



UiTM LAW REVIEW

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WHO IS THE INVENTOR UNDER THE PATENTS ACT 1983? - THE CONCEPT OF INVENTION AND INVENTORSHIP

by DR LIM HENG GEE*

Introduction

In the context of patentability it may not be necessary or crucial to determine whether a particular subject matter is an invention, especially in view of the provision of a list of non-patentable inventions in the Patents Act 1983 (the Act)¹ However, a proper appreciation of the meaning of invention is important, as this will permit the determination of who the inventor of an invention is. Inventorship is also crucial in disputes between an inventor and someone who has allegedly stolen the inventive concept from him to gain a patent. Further, in the case of employee inventions which belong to the employer under the Act, an employee is entitled to equitable remuneration, over and above his normal salary for his contribution to the increased wealth of his employer.² The employee who is claiming to be so entitled would have to justify his claim by proving some recognised contribution to the invention.

Where more than one person is involved in creating the invention, the issue of whether all the participants can be regarded as inventors, and hence joint inventors, can be crucial, as each of the joint inventors has valuable rights provided for under the Act.³ Further, it may be a ground for invalidation of the patent that the right to the patent does not belong to the person to whom the patent was granted.⁴ The fact that one of several joint inventors has not been joined in the application for a patent may be a basis for invalidation of the patent on the ground that as a co-inventor, he is entitled to co-ownership of the patent. Hence these possibilities are also considered.

Since so many vital answers hinge upon a proper understanding of the above concepts, this article seeks to analyse the concepts of invention, inventorship and joint inventorship under the Act and identify the various criteria that can be relied

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1 See s 13 of the Act.

2 See s 20 of the Act.

3 Although inventions are still being made by individual inventors, the modern trend seems to be that more researches are being conducted by the research organisations of an industrial corporation, the industrial research association of a whole industry, specialised institutions and government research laboratories. This would mean that issues of joint inventorship would become increasingly more important. See J Jewkes, D Sawers and R Stillerman, *The Sources of Invention* (Macmillan London 2nd Ed 1969), chapters 5 and 6. In fact, even when ownership of the patent is not in issue, the question of inventorship could be, both for professional pride and recognition - see, for example, *Kakkar & Anor v Szelke & Ors* [1989] 1 FSR 225.

4 Section 56(2)(d) of the Act.

upon in the determination of these concepts. A major problem in carrying out this task is the lack of reported local cases pertaining to the areas under consideration. Therefore, analysis and evaluation of the statutory provisions are made on a comparative basis by reference to cases from other jurisdictions.

Right to Apply for, and Ownership of, Patent

Before dealing with the various concepts mentioned above, it would be useful to briefly discuss the statutory provisions regarding the question of who can apply for a patent. This will serve as a background to the discussion of the concepts of invention, inventorship and joint inventorship. The Act provides that any person may make an application for a patent, either alone or jointly with another.⁵ This follows exactly the provision of section 7(1) of the Patents Act, 1977 of the United Kingdom. By virtue of section 22, where the right to obtain a patent is owned jointly, the patent may only be applied for jointly by all the joint owners. However, unlike the United Kingdom Act which then goes on to state the person or persons to whom a patent for an invention may be granted,⁶ the next two following subsections of section 18 then follow the WIPO Model Law for Developing Countries on Inventions (the WIPO Model law) by providing that the right to a patent shall belong to the inventor, and that in the case of a patent having been made jointly, the right to the patent shall belong to them jointly.⁷ Section 20, relating to employee inventions, also follows the scheme for employee inventions found in the WIPO Model Law.⁸ However, unlike the WIPO model which provides in section 119(3) that the rights to the patent may be assigned and may be transferred by succession, section 19 is silent on this point. There seems to be a missing link here. Nowhere in the Act is there a provision allowing for the assignee of a person, who is entitled to a patent under section 19(2) or (3), to have the right to own the patent. So while such an assignee has the right to apply for a patent by virtue of section 18(1), he does not seem to have a right to own the patent, as neither section 18(2) or (3), nor section 20 apply in his case. Although section 39 of the Act allows for a patent application or patent to be assigned or transmitted, this section only applies to a situation where an application has already been made or a patent granted. However, it would seem from the tenor of the Act that

5 Section 18(1) of the Act. Unlike the situation in the United States, the applicant could be a natural or legal person. The applicant will normally be the owner of the right to the patent, either the inventor or an assignee of the rights of the inventor. However, the inventor must be named in the application. Where the applicant is not the inventor, a statement justifying the applicant's right to the patent must be submitted together with the application for a grant of a patent - see Schedule II, Patents Form 1. The same system is found in the United Kingdom, see s 7(1) of the 1977 Act. In contrast to this, under the statutory scheme in the United States, the general rule is that only the first and true inventor has the right to apply for a patent - see USC 35, s 111, and the exceptions in ss 116, 117 and 118. This means that the inventor or inventors have a personal obligation to participate in the patent application process, regardless of whether the patent right has been assigned. Failure to ensure that all the inventors involved in creating the invention apply for the patent could render the patent void.

6 In s 7(2) of the Patents Act 1977, United Kingdom.

7 In ss 18(2) and 18(3) of the Act respectively. See s 119(1) and (2) of the *WIPO Model Law For Developing Countries on Inventions, Vol 1, Patents* (World Intellectual Property Organisation Geneva 1979).

