

# Chapter 17      Subject-Matter

## 17.01 Subject-matter - REVISED

One of the requirements for applications under the *Patent Act* is that the subject-matter defined by a claim must be patentable subject-matter, meaning (having regard to the definition of "invention" in section 2 of the *Patent Act*) that it be an art, process, machine, manufacture or composition of matter or an improvement in one of the foregoing and must, in accordance with subsection 27(8) of the *Patent Act*, not be a mere scientific principle or abstract theorem.<sup>1</sup>

Some clarification of the various terms used in the legislation is necessary as a precursor to the assessment of patentable subject-matter which will focus on the concept of actual invention and the extent to which the actual invention has a physical existence or manifests a discernible physical effect or change and relates to the manual or productive arts.

### 17.01.01      Art

The term "art", for the purposes of the *Patent Act*, pertains to the application of knowledge to effect a desired result.<sup>2</sup> An art must be the practical application of

knowledge,<sup>3</sup> and must therefore be defined in a manner that gives practical effect to the knowledge. An art, therefore, is typically claimed as either a use or a method.

A use claim typically sets out a manner or mode of employing something in order to accomplish a particular result without prescribing in detail how the result is to be achieved. For example, a use claim might take the form “Use of a heat source to boil water.” [See section [16.10.02](#) for further guidance on use claims.]

A “method” claim also sets out a mode or manner of accomplishing a certain result but includes one or more particular steps required to achieve the result. For example, a method claim might take the form of “A method of heating water comprising the steps of pouring two cups of water into a stainless steel container, placing the container on a heat source, and heating the water until the water temperature reaches 100 degrees Celsius.”

#### **17.01.02 Process**

A “process” implies the application of a method to a material or materials.<sup>4</sup> A process can be considered to be a mode or method of operation by which a result or effect is produced by physical or chemical action, by the operation or application of some element or power of nature; or of the application of one substance to another.

#### **17.01.03 Machine**

A “machine” is the mechanical and/or physical embodiment of any function or mode of operation designed to accomplish a particular effect, wherein the parts of the machine cooperate to accomplish the effect. A machine can be considered to be “any device that transmits a force or directs its application”, or “a device that enables energy from one source to be modified and transmitted as energy in a different form or for a different purpose”.<sup>5</sup> A machine may be claimed as a device, as an apparatus, or a system, for example.

#### **17.01.04 Manufacture**

A “manufacture” has been broadly defined as “a non-living mechanistic product or process” and as being the process of making (by hand, by machine, industrially, by mass production) technical articles or material (in modern use on a large scale) by the application of physical labour or mechanical power; or the article or material made by such a process.<sup>6</sup>

### **17.01.05      Composition of matter**

A “composition of matter” refers to physical and/or chemical substances, compounds and compositions, and includes combinations of ingredients, whether combined as a chemical union or physical mixture. The term “matter” implies that the ingredients must be perceptible in space and have mechanical mass. In *Harvard College v. Canada (Commissioner of Patents)*, the Supreme Court noted that the scope of this category must be limited in some way, else the categories of “machine” and “manufacture” would be made redundant.<sup>7</sup>

### **17.01.06      Statutory prohibition**

Subsection 27(8) of the *Patent Act* states:

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

This subsection has been interpreted by the courts as excluding from patentability (*inter alia*) mathematical formulae<sup>8</sup>. Natural phenomena and laws of nature are also considered to fall within the prohibition.

This statutory prohibition applies when an attempt is made to claim the excluded subject-matter in a general sense.

## **17.02   Examination of Subject-Matter - REVISED**

Once the subject-matter defined by a claim has been determined through purposive construction (see section 12.02 for more information on purposive construction), it is then necessary to determine whether that subject-matter complies with all of the requirements of the *Patent Act*.<sup>9</sup>

To be both patentable subject-matter and not be prohibited under subsection 27(8) of the *Patent Act*, the subject-matter defined by a claim must be limited to or narrower<sup>10</sup> than an actual invention<sup>11</sup> that either has physical existence or manifests a discernible physical effect or change<sup>12</sup> and that relates to the manual or productive arts, meaning those arts involving or concerned with applied and industrial sciences as distinguished for example from the fine arts or works of art that are inventive only in an artistic or aesthetic sense.<sup>13</sup> (see section 17.02.01 for more information on the manual or productive arts and what further arts would not be considered to fall within them)

