CANADA'S INTELLECTUAL PROPERTY AND TECHNOLOGY LAW FIRM

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Patentable Subject Matter: Background

Matt Norwood | Ridout & Maybee LLP November 11, 2022

CANADA'S INTELLECTUAL PROPERTY AND TECHNOLOGY LAW FIRM

Patent Act, s. 2

invention means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter





Patent Act, s. 27(8)

No patent shall be granted for any mere scientific principle or abstract theorem.

Schlumberger, [1982] 1 F.C. 845

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- Patent application on computerized method for processing data from a borehole
 - (e.g., a drilled oil well)
- Heard in June 1981
- 4 substantive paragraphs
 - Only <u>one paragraph</u> (para. 5) discusses statutory subject matter

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Schlumberger, [1982] 1 F.C. 845

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Claim 1 reads:

A machine operated method of processing well logging data, comprising:

(a) deriving a plurality of measurements representative of characteristics of an earth formation at selected depth levels over a section of a borehole;

(b) machine combining at least some of said derived measurements from at least some of said selected depth levels over said borehole section to compute at least one input parameter for said borehole section;

(c) machine combining at least some of said plurality of derived measurements from at least some of said selected depth levels with said at least one input parameter to compute at least one output parameter for at least some of said selected depth levels; and



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Schlumberger, CD 441 (PAB, 1978)

Well logging

From Wikipedia, the free encyclopedia

History

Conrad and Marcel Schlumberger, who founded Schlumberger Limited in 1926, are considered the inventors of electric well logging. Conrad developed the Schlumberger array, which was a technique for prospecting for metal ore deposits, and the brothers adapted that surface technique to subsurface applications. On September 5, 1927, a crew working for Schlumberger lowered an electric sonde or tool down a well in Pechelbronn, Alsace, France creating the first well log. In modern terms, the first log was a resistivity log that could be described as 3.5-meter upside-down lateral log.[3]

In 1931, Henri George Doll and G. Dechatre, working for Schlumberger, discovered that the galvanometer wiggled even when no current was being passed through the logging cables down in the well. This led to the discovery of the spontaneous potential (SP) which was as important as the ability to measure resistivity. The SP effect was produced naturally by the borehole mud at the boundaries of permeable beds. By simultaneously recording SP and resistivity, loggers could distinguish between permeable oil-bearing beds and impermeable nonproducing beds.[4]

In 1940, Schlumberger invented the spontaneous potential dipmeter; this instrument allowed the calculation of the dip and direction of the dip of a layer. The basic dipmeter was later enhanced by the resistivity dipmeter (1947) and the continuous resistivity dipmeter (1952).

Oil-based mud (OBM) was first used in Rangely Field, Colorado in 1948. Normal electric logs require a conductive or water-based mud, but OBMs are nonconductive. The solution to this problem was the induction log, developed in the late 1940s.

The introduction of the transistor and integrated circuits in the 1960s made electric logs vastly more reliable. Computerization allowed much faster log processing, and dramatically expanded log data-gathering capacity. The 1970s brought more logs and computers. These included combo type logs where resistivity logs and porosity logs were recorded in one pass in the borehole.

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Claim 1 reads:

[Processing well logging data - known in the art]

(a) deriving a plurality of measurements representative of characteristics of an earth formation at selected depth levels over a section of a borehole;

(b) machine combining at least some of said derived measurements from at least some of said selected depth levels over said borehole section to compute at least one input parameter for said borehole section;

(c) machine combining at least some of said plurality of derived measurements from at least some of said selected depth levels with said at least one input parameter to compute at least one output parameter for at least some of said selected depth levels; and



Schlumberger, CD 441 (PAB, 1978)

Claim 1 reads:

[Processing well logging data – known in the art]

[Collect data along the depth of the well – known in the art]

(b) machine combining at least some of said derived measurements from at least some of said selected depth levels over said borehole section to compute at least one input parameter for said borehole section;

(c) machine combining at least some of said plurality of derived measurements from at least some of said selected depth levels with said at least one input parameter to compute at least one output parameter for at least some of said selected depth levels; and



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Schlumberger, CD 441 (PAB, 1978)

Claim 1 reads:

[Processing well logging data – known in the art]

[Collect data along the depth of the well – known in the art]

[Process the well logging data to generate other unspecified data ("input parameter") – could be literally anything]

(c) machine combining at least some of said plurality of derived measurements from at least some of said selected depth levels with said at least one input parameter to compute at least one output parameter for at least some of said selected depth levels; and