8 See s 120, WIPO Model Law.

a patent can be issued to a non-inventor, as long as he can trace his claim to a person entitled, either under section 18 or section 20.⁹

Somewhat confusingly, section 18(2) begins with the proviso that subject to section 19, the right to a patent shall belong to the inventor. Section 19 lays down an avenue for judicial assignment of a patent application or patent.¹⁰ By virtue of this section, where the essential elements of an invention claimed in a patent application or patent have been unlawfully derived from an invention for which the right to the patent belongs to another person, that other person has the right to apply to the court for an order that the said patent application or patent be assigned to him. The limitation period for such judicial assignment is after five years from the date of the grant of the patent.¹¹ It would have been more accurate to state, "Subject to section 20, the right to a patent shall belong to the inventor", because section 20, the provision regulating ownership of employees' inventions, is the exception to the general rule that the rights to a patent shall belong to the inventor.

The lack of clarity in the particular section results from the "cut and paste" approach of the framers of the Act, with provisions of various parts of the Act and even sections being derived from "bits and pieces" from various legislative models. For the sake of clarity and to prevent unnecessary speculation, an additional provision should be inserted in section 19, clearly stating that where the rights to a patent have been assigned or transferred by succession, the rights to the patent shall belong to the assignee or the successor in title, and that section 18(2) is to be read subject to section 20.¹²

Invention and Inventor

There is no definition in the Act as to who the inventor is. However, section 12(1) defines an invention as "an idea of an inventor which permits in practice the solution to a specific problem in the field of technology".¹³ It follows from this definition that

9 See Schedule II, Patent Form No 1, where, if the applicant is not the inventor, he has to justify his right to the patent.

10 The same arrangement is adopted in ss 64 and 65 of the Sri Lankan Act.

11 See proviso to s 19 of the Act. This section follows s 121 of the WIPO Model Law.

12 For the United Kingdom approach, see s 7(2) of the Patents Act 1977, UK.

13 This definition follows exactly the definition in s 112(1) of the WIPO Model Law. In contrast, in the Patents Act 1977 of the United Kingdom, there is no definition of "invention" as such, although a list is provided in s 1(2) of things which are not considered invention. Further, for the purposes of the 1977 Act, s 125(1) defines an invention as "that specified in a claim of the specification ... as interpreted by the description and any drawings contained in that specification ...". "Inventor" is defined in s 7(3) of the 1977 Act as "the actual deviser of the invention and "joint inventor" shall be construed accordingly". For interesting and illuminating discussions of the various meanings of the term "invention", see E Williamson, "The Linguistic Basis of Patent Law", (1943) 25 JPOS 852, and R Gardiner, "Language and the Law of Patents", 47 Current Legal Problems 255 (1994). See also EA Godula, "Judge Learned Hand and the Concept of Invention", 9 IDEA 159 (1965-66). In the United States, "invention" is statutorily defined in a circular fashion to mean "invention or discovery" - USC 35, s 100(a).

an inventor must be the person who devises such an idea.¹⁴ From the definition, three elements must be present before an invention can be said to have been made under the Act. The first is the mental act, the conception of the idea by the inventor, the second is that the conception must be sufficiently worked out to provide the solution to a particular problem, and lastly, the problem must be related to the field of technology.

There has not been much analysis in the United Kingdom regarding the required elements constituting an invention. However, the case of *Allen v Rawson*¹⁵ provides some guidance. That case involved the issue of whether two workmen who had suggested various improvements to a patented machine should be considered as joint inventors together with the employer. Chief Justice Tindal, in denying joint inventorship status to them, stressed the fact that the employer had already worked out the complete idea and principle of the object of the invention. In *Hickton's Patent Syndicate v Patents & Machine Improvements Co Ltd*,¹⁶ the Court of Appeal, in considering whether the plaintiffs' machine was a patentable invention, emphasised the fact that the invention was in the idea or conception, as distinguished from the thing manufactured. Lord Diplock, in the course of determining whether the invention claimed was patentable, referred to the "idea, when put into practice".¹⁷ In deciding on the issue of ownership in an invention in *Greater Glasgow Health Board's Application*, Justice Jacob referred to "the patent of an idea".¹⁸ From these cases, it can be seen that the approach is not any different from what is contained in the definition, ie, that an invention relates to the conception of an idea.¹⁹