For each claim, the identification of the actual invention must be grounded in a purposive construction of the claim<sup>14</sup> and cannot be determined solely on the basis of a

literal reading of the claim, or a determination, not anchored in the language of the claim, of the “substance of the invention” within the meaning of that phrase as used by the Supreme Court of Canada in paragraph 46 of *Free World Trust v Électro Santé Inc.*, 2000 SCC 66.<sup>15</sup>

An actual invention may generally consist of either a single element that provides a solution to a problem or of a combination<sup>16</sup> of elements that cooperate together to provide a solution to a problem (see chapter 22 on computer-implemented inventions for further clarification relating to inventions involving computers). Where an actual invention consists of a combination of elements cooperating together, all of the elements of the combination must be considered as a whole when considering whether there is patentable subject-matter and whether the prohibition under subsection 27(8) of the *Patent Act* is applicable.<sup>17</sup>

An actual invention that includes a disembodied idea, a scientific principle or an abstract theorem is not patentable unless the disembodied idea, scientific principle or abstract theorem is part of a combination of elements that cooperate together and that combination has physical existence or manifests a discernible physical effect or change and relates to the manual or productive arts.<sup>18</sup>

An element of a claimed invention that is identified as essential for establishing the fences of the monopoly under purposive construction is not necessarily part of the actual invention. For example, an element may be an essential element of a claim only because the applicant intended to limit the scope of the monopoly being claimed to less than what the applicant actually invented. An element may thus be an essential element of the claim because the applicant intended it to be essential even though it has no material effect on the working of the invention.<sup>19</sup> Such an element would not form part of the actual invention because the fact that it has no material effect on the working of the invention means it does not cooperate with other elements of the claimed invention.

### **17.02.01 Manual or productive arts**

For an actual invention to be patentable subject-matter it must belong to the manual or productive arts. The manual or productive arts means those arts involving or relating to industrial and applied sciences. These arts have also been called the useful arts.<sup>20</sup>

These arts do not include, for example, the fine arts or works of art that are inventive only in an artistic or aesthetic sense.<sup>21</sup> They also do not include professional skills, such as methods of treating the human body, of cross examination or advocacy, or of describing and laying out parcels of land in a plan of subdivision of a greater tract of land.<sup>22</sup> Similarly, they also do not include mental processes or subject-matter significant

only in an intellectual sense.

Claimed subject-matter involving, or relating to, a field outside the manual or productive arts may still be patentable subject matter if the actual invention itself provides a solution to a problem in the manual or productive arts (e.g. it is new functional tool or represents an application of the applied or industrial sciences).

## **17.02.02 Fields particularly affected by subject-matter**

While the requirements relating to subject-matter are applied to all applications, a clarification of how the requirement impacts certain fields is useful.

### **17.02.02a Fine arts**

A fine art or work of art that is inventive only in an artistic or aesthetic sense does not relate to the manual or productive arts. Fine arts are, therefore, not patentable subject-matter.<sup>23</sup> The term is understood to include activities such as exercising, dancing, acting, writing, teaching, hair dressing, cosmetology, flower arranging, painting pictures and playing musical instruments. Generally, any product derived from a fine art will also not be patentable subject-matter.

The exclusion from patentability of fine arts does not extend to inventive materials and instruments used in practising a fine art. For example, while an artistic method of painting a picture and the resultant picture are not patentable subject-matter, an inventive easel for holding a canvas could be patentable subject-matter. Similarly, the paints, paint-brushes etc., used in conjunction with the fine art—but not derived from the fine art as the picture is—may be considered to be patentable subject-matter.

### **17.02.02b Methods of medical treatment or surgery and medical uses**

A method or process of surgery or therapy on living humans or animals is not considered to be within the scope of the meaning of invention as set out in section 2 of the *Patent Act*.

By way of contrast, medical uses satisfying certain conditions can be patentable subject-matter.

A detailed consideration of medical and surgical methods as well as medical uses can be found in section [23.03](#).

### **17.02.02c Higher life forms**

The Supreme Court of Canada has determined that higher life forms are excluded from patentability by virtue of their not being either manufactures or compositions of matter within the definition of invention as set out in section 2 of the *Patent Act*.<sup>24</sup>

A detailed consideration of higher life forms can be found in section [23.02.01](#).