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Claim 1 reads:

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Claim 1 reads:

- [Processing well logging data known in the art]
- [Collect data along the depth of the well known in the art]
- [Process the well logging data to generate other unspecified data ("input parameter") could be literally anything]
- [Process the well logging data and unspecified data to generate further unspecified data ("output parameter") for 1+ of the depth levels (e.g., for the well bottom)]
- (d) machine combining at least some of said derived measurements with said at least one output parameter for at least some of said selected depth levels to recompute said at least one input parameter or compute another input parameter for combination with at least some of said plurality of measurements to produce output parameters representative of at least one formation characteristic.



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Claim 1 reads:

[Processing well logging data – known in the art]

[Collect data along the depth of the well – known in the art]

[Process the well logging data to generate unspecified data ("input parameter") – could be literally anything]

[Process the well logging data and the unspecified data to generate further unspecified data ("output parameter") for 1+ of the depth levels (e.g., for the well bottom)]

[Process the well logging data and unspecified data to generate more data (more "output parameters") that tells you something about your earth formation]

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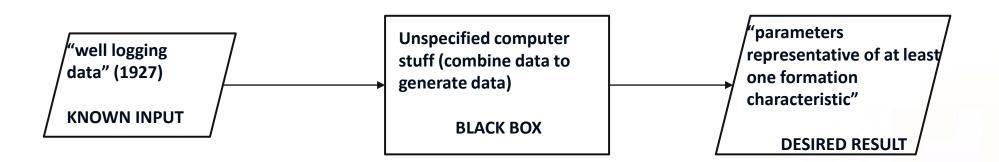


Anticipation? Obviousness? Overbreadth?

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- Holding?
 - [If you couldn't patent a process performed by a human, then you can't patent a machine that performs an analogous mechanical process to achieve the same result?]



- Clearly the correct result
- Less clear whether a "mathematical formula" is what rendered the claims unpatentable

Shell Oil, [1982] 2 S.C.R. 536

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- Decision published <u>November</u> 1982
- Patent claims a new use for an old compound:
 - "It is not the process of mixing the old compounds with the known adjuvants which is put forward as novel. It is **the idea of applying the old compounds to the new use** as plant growth regulators; the character of the adjuvants follows inevitably once their usefulness for that purpose has been discovered."

Shell Oil, [1982] 2 S.C.R. 536

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PROPERTY AND TECHNOLOGY

• What then is the "invention" under s. 2?

- the inventive ingenuity is in the **discovery** of the new use
- **application** of this new knowledge to effect a desired result
- which has an undisputed **commercial value**



Free World Trust and Whirlpool (SCC 2000)

- SCC rejects literal construction of patent claims
- SCC also rejects doctrine of

"<u>substantive</u> infringement"

Free World Trust and Whirlpool (SCC 2000)

 Instead, a patent is to be construed using <u>purposive</u> construction <u>for all purposes</u> Amazon, 2011 FCA 328

 Applies FWT/Whirlpool to statutory subject matter analysis

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- "actual invention" must be grounded in a <u>purposive construction</u> of the patent claims
 - cannot be determined solely on the basis of a <u>literal</u> reading of the patent claims
 - or a determination of the "substance of the invention"



Amazon, 2011 FCA 328

- *Shell Oil* is consistent with purposive construction per *FWT/Whirlpool*:
 - <u>purposive construction</u> of a claim to identify essential elements,
 - in which a <u>new scientific discovery</u> provides the <u>only new or useful subject matter</u> in the claim,
 - is a patent eligible invention under s. 2 and s. 27(8) of the Patent Act



Amazon, 2011 FCA 328

[62] Schlumberger exemplifies an unsuccessful attempt to patent a method of collecting, recording and analyzing seismic data using a computer programmed according to a mathematical formula. That use of the computer was a practical application, and the resulting information was useful. But the patent application failed for want of patentable subject matter because the Court concluded that **the only novel aspect of the claimed invention was the mathematical formula** which, as a "mere scientific principle or abstract theorem", cannot be the subject of a patent because of the prohibition in subsection 27(8).

[63] It is arguable that the patent claims in issue in this case could fail on the same reasoning, depending upon whether a purposive construction of the claims in issue leads to the conclusion that *Schlumberger* cannot be distinguished because **the only inventive aspect of the claimed invention is the algorithm – a mathematical formula** – that is programmed into the computer to cause it to take the necessary steps to accomplish a one-click online purchase.