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- 14 Before a person can claim to be an inventor, the idea, or conception, must originate from him, unlike under previous indigenous patent statutes, where the first importer could also be deemed an inventor. See, for example, s 2, Ordinance No 15 (Inventions), Straits Settlements, and s 2, Enactment No 19, Federated Malay States.
- 15 *Allen v Rawson* (1845) 135 ER 656, at 665-667, per Tindal CJ. Two workmen, Shaw and Milner, had variously made suggestions concerning improvements to certain structural parts of the patented invention invented by one William. Both of these features were described in the specification and mentioned in the claims. As a defence the defendant alleged that the patentee had no right to claim as part of his invention the structures which was alleged to be the invention of Shaw and Milner. The patent was, therefore, alleged to be void.
- 16 *Hickton's Patent Syndicate v Patents & Machine Improvements Co Ltd* (1909) 26 RPC 339, per Cozens-Hardy MR, at 346, and Fletcher Moulton J, at 347. Buckley LJ, at 348, said, "No doubt you cannot patent an idea, which you simply conceived, and have suggested no way of carrying out, but the invention consists in thinking of or conceiving something and suggesting a way of doing it". See also *Genentech Inc's Patent* [1989] RPC 147, per Purchas LJ, at 205-210.
- 17 *Johns-Manville Corporation's Patent* [1967] RPC 479 (CA), at 493.
- 18 *Greater Glasgow Health Board's Application* [1996] RPC 207, per Jacob J, at 219. Similarly, in *Amateur Athletic Association's Applications* [1989] RPC 717, the hearing officer, Mr Panchen, at 720, concluded that the referer was the actual inventor after holding that he was the one who had contributed the ideas for the various features of the invention. The hearing officer, Mr Vivian, in *Viziball Ltd's Application* [1988] RPC 213, at 217, regarded the word "invention" used in section 3 of the 1977 Act as that "which was conceived" by the applicant to be the invention at the time he filed his application whether that be a patentable invention or not". In *Merrell Dow Pharmaceuticals Inc & Anor v HN Norton & Co Ltd* [1996] RPC 76, at 86, Lord Hoffmann, in analysing the meaning of novelty under the 1977 Act, briefly alluded to the fact that "an invention is a piece of information".
- 19 There is a provision in the 1977 Patents Act relating to compensation for employee inventions which states, in s 43(3), that "references to the making of an invention by an employee are references to his making it alone or jointly with any other person, but do not include references to his merely contributing advice or other assistance in the making of an invention by another employee". This provision has so far not been subject to any judicial analysis. If the phrase "advice or other assistance" refers to gratuitous advice given by a person who is not part of a team assigned to a particular project from which an invention is devised, this may be a correct statement of the law. Similarly if it refers to assistance of a non-conceptual nature. However, as will be discussed later, it will drastically cut down on the right to be recognised as a joint inventor if the word "advice" is construed strictly.

In contrast to this dearth of judicial analysis of what constitutes an invention in the United Kingdom, the United States cases reveal a rich source of guidance. The courts there have consistently held that an invention consists of two operations, one, the conception of the idea, the mental operation, and the other, the reduction to practice, the physical operation.²⁰ However, it must be remembered that the United States patent system practises a “first to invent” system. In the determination of who, among competing applicant, is the first to invent, and hence entitled to priority of invention, the Patent Office, and the Court, are bound to apply the statutory criteria in section 102(g) of USC 35. Under this section, in determining priority of invention, “there shall be considered not only the respective date of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other”.²¹

It is submitted that this extended meaning of invention under the United States system, involving both a conception and a reduction to practice is not applicable in the Malaysian context. Unlike the United States system, the Malaysian system practises a first-to-file system. Hence there is no need for resolving conflicting claims for priority. Situations in which the question of inventorship arise are only in the context of ownership of the patent, claims to joint inventorship, and rights to compensation for employment inventions. The concept of reduction to practice is, therefore, not relevant in solving these issues, which are related only to inventorship and not to any issue of priority of an invention. This is borne out by the United States

20 See, for example, *Bourne v Jones* 98 USPQ 206 (DC SD Florida, 1951), per Whitehurst, District Judge, at 209, “Ordinarily, invention is construed to mean a mental operation involving the conception of an idea, and a physical operation involving reduction to practice of the mental concept ... Invention cannot be predicated on mere speculation or conjecture; it must be based on something ascertained, something definite and certain.”; *United States v Dubilier Condenser Corp* 289 US 178; 17 USPQ 154 (US Sup Ct 1933), per Justice Roberts for the Court, at 158, “... the peculiar nature of the act of invention, ... consists neither in finding out the laws of nature, nor in fruitful research as to the operation of natural laws, but in discovering how those laws may be utilised or applied for some beneficial purpose, by a process, a device or a machine. It is the result of an inventive act, the birth of an idea and its reduction to practice; the product of original thought; a conception demonstrated to be true by practical application or embodiment in tangible form”.; *Land v Dreyer* 69 USPQ 602 (CCPA 1946), per O’Connell, Judge, at 605, “The party claiming conception of an invention must show that it was complete and operative and such as would enable a person skilled in the art to reduce the conception into practice without any further research or exercise of the inventive skill. It is not sufficient, therefore, to show that a party claiming an invention has conceived a result to be obtained; the patentable thing is the means provided and disclosed by him to accomplish that result.”

21 Hence, under this system, a person who is second to file may still establish priority by showing the earliest date of invention. The general rule as to priority of invention is that priority goes to the inventor who first reduces an embodiment of the invention to practice. This rule is subject to two exceptions. The inventor who is the first to conceive the subject matter but the last to reduce to practice will prevail if he exercises reasonable diligence in reducing to practice from a time just prior to when the first person to reduce to practice conceives the subject matter. Further, the second to reduce to practice will prevail if the first abandons, suppresses, or conceals the invention.

cases where priority of invention was not an issue.²² All these cases emphatically stress that the threshold question in determining inventorship is who conceives the invention. A person cannot be regarded as an inventor unless he contributes towards its conception. As far as defining an inventor is concerned, reduction to practice *per se* is irrelevant.²³

However, an analysis of the decisional law of the United States with regard to the meaning of “conception” is useful to determine with more precision the meaning of “invention” and thus “inventor”. This will be useful later in helping to determine whether a person claiming to be such is entitled to be granted status as a joint inventor. Hence, only the first component under the US approach is relevant in the consideration of the meaning of an invention, ie, the mental element or the conception. To what degree must the conception be completed before it can be accorded the status of an invention under the Act?