### **17.02.02d Computer-implemented inventions**

The mere fact that a computer is identified to be an essential element of a claimed invention for the purpose of determining the fences of the monopoly under purposive construction does not necessarily mean that the subject-matter defined by the claim is patentable subject-matter and outside of the prohibition under subsection 27(8) of the *Patent Act*.

A detailed consideration of computer-implemented inventions including whether they can be considered patentable subject-matter and outside of the prohibition under subsection 27(8) of the *Patent Act* can be found in chapter 22.

### **17.02.02e Forms of energy**

Forms of energy such as regions of the electromagnetic spectrum, electric currents and explosions are not considered to be subject-matter within the scope of the meaning of invention as set out in section 2 of the *Patent Act*.

Forms of energy are not considered to be manufactures or compositions of matter in the sense intended by the *Patent Act*. Electromagnetic and acoustic signals are also considered to be forms of energy and do not contain matter even though the signal may be transmitted through a physical medium. Thus, claims to electromagnetic and acoustic signals do not constitute patentable subject-matter within the meaning of section 2 of the *Patent Act*.

More particularly, an electromagnetic or acoustic signal is not considered to be an art (i.e. not a method or a use *per se*) nor a process (i.e. not a mode or method of operation by which a result or effect is produced by physical or chemical action; by the operation of application of some element of power of nature; or by the application of one substance to another). Neither is an electromagnetic or acoustic signal a machine, as it is not the mechanical embodiment of any function or mode of operation designed to accomplish a particular effect, nor is it a composition of matter, as it is not a chemical compound, composition or substance. An electromagnetic or acoustic signal is taken not to be itself a material product and is therefore, also not a manufacture.

## **17.02.02f Printed matter**

Printed matter that has purely intellectual, artistic or aesthetic significance, such as a literary work, is excluded from patentability for the reasons outlined in 17.02.02. However, where printed matter cooperates with the substrate on which it is printed to provide a new functionality, a claim to this subject-matter may be considered patentable subject-matter. For the printed matter and the substrate to be considered to cooperate together to form an actual invention, they must together solve a problem related to the use of the printed matter in general, and not be based solely on the intellectual, artistic or aesthetic content of the printed matter itself.

By way of example, each of the following has been found by the Commissioner of Patents as being patentable subject-matter: a textile material bearing markings to enable greater precision during a manufacturing procedure,<sup>25</sup> a newspaper layout in which white space is left to facilitate reading when the paper is folded, a layout of text on a series of pages to facilitate a bookbinding process, and a layout of text on a ticket which permits the ticket to be divided either horizontally or vertically while ensuring all information will appear on both halves.

In each of the foregoing the printed matter provided a new mechanical functionality in combination with the substrate such that the combination can be considered an actual invention; the actual content of the printed matter was not the basis of the invention.

The term “printed matter” should not be restricted to traditional ink-on-paper printing but may include any means of displaying information.

Example:

An application describes a new scratch-off lottery ticket wherein the scratchable areas are arranged in a maze-pattern, wherein the user must scratch one cell at a time to determine if they can move their way to the end of the maze.

Claim:

A scratch-off lottery ticket comprising a plurality of intersecting pathways that define a maze upon a paper substrate, said pathways divided into individual cells, each cell including an indicator of direction and each cell being covered by an opaque scratchable material, wherein if the indicators of direction define a path from a first cell of the maze to a final cell of the maze, the lottery ticket is a “winning ticket.”

Analysis:

Purposive construction

Person of ordinary skill in the art (POSITA)

The POSITA is considered to be a person who is skilled in the design of scratch-off lottery tickets; the POSITA is also knowledgeable in the field of marketing.

Common General Knowledge (CGK) of the POSITA

The POSITA would consider that substrates on which information is concealed under opaque scratchable material are CGK. The use of such substrates in the art of scratch-off lottery tickets having various game scenarios would also be considered to be CGK.

What are the essential elements?

There is no use of language indicating that any of the elements in this claim are optional, a preferred embodiment or one of a list of alternatives. Therefore, all the elements identified in this claim are considered to be essential.

Subject-matter

The claimed lottery ticket does not appear to provide any new or improved mechanical functionality to the combination of the printed matter, substrate and covering material. Consequently, the paper substrate and covering material cannot be considered to cooperate with the printed matter elements. The actual invention consists of those essential elements forming the printed matter. This actual invention is solely of intellectual, artistic or aesthetic significance. Therefore, the claim is directed to non-patentable subject-matter and is non-compliant with section 2 of the *Patent Act*.