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What is happening here?



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Let's zoom out

Folk history of s. 27(8)

- "scientific principle or abstract theorem"
 - Concern about <u>overbreadth</u>
 - Fundamental principles and theorems are <u>too important</u> to grant anyone even a temporary monopoly over them

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 Instead, you need to <u>limit</u> your monopoly to a particular practical application



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How s. 27(8) is applied in practice

- Used to reject trivial or obvious inventions
 - The invention isn't too important
 - Rather, it's <u>not important enough</u>

Patent Paradox: Less Is More

• Claim scope diminishes as details are added to claim

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PROPERTY AND TECHNOLOGY

- Despite being an elementary lesson in claim drafting, everyone gets confused by this
 - Engineers
 - Journalists
 - Patent Agents
 - Examiners
 - Adjudicators

Patent Paradox: Less Is More

- Invented too much, or invented too little?
 - S. 27(8): "mere scientific principle or abstract theorem"

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- Schlumberger: "merely the discovery that by making certain calculations according to certain formulae, useful information could be extracted from certain measurements"
- U.S. Alice/Mayo cases: "in applying the §101 exception, we must distinguish between patents that claim the 'buildin[g] block[s]' of human ingenuity and those that integrate the building blocks into <u>something more</u>"
 - (or something less?)

Patent Paradox: Less Is More

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A "disembodied idea" — or a "scientific principle" or "abstract theorem" — is not patentable as such, but a claim to a practical application of an idea, principle, or theorem, is good subject matter. And s 27(8) provides that "No patent shall be granted for any mere scientific principle or abstract theorem." The words "mere" and "abstract" are not superfluous. **The word "mere" is not used as meaning a "trifle" — "Oh, that's merely F=ma" — but rather in the sense of 'pure', or 'nothing more than'** (apparently from Latin for "undiluted").

- Prof. Norman Siebrasse, Sufficient Description blog, June 27, 2022

Actual history of s. 27(8)

- Not really about overbreadth *per se*
- Codifies pre-existing, longstanding principles in English jurisprudence
 - An inventor must have a <u>complete</u> invention

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- I.e., it must be reduced (!!) to practice
- The inventor cannot simply identify an intriguing phenomenon or principle ("mere scientific principle or abstract theorem") and leave the <u>application</u> of the principle to others

Shell Oil Addresses This Concern

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What then is the "invention" under s. 2? I believe it is the <u>application</u> of this new knowledge to effect a <u>desired result</u> which has an undisputed <u>commercial value</u> and that it falls within the words "any new and useful art".



Patentable Subject Matter – The CIPO Lens

11th Annual UofT Patent Colloquium

Isi Caulder, Partner | icaulder@bereskinparr.com

November 11, 2022 Bereskin & Parr LLP | Bereskin & Parr S.E.N.C.R.L., s.r.l. Bereskin & Parr

The CIPO Lens – A MAP

- Practice Notice 2011-04
- Practice Notice 2013-02/2013-03
- Practice Notice 2020-04
- PAB Case Review A few observations



CIPO's Guidance – PN 2011-04

- Problem-solution approach
- Identify the actual invention
 - ID elements that provide a solution to the problem
- Determine patentability based on elements identified

"A computer does not become patentable simply because it has been programmed to do something new. In order for the program to be part of the same inventive concept as the hardware, it must cause the computer to become a new solution to a technical problem."



CIPO's Guidance – PN 2013-02/2013-03

- Problem-solution approach
- Identify problem
 - "In certain cases, a key point may be determining whether or not the problem faced by the inventor was a "computer problem" (*i.e.* a problem with the operation of a computer) as opposed to *not* being a "computer problem" (*i.e.* a problem whose solution may be implemented using a computer)."
- Identify solution to problem
- Determine essential elements of solution

"A good indicator that a claim is directed to statutory subjectmatter is that it provides a technical solution to a technical problem."