1. The conception

Inventions involves discovery, but discovery as such does not amount to an invention. A mere discovery will not fall within the definition of invention under the Act.²⁴ So, for example, the discovery of the explanation of a process is not patentable since it will not amount to an invention in itself.²⁵ However, the idea of how natural laws may be utilised or applied for some beneficial purpose, by a process, a device or

22 See *Mergenthaler v Scudder* 11 App DC 264 (DCC 1897), at 276, where the Court of Appeals of the District of Columbia said that, “The conception of the invention consists in the complete performance of the mental part of the inventive act. All that remains to be accomplished in order to perfect the act or instrument belongs to the department of construction, not invention”; and *In re Hanlee* 223 USPQ 1122 (Comm of Pat and Trademarks, 1984) *per* Denny, Deputy Assistant Commissioner for Patents, at 1123, “The threshold question in determining inventorship is who conceived the invention. Unless a person contributes to the conception of the invention, he is not an inventor. ... Insofar as defining an inventor is concerned, reduction to practice *per se* is irrelevant. One must contribute to the conception to be an inventor”. See also *Amax Fly Ash Corp v United States* 182 USPQ 211 (US Ct Cls Trial Div 1974), *per* Judge Cooper, at 215, “Once conception has occurred, the inventor may use the services and assistance of others to perfect his invention without losing his right to a patent”.

23 Note that even though there is no requirement for reduction to practice, it will normally be the case that there would be prior experimentation to test the theory upon which the conception is based. This test could, however, be carried out by other persons under the direction and control of the inventor without detracting from his sole claim to inventorship. Further, as will be discussed later, the idea should be sufficiently worked out to enable a person skilled in the art to be able to practise it. However, it is not required that the best mode should have been conceptualised, nor a commercially viable model made available, since this will lie in the field of design. Although the Act provides that the specification must provide a means to carry out the invention into effect and that the best mode known to the applicant must be disclosed, it is submitted that this goes only to the question whether the specification is sufficient to satisfy the requirement of the Act regarding the description in the application, and not as to whether there is in existence a complete conception of the invention.

24 The Act has adopted the pragmatic approach by stating in s 13(1) that “notwithstanding the fact that they may be inventions, discoveries, scientific theories ... etc. shall not be patentable”. In contrast, the Patents Act, 1977, United Kingdom, in s 1(2) laid down a non-exclusive list of things which are not inventions for the purposes of the 1977 Act. These range from discovery, scientific theory or mathematical method to the presentation of information.

25 *Solvex Corp v Freeman et al* 199 USPQ 797 (WD Virginia, 1976), *per* Turk, Chief District Judge, at 804-805, “The discovery [is] of the fact that polycarbonate thread in the presence of perchlorethylene and with agitation is fractured into fragment and can be removed by either a washing or tumbling action. The explanation of a process is not patentable. Eg, *DeForest Radio Co v General Electric Co* 283 US 664, 684, 685; 9 USPQ 297, 303-304 (US Sup Ct 1931); *Templeton Patents, Ltd v Simplot Co* 142 USPQ 428, 429-430 (8th Cir 1964)”.

a machine will be patentable,²⁶ provided there is a practical embodiment. A mere general conception or idea is not enough to qualify as an invention.²⁷ The idea must be sufficiently worked out to enable the solution of a particular problem. The idea cannot be “a mere speculation or conjecture”, it has to be based on “something ascertained, something definite and certain”.²⁸ As was stated in *Agawam Woolen Co v Jordan*,²⁹ the leading case on this area in the United States, “He is the inventor and is entitled to the patent who first brought the machine to perfection and made it capable of useful operation”.

In the oft-quoted case of *Mergenthaler v Scudder*,³⁰ it was said that “The conception of the invention consists in the complete performance of the mental part of the inventive act. All that remains to be accomplished in order to perfect the act or instrument belongs to the department of construction, not invention. It is, therefore, the formation, in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice, that constitutes an available conception, within the meaning of the patent law”. In *Townsend v Smith*,³¹ the court, applying *Mergenthaler v Scudder*, stressed that conception within the meaning of patent law is the formation of “a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice”. The conception must be “sufficiently plain to enable those skilled in the art to understand it”.³² This has to be right, since if the conception has not reached such a stage, and inventive input still has to be made, it would mean that the conception has not reached the stage of an invention within the meaning of the Act. This emphasis on the possibility of the conception being put to practice by one skilled in the art was also emphasised in *Amax Fly Ash Corp v United States*,³³ where it was said that “conception has been achieved when the inventive idea is crystallised in all

26 *Per* Justice Roberts for the Court, at 158, in *United States v Dubilier Condenser Corp* 17 USPQ 154 (US Sup Ct 1933). See also *Genentech Inc's Patent* [1989] RPC 147, *per* Purchas LJ, at 208. “In my judgement there may be a critical distinction to be drawn between a claim to new knowledge or to a discovery ‘as such’ which is not patentable ... and a claim to a method embracing a discovery which may well be an invention which is patentable”.

27 *Amax Fly Ash Corp v United States* 182 USPQ 211 (US Ct Cls Trial Div 1974), *per* Judge Cooper, at 215. “The conception must be more than the realisation of a desirable result, *Garrett Corp v United States* ... , and more than a mere hope or expectation, *Alpert v Slatin* ... (citations omitted)”. See also *Hickton's Patent Syndicate v Patents & Machine Improvements Co Ltd* (1909) 26 RPC 339, *per* Buckley LJ, at 348, “... the invention consists in thinking of or conceiving something and suggesting a way of doing it”.

28 See *Bourne v Jones* 98 USPQ 206 (DC SD Florida, 1951), *per* Whitehurst, District Judge, at 209.

29 *Agawam Woolen Co v Jordan* (1868) 74 US (7 Wall) 583, at 602.