### **17.02.02g Games**

A manner of playing a game or sport does not fall within the manual or productive arts, and a method for playing a game is therefore not patentable subject-matter. This is so whether the claimed method is distinguished on the basis of specific rules governing play or in terms of actions to be taken to achieve specific game-related results.

Tools made use of in the playing of a game may themselves be patentable subject-matter (e.g., a specifically designed table or playing piece or a game board with a particular mechanical function, or combination of such that is patentable subject-matter on its own merits).

Example

An application is directed to a new board game in which game pieces are moved by players around the spaces on a 3-dimensional board depending on the number resulting from a roll of a dice. The board has a mechanized arm with a claw at one end that rotates around the board; depending on the orientation of the claw and the position of the piece, the claw will either knock over the player's piece or pick it up and place it in a different area of the board.

Claim:

A board game comprising:

a 3-dimensional game board comprising a pattern of spaces;

the board comprising a mechanized arm that is rotated around the centre of the board by a motor, said arm comprising a claw that can be positioned in two orientations, either horizontal or vertical; and

a plurality of game pieces, wherein each piece comprises a means to interact with the claw when in the horizontal orientation thereby allowing said claw to pick up said piece.

Analysis:

Purposive Construction

Person of ordinary skill in the art (POSITA)

The POSITA is a designer and manufacturer of board games and is also knowledgeable in the field of mechanical engineering.

Common General Knowledge (CGK)

Board games in general are well known and the manufacture of 3-dimensional game pieces is CGK. Mechanical devices are also CGK.

What are the essential elements?

There is no use of language indicating that any of the elements in this claim are optional, a preferred embodiment or one of a list of alternatives. Therefore, all the elements identified in this claim are considered to be essential.

Subject-matter

It is apparent that the 3-dimensional game board, the mechanical arm and playing pieces cooperate together to provide a tool for playing a game. Therefore, the actual invention includes at least these essential elements which have a physical existence.

Despite occurring in the context of playing games, these elements represent the application of principles of engineering to the field of playing games which indicates that the actual invention relates to the manual or productive arts. The claim is directed to patentable subject-matter.

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1 [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 38.

2 [Shell Oil Co. of Canada v Canada \(Commissioner of Patents\)](#), [1982] 2 S.C.R. 536, at page 549

3 [Shell Oil Co. of Canada v Canada \(Commissioner of Patents\)](#), [1982] 2 S.C.R. 536, at page 549

4 *Commissioner of Patents v Ciba Ltd.* [(1959), 30 C.P.R. (1st), 135 (S.C.C.)] at page 141; *aff'g* [(1957), 27 C.P.R. (1st), 82 (Ex.Ct.)]

5 "machine noun" *The Oxford Dictionary of English (revised edition)*, Oxford University Press 2005; "machine" *The Concise Oxford Dictionary of Mathematics*, Oxford University Press 2005

6 [Harvard College v Canada \(Commissioner of Patents\)](#), [2002] S.C.C. 76; [(2002), 21 C.P.R. (4th), 417 (S.C.C.)] at paragraph 159. The court relied on the definitions of the term in the Oxford English Dictionary and the Grand Robert de la langue française

7 [Harvard College v Canada \(Commissioner of Patents\)](#) [2002] S.C.C. 76; [(2002), 21 C.P.R. (4th), 417 (S.C.C.)] at paragraphs 157-163

8 *Schlumberger Canada Ltd. v Commissioner of Patents* [(1981), 56 C.P.R. (2nd) 204 (F.C.A.)] at page 206

9 [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraphs 38 to 41.

10 The requirement that a claim be limited to or narrower than an actual invention means that the claim must place the fences around either the entirety of an actual invention or some part of an actual invention. If a claim places the fences around subject-matter that is not part of an actual invention, the claim does not comply with the requirements of subsection 27(4) of the *Patent Act*.

11 In [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 42, the court stated that the actual invention is a relevant and necessary question in evaluating

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patentable subject-matter.

12 [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraphs 66 to 69.

In paragraph 66, the court refers to "something that manifests a discernible effect or change". Given that this reference is made in the context of a discussion about the "physicality requirement", the Office understands this reference to be intended to refer to "something that manifests a discernible physical effect or change".