> Bereskin &Parr

CIPO's Guidance – PN 2020-04

- Some problem-solution language
- Determine essential elements using purposive construction
- Determine actual invention
 - "An actual invention may consist of either a single element that provides a solution to a problem or of a combination of elements that cooperate together to provide a solution to a problem."
 - Problem should be **technical**
- Determine whether actual invention is subject-matter eligible
 - Physical existence and/or
 - Manifests a discernible physical effect or change (and relates to the manual or productive arts)



CIPO's Guidance – PN 2020-04 – Examples

- Patentable
 - 2 Types of scenarios:
 - Input/output having physical existence or manifesting physical effect or change
 - Improving functioning of computer (*e.g.,* fewer resources, less power needed)
- Not patentable
 - Generic method of receiving data, processing data, displaying results

Bereskin &Parr

PAB Case Review – A few observations

- Cases examined prior to PN 2020-04
- ~ 50-50 affirmed vs reversed
- Most (computer-implemented) allowed cases involve physical input/output
- PAB: problem-solution only for identifying whether computer and algorithm form part of a single invention
- Some variations in how actual invention test applied
- Determination of essential elements seems more like a formality

Bereskin &Parr

BGC Partners, INC. (Re), 2021 CACP 24 - Allowed

- System and method for protecting users from erroneous price entries in electronic trading
- PAB relied on specification to identify problem
- PAB focused on *effect* of steps claimed
 - Effect was to address technical limitation of electronic trading system.
 - Reduce erroneous entry caused by user interface
- Subject-matter eligible because computer and algorithm form single actual invention that has physical existence



NYSE GROUP, INC (Re), 2022 CACP 1 – Refused

- System and method for controlling trading in illiquid financial markets by preventing execution of some orders
- PAB: inputs and outputs to be generic reception of data and output of results
- Applicant: electronic trading system's operating efficiency is improved and post-execution processing reduced (less memory, fewer processing resources)
- PAB: Applicant's argument is based on premise not contained in claims





Questions?

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November 11, 2022 Bereskin & Parr LLP | Bereskin & Parr S.E.N.C.R.L., s.r.l. Bereskin & Parr

Patentable Subject Matter: Federal Courts, *Benjamin Moore*, and More

NOVEMBER 11, 2022

UNIVERSITY OF TORONTO PATENT COLLOQUIUM

KEVIN P. SIU, GILBERT'S LLP



Patentable Subject-Matter Cases

1980s	 Schlumberger Canada, [1982] 1 FC 845 (FCA) (practical application of math) Shell Oil Co, [1982] 2 SCR 536 (new uses)
1990 s	 Progressive Games, Inc, 1999 CanLII 8921 (FC) (methods of playing games)
2000s	 <i>Harvard College</i>, 2002 SCC 76 (higher life forms) <i>Monsanto v Schmeiser</i>, 2004 SCC 34 (genes, plants, and seeds)
2010 s	 Amazon.com, 2011 FCA 328 (business methods and "physicality")
2020 s	 <i>Choueifaty</i>, 2020 FC 837 (financial methods and the "problem-solution" approach) <i>Benjamin Moore</i>, 2022 FC 923 (computer-implemented inventions and construction)

* Excluding methods of medical treatment cases



Judicial Tools to Address Subject-Matter

- **Section 2** definition of "invention" in *Patent Act*:
 - "invention means any new and useful art, process, machine, manufacture or composition of matter..."
- Section 27(8) exception in *Patent Act*:
 - "No patent shall be granted for any mere scientific principle or abstract theorem,"
- Judicially-created exceptions:
 - Methods of medical treatment
 - Higher life forms



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Choueifaty: The Patent

CA 2,635,393 (2008) – Invention for optimizing financial holdings

1. A computer-implemented method for providing an anti-benchmark portfolio, the method comprising:

acquiring, using a computer system, data regarding a first group of securities in a first portfolio,

wherein the computer system comprises a computer processor and memory coupled to said processor,

identifying, using a **computer system**, a second group of securities to be included in a second portfolio based on said data and on risk characteristics of said second group of securities, and

providing, using a **computer system**, the individual weightings for each of the securities in said second portfolio according to one or more portfolio optimization procedures that maximizes the anti-benchmark ratio for the second portfolio

wherein the anti-benchmark ratio is represented by the quotient of:

a **numerator** comprising an inner product of a row vector of holdings in said second portfolio and a column vector of a risk characteristic of return associated with said holdings in said second portfolio; and

a **denominator** comprising the square root of a scalar formed by an inner product of said row vector of said holdings in said second portfolio and a product of a covariance matrix and a column vector of said holdings of said second portfolio.