30 *Mergenthaler v Scudder* 11 App. DC 264 (Court of Appeals, District of Columbia) at 276.

31 *Townsend v Smith* 4 USPQ 269 (CCPA 1929), *per* Graham, Presiding Judge, at 271. “It is therefore the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice that constitutes an available conception within the meaning of the patent law. A priority of conception is established when the invention is made sufficiently plain to enable those skilled in the art to understand it”.

32 See *Land v Dreyer* 69 USPQ 602 (CCPA 1946), *per* O'Connell, Judge, at 605, “The party claiming conception of an invention must show that it was complete and operative and such as would enable a person skilled in the art to reduce the conception into practice without any further research or exercise of the inventive skill. It is not sufficient, therefore, to show that a party claiming an invention has conceived a result to be obtained; the patentable thing is the means provided and disclosed by him to accomplish that result. See *Townsend v Smith* 4 USPQ 269; *Rowe v Holtz* 12 USPQ 234, and authorities cited therein”.

33 *Amax Fly Ash Corp v United States* 182 USPQ 211 (US Ct Cls Trial Div 1974), *per* Judge Cooper, at 215; decision affirmed and opinion of Judge Cooper adopted, 185 USPQ 437 (US Ct Cls 1975).

of its essential attributes and becomes so clearly defined in the mind of the inventor as to be capable of being converted to reality and reduced to practice by the inventor or by one skilled in the art". However, it must be appreciated that a conception can reach a stage where it can be described as a "definite and permanent idea of the complete and operative invention" even though some mechanical details still need to be worked out, as long as it could be worked out without the exercise of inventive skill.³⁴

The phrase "which permits in practice" in the definition of "invention" in the Act leads to the conclusion that this level of conception has to be reached en route to the solution for it to be considered an "invention". The inventor may acquire the assistance of someone with mechanical skills to help him construct the machine and put it in concrete form. This assistance, however, will not make the engineer a co-inventor.³⁵ Therefore, the fact that he requires the assistance of some one else to help him refine it mechanically will not mean that his conception is incomplete.³⁶ The inventor does not have to be a mechanical genius - the conception is in the mental ability and not mechanical or commercial ability. A commercial decision does not constitute invention.³⁷

2. Solution of a specific problem

The solution must relate to a specific problem in the field of technology. The WIPO Commentary to section 112(1) explains that the word "solution" is to be understood in a broad sense. Therefore, the solution need not be a solution to the specific problem which is under investigation.³⁸ This approach should rightly be adopted. The invention need not be related to a pre-solution problem in the sense that there has to be a predetermined problem to be solved. A post solution problem, an "answer to an

34 *In re Tausel* 117 USPQ 188 (CCPA 1958), per Worley, Judge, at 189, "The *Mergenthaler v Scudder* ... decision has been repeatedly cited and approved by this court, ... but we do not construe it as holding that the final size and shape of every part and the location of every nut, screw, and bolt must be exactly foreseen before the conception of an apparatus can be said to be complete. It is sufficient if the inventor is able to make a disclosure which would enable a person of ordinary skill in the art to construct the apparatus without extensive research or experimentation".

35 See later, joint inventorship, below.

36 See *Alto Company v Fish Manufacturing Co* 116 USPQ 331 (DNJ 1957), aff'd per curiam 116 USPQ 306 (CA 3rd Cir 1958). Forman, Chief Judge said at 334, "It is not disputed that Harrison contributed important refinements to the slicing machine mechanism ... But it is exactly the type of refinement that a qualified engineer and designer, such as Harrison claimed to be, can reasonably be expected to make in contrast to the efforts of Schmidt, who was not an engineer by profession. The fact that Harrison's contribution made the machine commercially practicable, however, by no means establishes him as the inventor. ... It is clear that Harrison was called in when Schmidt's progress in developing a cluster-roll slicing machine had reached that plateau requiring a good mechanical engineer. It is also clear that he was not called in and asked, without prior experimentation by Schmidt, to produce a machine which would slice buns in clusters". See also *Magnus Harmonica Corp v Lapin Products, Inc* 98 USPQ 94 (SD NY 1953), per Conger, District Judge, at 99, "I do not think anyone will deny that an inventor may employ a mechanic to assist him in applying his conceptions without making him even a co-inventor".

37 See *Biogen Inc v Medeva plc* [1995] RPC 25, at 91; [1995] FSR 4, at 34 (CA), per Hobhouse LJ.

38 The Commentary gives the example of a solution to solve the problem of providing cooking utensil which can be taken from a refrigerator and placed in an oven, and vice versa, without damaging the utensil, as a spin-off from researches into the development of a material capable of withstanding the extreme temperature differences encountered by space vehicles - see WIPO Model Law - Commentary, at 57.

unasked question”, in the sense that there is no predetermined problem at hand when the inventor recognises that the solution is an answer to a particular problem which is not the subject of his research or investigation, will equally qualify as an invention. Likewise, in the case where identifying a problem is the inventive contribution, the solution, even though obvious once the problem has been identified, would fall within the definition of an invention.³⁹

So an accidental invention in the sense of a solution presenting itself through the recognition that it is the answer to a problem which was never in contemplation of the inventor at the time when the solution was found will still amount to an invention. A good illustration is to be found in *Townsend v Smith*,⁴⁰ where in the course of investigating some problem with his screw-cutting machine, the appellant discovered that the fault was the result of a wrong set of gears being used, resulting in the threading tool, on the moment of initiating each cut on the screw blank, not starting in the same spot that it formerly did, and making a new mark each time the tool passed over the screw. He immediately conceived the idea that this was the solution required for making double-threaded screws.⁴¹