In paragraph 68, the court stated that "our understanding of the nature of the "physicality requirement" may change because of advances in knowledge". The test of whether the actual invention of a claim is something with physical existence, or something that manifests a discernible physical effect or change, must therefore be considered in light of today's technology. In the context of computer-related inventions for example, the electronic, magnetic or optical changes that take place during the operation of a computer are considered to satisfy the physicality requirement provided that the computer is part of the actual invention.

13 In addition to satisfying a "physicality requirement" the actual invention must relate to the manual or productive arts and not to a fine art. In [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 58, the court confirmed that the "well understood classes of patentable subject matter" do not include "the fine arts or works of art that are inventive only in an artistic or aesthetic sense". Thus, for example, an artistically inventive painting on a canvas or a musically innovative recording on a CD are not patentable subject-matter, even though the canvas and the CD are physical and their creation involves physical processes.

14 Different claims in a patent or patent application may place the fences around subject-matter of different actual inventions or may place the fences around different parts of the subject-matter of the same actual invention.

15 [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 43.

16 In [Canada \(Attorney General\) v Amazon.com, Inc, 2011 FCA 328](#), paragraph 63, the court highlighted the importance of considering whether a particular element of a claimed invention is itself the whole invention or whether it is "only one of a number of essential elements in a novel combination".

17 In identifying the actual invention covered by a claim, it is appropriate to consider the solution(s) evident to a person skilled in the art upon reading the specification. However, the actual invention will not necessarily be limited to the element or elements that constitute the inventive aspect of a particular solution. Instead, the identification of the actual invention must consider all the essential elements of the claim (as purposively construed) that cooperate

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together to achieve the solution. For claims having a single essential element, the analysis focuses on whether the element achieves the solution. For claims having multiple essential elements, the analysis must consider any combination of those elements that cooperate to achieve the solution.

18 In [Shell Oil Co. of Canada v Canada \(Commissioner of Patents\)](#), [1982] 2 S.C.R. 536, at 554, the Supreme Court stated: "A disembodied idea is not per se patentable. But it will be patentable if it has a method of practical application." Taking into account the decision of the Federal Court of Appeal in [Canada \(Attorney General\) v Amazon.com, Inc. 2011 FCA 328](#), including in particular paragraphs 58, 63 and 66, the Office considers that for a disembodied idea to have a method of practical application, the disembodied idea must be part of a combination of elements that cooperate together to provide a solution to a problem and that combination must have physical existence or manifest a discernible physical effect or change and must relate to the manual or productive arts.

19 [Free World Trust v Électro Santé Inc., 2000 SCC 66](#), paragraphs 55-59.

20 *De Forest Phonofilm of Canada Ltd v Famous Players Canadian Corp*, [1931] Ex CR 27; *Canadian Gypsum Co v Gypsum, Lime & Alabastine Canada Ltd*, [1931] Ex CR 180; *Re National Research Development Corp's Patent Application* (1959), [1961] RPC 135, 102 CLR 252, [1959] HCA 67 (HCA); *Shell Oil Co v Commissioner of Patents*, [1982] 2 SCR 53.

21 *Tennessee Eastman Co v Canada (Commissioner of Patents)* (1970), 62 CPR 117 (Ex Ct) at 50–52; *Imperial Chemical Industries Ltd v Canada (Commissioner of Patents)* (1986), 9 CPR (3d) 289 (FCA) at 291, 295–96.

22 *Lawson v Commissioner of Patents* [(1970), 62 C.P.R. (1st), 101 (Ex. Ct.)] at page 111; [AbbVie Biotechnology Ltd. v Canada \(Attorney General\) 2014 FC 1251](#) at paragraphs 56 and 114; [Aux Sable Liquid Products LP v JL Energy Transportation Inc. 2019 FC 581](#) at paragraphs 230-238

23 [Canada \(Attorney General\) v Amazon.com, Inc. 2011 FCA 328](#) at paragraph 58

24 [Harvard College v Canada \(Commissioner of Patents\) \[2002\] S.C.C. 76; \[\(2002\), 21 C.P.R. \(4th\), 417 \(S.C.C.\)\]](#) at paragraphs 159 to 163

25 *Re Application No. 996,098 of Boussac* (1973) [C.D. 143](#)