Choueifaty: Patent Prosecution

- CIPO applied its Practice Notice to *Choueifaty*:
 - Using the "problem-solution" analysis in claim construction
 - Asking whether the "computer" is an **essential element**, by:
 - Determining whether the "problem" was a "computer problem"
 - Determining whether the "solution" was a "computer implementation" that improved computing
- CIPO defended its practice on the basis that it was not bound by claim construction of *Free World (SCC)* during patent prosecution



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Choueifaty: The Court

- Choueifaty v Canada (Attorney General), 2020 FC 837
 - FC held that the "problem-solution" approach was not consistent with binding law on claim construction in *Free World Trust* and *Whirlpool (SCC)*
 - FC rejected the idea that CIPO could apply a different standard during prosecution – CIPO's role "is to determine validity" like a judge
 - FC did not suggest a new test but remanded the decision to CIPO
- Outcome: Patent Allowed on remand 2021 CACP 3 (CD1556)
- CIPO amended Practice Notice on computer inventions



Choueifaty: Recap

- *Choueifaty* FC **resolved** some long-standing questions:
 - Can CIPO apply a different legal test during prosecution? (No)
 - Is the "problem-solution" approach correct? (**No**)
 - What is the correct approach to construction? (*Free World*)
- *Choueifaty* FC **left open** some key issues facing practitioners:
 - At what **stage** should the examiner consider subject matter?
 - What is the **test** for patentability of computer-implemented inventions?
 - Why does a computer element have to be "essential" (a question arguably left open in Amazon.com, 2011 FCA 328 at paras 64-73 which addressed "physicality")



Choueifaty: Postscript

- Did the court really reject the problem/solution approach?
 - [42] The Appellant submits that the Commissioner mischaracterised the purpose (or solution) of the claimed invention to be simply the creation of a new financial portfolio. However, he notes that another purpose of the invention was to improve computer processing. The Commissioner failed to address this adequately in her decision. Specifically, she found that the problem and solution of the claims centred on financial management (yielding a new financial product), but did not explain why she excluded computer processing as a solution. This aspect of the invention requires closer examination.



Choueifaty: Postscript

- CIPO's allowance of the '393 Application was based on a revised factual finding of a "computer solution"
- *Re Choueifaty* (PAB), 2021 CACP 3:
 - [34] Thus, when carrying out any of the claimed inventions of the second proposed claims, the computer operations performed include those designated in the description as the Choueifaty Synthetic Asset Transformation and Back-Transformation, permitting the optimization to be performed with significantly less processing and greater speed than if ratio R were maximized directly. Accordingly, **this can be considered an algorithm that improves the functioning of the computer used to run it**, such as described in *PN2020–04*: **the computer and the algorithm together form a single actual invention that has physicality** and solves a problem related to the manual or productive arts.
- CIPO continued to apply "problem-solution" in its revised PNs



Benjamin Moore v Canada

- Benjamin Moore v Canada (Attorney General), 2022 FC 923
 - Two 2008 patents for computer-implemented methods of selecting paint colours to match emotion based on a mathematical score
 - CIPO applied the pre-Chouiefaty "problem-solution" approach and rejected the claims on the basis that no computer problem was being solved, therefore the computer elements were not essential
 - Appeal of CIPO decision to the Court attracted IPIC's intervention
 - All parties agreed that CIPO's approach was incorrect [32]



Benjamin Moore: The Patent (1)

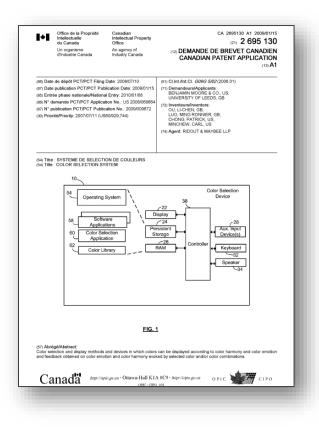
CA 2,695,130 (2008) "Color Selection System" – Claim 1:

1. A **computer implemented method** for selecting colors comprising:

associating, in dependence on a mathematical equation that models a human emotional response to color, a color emotion score with each of a plurality of colors that are numerically defined in a color library;

receiving a user input indicating a desired color emotion level; and

selecting, from the color library, colors for presentation to the user in dependence on the color emotion scores associated therewith and the desired color emotion level.