3. In the field of technology⁴²

This last requirement merely emphasises the fact that the patent system is designed to protect inventions related to the technical field and not those relating to the aesthetics or which are of an abstract or intellectual character, as reflected in the list of excluded inventions in section 13.⁴³ This requirement has often been stressed in the jurisprudence of the European Patent Convention when the import of Article 52 is considered. The Technical Board of Appeal of the European Patent Office has stressed that the word “invention” requires that the subject matter or activity must have a technical character or gives rise to a technical effect or provides a technical

39 See text accompanying notes 85 and 86.

40 *Townsend v Smith* 4 USPQ 269 (CCPA 1929). It was held that there was a complete conception and reduction to practice of the invention at that time, and hence he was entitled to claim the invention. See Graham, Presiding Judge, at 271.

41 Another example of an accidental invention is seen in *PLG Research Ltd & Anor v Ardon International Ltd & Ors* [1993] FSR 197. See Aldous J, at 207-208, “According to Dr Mercer, Mr Hureau made his invention while cleaning a die used for the Netlon process [which produced diamond-shaped nets]. He stopped rotation of the outer die and lowered the inner die to clean it. The extruder continued to pump resin and therefore a horizontal ring was extruded through the opening between the dies. Upon raising the lower die a tube of vertical strands was extruded. He realised that the Netlon die head could be adapted to create an extruded tubular square net by reciprocating the inner die in the direction of the extrusion. The result is a square net with horizontal strands interrupted by horizontal strands”.

42 “Technology” - “the scientific study of the practical or industrial arts” - *The Shorter Oxford English Dictionary on Historical Principles* (Clarendon Press Oxford 3rd Ed 1987).

43 See note 24.

contribution to the art.⁴⁴ The same is also true in respect of the construction of section 1(2), the equivalent section of Article 52 EPC, of the United Kingdom Patents Act 1977.⁴⁵

Joint Inventors and Concept of Joint Inventorship

From the above analysis the important element in the determination of an invention is the complete conception. The requirement of the need for a complete conception is very relevant in the context of the determination of who, among the people involved in joint researches, are joint inventors. In theory, persons who have made the various small contributions towards the complete conception of the final solution, and not merely contributing mechanical skills, are eligible to be considered as joint inventors. The Act provides that “where two or more persons have jointly made an invention, the rights to a patent shall belong to them jointly”.⁴⁶ No further guidance is provided in the Act as to which persons amongst collaborator should be regarded as having made the invention. However, based on the earlier discussion of the meaning of invention and hence identification of the inventor, and with guidance from decided cases in the United States, it may be possible to construct a definition of joint invention and also some basic rules regarding the existence or non-existence of joint inventorship.

1. Determination of joint inventorship

Although there are several United Kingdom cases in which joint inventorship was an issue, in none of these cases was there an attempt to define in positive terms the

44 See, for example, *Vicom/computer related invention* T204/84 [1987] OJ EPO 14; *IBM/ Document abstracting and retrieving* T 22/85 [1990] OJ EPO 12; [1990] EPOR 98, Technical Board of Appeal, Reasons for the decision 2, “According to Article 52(2) certain subject matter or activities in particular shall not be regarded as inventions within the meaning of paragraph (1) of the Article. ... Whatever their differences, these exclusions have in common that they refer to activities which do not aim at any direct technical result but are rather of an abstract and intellectual character. 3. The requirement that an invention must have a technical character or in other words, must provide a technical contribution to the art is at the basis of a long-standing legal practice in at least the majority of the Contracting States of the EPO” ; *Esswein/ Automatic Programmer* T579/88 [1991] EPOR 120, Technical Board of Appeal, Reasons for the decision 3.1.1.; *IBM/ Card Reader* T854/90 [1993] OJ EPO 669, at 675; and *Sternheimer/ Harmonic Vibrations* T366/87 [1989] 3 EPOR 131, Technical Board of Appeal, Reasons for the decision para 2.1.

45 See, for example, Fox LJ, in *Merrill Lynch's Application* [1989] RPC 561, at 569, “Something further is necessary. The nature of that addition is, I think, to be found in the *Vicom* case where it is stated: ‘Decisive is what technical contribution the invention makes to the known art’. There must I think be some technical advance on the prior art in the form of a new result [Eg, a substantial increase in processing speed as in *Vicom*].” See also *Lux Traffic Controls Ltd v Pike Signals Ltd* [1993] RPC 107, per Aldous J, at 139, “At the heart of many inventions is a discovery which is an excluded matter. What can be patented is the incorporation of that discovery into technology. As Fox LJ, stated (in *Merrill Lynch's Application* [1989] RPC 561 at 569), something more than the excluded matter is required to enable an invention to be patented. That something extra is a technical contribution to the art”, and at page 144, “The invention provides a technical contribution to the known art in that it provides a controller with a one knob setting per set of lights so that it can be quickly and easily operated by unskilled persons. It is not an invention for a system of regulating traffic as such”.

