directed, doses in the ranges described in the patent, which must be taken to be outside the range of conventional doses, would have a beneficial effect.

[86] Having thus construed claim 1 of the ‘581 patent, the next step is to identify the differences between the claim as construed and the prior art relied upon by SNF. The Federal Court noted in its Reasons that SNF relied on two patents or a combination of the two. In fact, the Federal Court’s analysis focussed on the Gallagher patent. SNF’s reliance on the Gallagher patent in not surprising since both it and the ‘581 patent address the same problem using the same class of compounds and both are owned by Ciba. In fact, the Federal Court was of the view that the ‘581 patent was drafted with the Gallagher patent in mind: see the Court’s discussion of the evidence of Mr. William Peatfield, the patent agent who drafted the ‘581 patent at paragraphs 40-49 of the Reasons.

[87] The teachings of the Gallagher patent are described as follows in the ‘581 patent:

> WO-A-0192167 [the Gallagher patent] describes a process where a material comprising a suspension of particulate solids is pumped as a fluid and then allowed to stand and rigidify. The rigidification is achieved by introducing into the suspension particles of a water soluble polymer which has an intrinsic viscosity of at least 3 dl/g. This treatment enables the material to retain its fluidity was [sic] being pumped, but upon standing causes the material to rigidify. This process has the benefit that the concentrated solids can be easily stacked, which minimises the area of land required for disposal. … The importance of using

> particles of water soluble polymer is emphasised and it is stated that the use of aqueous solutions of the dissolved polymer would be ineffective.
>
> '581 patent at page 5, lines 31-32, page 6, lines 1-11.

[88] For ease of reference, I set out Claim 1 of the Gallagher patent:

> A process in which material comprising an aqueous liquid with dispersed particulate solids is pumped as a fluid then allowed to stand and rigidify and the rigidification is improved whilst retaining the pumpability of the material by combining polymeric particles with the material during or prior to pumping the material, wherein the polymeric particles comprise water-soluble synthetic polymer which has an intrinsic viscosity of at least 3 dl/g…
>
> Gallagher patent at page 23, lines 2-10.

[89] As can be seen, much of what is claimed in Claim 1 of the '581 patent is found in the Gallagher patent. In particular, the Gallagher patent teaches the treatment of a solution of dispersed particulate matter by the in-line addition of water-soluble polymer. The treated solution maintains its fluidity while being pumped but solidifies or rigidifies upon deposition.

[90] Both the Gallagher patent and the '581 patent refer to a lower threshold for intrinsic viscosity. In the case of the Gallagher patent, the threshold is 3 dl/g while in the '581 patent it is 5 dl/g. However in both cases, the disclosure portion of the specification indicates a preferred range of intrinsic viscosity. In the case of the '581 patent, the preferred range is 8-25 dl/g while the more preferred range is 11 or 12 dl/g to 18 or 20 dl/g. The Gallagher patent refers to a preferred range of 8-20 dl/g and a more preferred range of 11 or 12 to 16 or 17 dl/g. I have not been able to find any evidence which would show that there is some significance to the difference between the ranges.

[91] The elements of the ‘581 patent which are not found in the Gallagher patent are the notions of an “effective rigidifying amount” and of “an aqueous solution of a water soluble polymer.”

[92] The next step in the analysis, step 4, is to determine if these differences could be bridged by the skilled person using only their common general knowledge and those elements of the prior art which that person could find by conducting a reasonably diligent search. Simply put, would the Skilled Person with the Gallagher patent in hand, using only the information identified above, arrive without difficulty at the conclusion that slurries could be treated to produce the desired effect by using “an effective rigidifying amount” of “an aqueous solution of a water-soluble polymer”?

[93] It will be recalled that the Federal Court found that the common general knowledge included the knowledge that slurries could be treated using an aqueous solution of water-soluble polymers: see Reasons at paragraph 186. That finding of fact means that, on this point of difference, the Skilled Person would readily bridge the difference between claim 1 as construed and the prior art (as exemplified by the Gallagher patent) because the knowledge required to do so was part of the common general knowledge. That aspect of claim 1 was therefore obvious.

[94] This leaves the question of the use of an effective rigidifying amount of such an aqueous solution of water-soluble polymers. On that issue, the Federal Court reasoned as follows:

> The Skilled Person would have gone directly and without difficulty to the step of using a minimum dosage of polymer to achieve the level of rigidification of the

> slurry deposit for the job. It is routine for the Skilled Person to decide, *inter alia*: the nature of the polymer; its form and dosage; and the point of addition to the slurry line. Thus, applying an "effective" amount is obvious, as the Skilled Person would continue to apply the necessary polymer to achieve the necessary outcome and discontinue application once overdosing occurred.
>
> Reasons at paragraph 195.

[95] I agree with this reasoning. A Skilled Person, using their common general knowledge, would be able to bridge the difference between the claim as construed and the cited prior art (the Gallagher patent). The Federal Court found that the common general knowledge included the knowledge that flocculation was dose-dependent: Reasons at paragraph 185. It requires no inventiveness to go from that knowledge to the knowledge that increasing the dose beyond conventional dosage would eventually produce the desired results. As a result, the invention claimed in the '581 patent is obvious.

[96] Even though this conclusion was sufficient to dispose of the issue of obviousness, the Federal Court then embarked on the "obvious to try" analysis which the Supreme Court endorsed in *Plavix*. In my view, the Federal Court need not have done so. The finding that the skilled person would have known to use an aqueous solution of water-soluble solution and then to adjust the dose until the desired result was achieved means that the question of "obvious to try" either did not arise or had already been answered. To the extent that Ciba argues that the Federal Court erred in embarking upon the "obvious to try" analysis, it is correct though not for the reasons it suggests.

[97] The result is that Claim 1 is obvious and, since all other claims are directly or indirectly dependent on Claim 1, the '581 patent is invalid.

CONCLUSION

[98] I would therefore dismiss the appeal with costs.

"J.D. Denis Pelletier"
J.A.

“I agree
Donald J. Rennie J.A.”

WOODS J.A. (Concurring reasons)

[99] I have read the well-written reasons of the majority by Justice Pelletier and agree with my colleagues that this appeal should be dismissed. I also concur with the reasons, except that I would decline to provide an opinion on the issue discussed at paragraphs 51 to 63, above. This part of the analysis concerns the effect of section 28.3 of the Act on the determination of obviousness.

[100] In my view, it is preferable for this issue to be left for another day, as it was in *E. Mishan & Sons, Inc. v. Supertek Canada Inc.*, 2015 FCA 163, 134 C.P.R. (4th) 207 at paragraph 21. The issue is better addressed in an appeal where it is relevant to the outcome and in which the Court has the benefit of full submissions from counsel, which was not the case here.

"Judith M. Woods"

J.A.

FEDERAL COURT OF APPEAL

NAMES OF COUNSEL AND SOLICITORS OF RECORD

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