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Benjamin Moore: The Patent (2)

CA 2,695,146 (2008) "Color Selection System" – Claim 1:

1. A computer implemented color selection method, comprising:

selecting, using a controller, a group of known colors from a storage;

receiving user input from a **user input device**, through a visual user interface of a **color display screen**, identifying a user chosen color;

receiving user input from the user input device identifying a threshold for a first color emotion based on a first human psychophysical perception, wherein the **threshold comprises a numerical color emotion score** and wherein the first color emotion comprises at least one of exciting-calming, light-dark, clean-dirty, happy-sad, fun-serious, warm-cool, or inviting-uninviting color emotion;

selecting, using the controller, in dependence on a first mathematical model that models the first human psychophysical perception, which colors in said group of known colors would achieve the threshold for the first color emotion when combined with the user chosen color and with each other, wherein the first color emotion comprises a bipolar emotion scale having a plurality of levels between end points and wherein the first mathematical model is based on psychophysical responses of a plurality of test subjects to a plurality of test colors indicating a degree of color emotion on the bi-polar emotion scale for the plurality of test colors; and

providing an output for the user identifying the selected colors on the visual user interface by at least displaying on the color display screen a color sample of each of the selected colors, displayed concurrently on the color display screen.

am Date & Model PCTRET FEND Table 2003011 1	.*1	Office de la Propriété Intellectuelle du Canada Un organisme d'Industrie Canada	Canadian Intellectual Property Office An agency of Industry Canada	CA 2005146 AN 20000115 (21) 2 695 146 (12) DEMANDE DE BREVET CANADIEN CANADIAN PATENT APPLICATION (13) A1
59 Title: COLOR SELECTION SYSTEM	(87) Date (85) Entr (85) N° d (87) N° p	publication PCT/PCT Public ée phase nationale/Nation emande PCT/PCT Applica ublication PCT/PCT Public	alication Date: 2009/01/15 al Entry: 2010/01/08 tion No.: US 2008/089823 ation No.: 2009/009745	(71) Demandeu/Applicant: BENJAMN MOORE & CO., US (72) Inventeurs/Inventors: CAONO, PATRICK, US; MINCHEW, CARL, US; EVMNS, KATHLEEN, US
	(54) Title (57) Abré Color sel	COLOR SELECTION SY	STEM	can be displayed according to color harmony and obor emotion of by seecidel color and/or color combinations.



Benjamin Moore: Examination

- FC noted that CIPO incorrectly continued to apply a problemsolution approach despite its rejection in *Choueifaty*
- *Benjamin Moore*, 2022 FC 923 at para 12:
 - [12] Following *Choueifaty*, CIPO issued an updated Practice Notice entitled "Patentable Subject-Matter under the Patent Act". However, this Practice Notice still includes the problem-solution approach, stating on its page 2 of 5 that "An actual invention may consist of either a single element that provides a solution to a problem or of a combination of elements that cooperate together to provide a solution to a problem".



Benjamin Moore: Problem/Solution

CIPO-identified "problem"

 A need for a colour selection system that can assist consumers or other users in reaching confident and satisfying colour section (*sic*) choices. Further, the selection of appealing colour combinations from an abundance of choices can be challenging even with colour selection tools (146 Decision at para 32, 130 Decision at para 32).

CIPO-identified "solution"

- ['146 App.] The solution relates to the improved evaluation, by use of mathematical modelling of user emotions or colour harmony, of the compatibility of colour choices, based on parameters set by the user (146 Decision at para 45).
- ['130 App.] Calculating and associating a colour emotion score with each of a plurality of colours to aid a user in selecting a colour or colour combination (130 Decision at para 45).
- CIPO determined there was "no computer problem to be solved"



Benjamin Moore: The Court

- Parties agreed CIPO's approach was incorrect but disagreed on remedy
- FC remanded the decision and gave some guidance
- New "framework" proposed by IPIC for "assessment of the patentability of computer-implemented inventions" and adopted by the Court:
 - a) Purposively construe the claim;
 - b) Ask whether the construed claim as a whole consists of only a mere scientific principle or abstract theorem, or whether it comprises a practical application that employs a scientific principle or abstract theorem; and
 - c) If the construed claim comprises a practical application, assess the construed claim for the remaining patentability criteria: statutory categories and judicial exclusions, as well as novelty, obviousness, and utility.



Benjamin Moore: Recap

- *Benjamin Moore* answered some questions:
 - Is the "problem-solution" approach correct? (*No, again*)
 - What is the correct approach to construction? (*Free World, again*)
 - At what stage do you consider subject-matter? (After claim construction, but before other grounds of invalidity*)
- *Benjamin Moore* left some open questions:
 - What is the applicable **test** for statutory subject matter?
 - Has the "physicality requirement" changed for new inventions? (See para. 52)
 - What role, if any, does "**problem-solution**" play in other areas of validity?