46 Section 18(3) of the Act.

meaning of joint inventorship.⁴⁷ The exception is the case of *Russell's Patent*,⁴⁸ where the opinion was expressed that if the parties involved had contributed towards the invention, and had from time to time contributed suggestions, then the invention should be considered as having been made by both parties. Similarly, Whitford J in *Viziball Ltd's Application* approved the approach taken by the hearing officer that since the invention involved two essential elements, and since each of the two inventors had contributed one of the elements, the invention should be jointly owned by them.⁴⁹ In *Norris's Patent*,⁵⁰ the issue was whether the patent was rightly issued to the named sole inventor or whether the referrer was the sole inventor. The court held that the referrer should be considered as a joint inventor together with the patentee. In coming to this conclusion, the court held that the invention involved two distinct and interrelated aspects. It was not shown that the referrer was involved in conceiving the first aspect, the optical aspect. The second aspects, the electronic control aspect, involved two matters, the concept and the electronic arrangements for giving practical effect to that concept. On the evidence, the court held that the referrer had contributed to the design of the electronic system which formed a significant aspect of the invention disclosed in the patent. However, it is not clear from the opinion whether the designing of this electronic means involved more than the use of general mechanical skills, or whether the arrangement in itself was inventive. The applicant, Neely, in *Staeng Limited's Patents* sought an order naming him as sole inventor of two patents in which one Robertson was named as the inventor. Although the hearing officer held that Neely was the actual deviser, in the sense that he was the one who contributed the idea which led to the invention, he declined to accept that Neely was the sole inventor. This was because the evidence showed that Neely did not come up with the idea "unprompted", and that "Mr Robertson posed the question, and Mr Neely came up with a suggested solution". Therefore, both should be considered as joint inventors.⁵¹ It has to be noted that a factor of significance in the determination

47 *Allen v Rawson* 135 ER 656 (1845) was concerned with whether a person who had contributed in some way to the final form of the invention could be regarded as a joint inventor (see note 15 for the facts). There was no discussion in the opinions as to what would constitute joint inventorship. Only negative indications were given, ie, what would not amount to joint inventorship. However, from the opinion, it is possible to say that where a person made suggestions subordinate to the main conception, and these suggestions do not in any way affect the main principle of the invention, since there was already in existence a complete conception, then the person making the suggestion could not be regarded as a joint inventor.

48 *Russell's Patent* 44 ER 937 (1857). Two persons, Russell and Muntz, applied for patents for the same invention. Russell applied to have the great seal affixed to his letters patent. Muntz, Russell's servant, opposed on the ground that the invention was his, not his master's. The court ruled that the great seal should not be affixed to the letters patent of Russell except on the terms that they should be assigned to a trustee for Russell and Muntz, and Muntz agreeing to abandon his application for his own letters patent. See Lord Cranworth LC, at 938-939. "The result of them appeared to be that the petitioner and the respondent ... had both contributed towards the invention, or had independently arrived at the same result... Both of them were engaged in the manufacture to which the patent applied. Both felt the want of such an invention, both were aware of the general principles on which such an invention must proceed, and I have no doubt that from time to time one contributed one suggestion and the other another, so that in the end when, on the 27th of March last, the specification was finally drawn out, it was not in the power of either to state positively, and without doubt, to whom the merit of the invention was to be attributed. It was, in truth, to be ascribed, in some degree, to one, and in some degree, to the other".

49 *Viziball Ltd's Application* [1988] RPC 213, per Whitford J, at 220.

50 *Norris's Patent* [1988] RPC 159, an entitlement proceeding under s 8 (which was later treated as an application under section 37 when the patent was granted, see Falconer J, at 174-176).

51 *Staeng Limited's Patents* [1996] RPC 183, in the Patent Office, decision of Dr Ferdinando, at 188-190.

of the issue was that the onus of proof lay with Neely to establish his claim to sole inventorship.⁵²

Useful as the above cases may be, they do not provide detailed analyses of the concept of joint inventorship. Therefore, to get further guidance as to exact parameters of “one of the muddiest concepts in the muddy metaphysic of the patent law”,⁵³ guidance will have to be sought from the United States, where there is more relevant litigation.

In *Altoona Publix Theaters, Inc v American Tri-Ergon Corp*,⁵⁴ Judge Buffington held that “there is a joint invention when two or more persons jointly work or collaborate in devising and putting into practical form the subject matter of the patent in question”. Building on this definition Judge Yankwich⁵⁵ was of the opinion that in order for an invention to be truly called a joint invention, two or more inventors must have “collaborated in evolving the patented device”. They must have “worked together for a common end, which was, through mutual consultations and suggestions, finally accomplished by the contributions and united efforts of the collaborators”. Another pertinent description of joint inventorship can be found in the case of *Monsanto Co et al v Kamp et al*,⁵⁶ where Holtzoff, District Judge, said that a joint invention “is the product of collaboration of the inventive endeavours of two or more persons working towards the same end and producing an invention by their aggregate efforts”. He further held that to constitute a joint invention, it is necessary that “each of the inventors work on the same subject matter and make some contribution to the inventive thought and to the final result”.

The crux of all these descriptions, therefore, is that before there is the entire conception of the invention, there must have been a voluntary pooling of ideas and suggestions, and through these contributions and efforts, the final concept is formulated.⁵⁷ A case in point to illustrate the importance of the requirement for collaborative efforts between the parties before there could be a joint inventorship is *SW Farber, Inc v Texas Instruments, Inc*,⁵⁸ where the court held that the inventor of an existing element which went into making the patented combination was not a joint inventor. Similarly, a mere teacher of the prior art will also not qualify as a joint

52 Ibid. This point is important because normally the person who poses a problem to the inventor is not considered a joint inventor.

53 *Mueller Brass Co v Reading Industries* 176 USPQ 361 (ED Pa 1972), per Newcomer, District Judge, at 372.

54 *Altoona Publix Theaters, Inc v American Tri-Ergon Corp* 22 USPQ 8 (CCA 3rd Cir 1934), per Buffington, Circuit Judge, at 11.

55 *Pointer v Six Wheel Corporation* 83 USPQ 43 (CA 9th Cir 1949), per Yankwich, District Judge, at 47.

56 *Monsanto Co et al v Kamp et al* 154 USPQ 259 (D.D.C. 1967), per Holtzoff, District Judge, at 262.

57 *Pointer v Six Wheel Corporation* 83 USPQ 43 (CA 9th Cir 1949), per Yankwich, District Judge, at 47, “And the product of the joint endeavour is a joint invention when ... 'before the entire conception of the invention by one inventor, another meets him and by his consent unites with him in exercising inventive skill upon the development and perfecting of the conception.' ... Here, there is no voluntary pooling of ideas”.

58 *SW Farber, Inc v Texas Instruments, Inc* 135 USPQ 394 (DC Delaware 1962), per Steel, District Judge, at 398.

inventor.⁵⁹ The same applies where the invention involves an improvement of a prior device. The prior inventor will not be regarded as a joint inventor together with the inventor of the improvement invention.⁶⁰

From the above definition, it will be seen that the parties involved may not have started on the project at the same time. One may have started at an earlier time, and the other may have started before, at the same time, or after the first. They may initially not have been aware of the efforts of each other. However, if they got together before the final concept is formulated, and, pooling their ideas and resources, a solution is found to the problem they were researching into, there will be joint inventorship.⁶¹

The contribution made by a person claiming to be a joint inventor needs to be a conceptual contribution as opposed to mere mechanical contribution. This was stressed in *Pointer v Six Wheel Corporation*.⁶²

However, there may be a situation when two or more persons may not consciously have embarked on a scheme to invent something. For example, in the course of a casual conversation, some one may have brought out a particular problem, or the need to bring about a particular desired result. Assume that from this point there were mutual suggestions and contribution from each member of the group to find out a solution for the problem posed, and through such "brain storming" a solution is found.

59 See *O'Reilly v Morse* 56 US 62, at 109; 14 Law Ed 601, at 622 (US Sup Ct 1853), "Neither can the inquiries he made, or the information or advice he received, from men of science in the course of his researches, impair his right to the character of an inventor. No invention can possibly be made consisting of a combination of different elements of power, without a thorough knowledge of the properties of each of them, and the mode in which they operate on each other. And it can make no difference in this respect, whether he derives his information from books, or from conversation with men skilled in the science".

60 See, for eg, *Pointer v Six Wheel Corporation* 177 F.2d 153; 83 USPQ 43 (CA 9th Cir 1949), per Yankwich, District Judge, at 47, "Here, the only basis for the claim of joint invention lies in the fact that the Knox device was an addition to, and an improvement upon, the Stebbins structure. If that were enough to make the invention joint, every 'improvement' which is claimed solely by the improver could be invalidated upon showing that it was grafted upon a prior structure. And the great body of improvement patents, which represents, perhaps, the most important contribution to patents in the field of mechanics could be entirely destroyed. In truth, the improver could be compelled to take in the inventor of the prior structure, whether his invention was merely disclosed in a patent or actually reduced to practice, lest some one, in the future, seek to invalidate the improvement patent upon the ground that it was not his sole invention. This is not the law".

61 *McKinnon Chain Co v American Chain Co* 268 F 353 (CCA 3rd Cir 1920), Wooley, Circuit Judge, at 354-360, "[T]he controlling issue ... is whether the invention was the sole invention of Coulter, the sole patentee, or was the joint invention of Coulter and Hoff, the latter being superintendent of one of the defendant's mills. ... From this evidence we make certain findings of fact. One is, that Hoff was the first to conceive the principle of simultaneous and successive arm movement mechanism. Another is, that later Coulter became possessed of the same idea, either from Hoff or from himself. ... The machine then contained in combination Hoff's conception and what we have assumed was Coulter's conception, so combined and interrelated that the presence of each was indispensable to the functioning of the other, for without either the machine would not work. As both Hoff and Coulter had at one time, the crucial time, worked together for a common end, which was finally accomplished by the contributions and united efforts of both, we are of opinion, after applying familiar law to the facts, that the invention was the invention of both, and was, therefore, joint invention". See also *General Motors Corp v Toyota Motor Co* 667 F 2d 504; 212 USPQ 659 (CA 6th Cir 1981) - a prior conception that is modified as a result of collaborative effort may become conception of a joint invention.

62 *Pointer v Six Wheel Corporation* 83 USPQ 43 (CA 9th Cir 1949), per Yankwich, District Judge, at 47, "And the produce of the joint endeavour is a joint invention when, ... before the entire conception of the invention by one inventor, another meets him and by his consent unites with him in exercising inventive skill upon the development and perfecting of the conception".

Could members of this group be considered as joint inventors? Admittedly there do not seem to be any reported decisions with respect to the scenario described above. However, the case of *Polye v Uhl*,⁶³ concerning an appeal by the junior party Polye from a decision of the Board of Patent Interferences awarding priority of invention of the five counts in issue to the senior party Uhl, neatly illustrates the problem envisaged above.⁶⁴ Both the parties involved were working for non-related employers. Prior to the time when the invention in issue was made, Polye had been engaged in finding a solution to the problem of how to prevent the accumulation of hydrogen gas in the sealed electrolytic switch envelope. The gas built up a pressure sufficient to cause the sealed envelope to burst. Polye had been considering the use of several different types of hydrogen absorbers. In the course of a conversation with his neighbour, Uhl, in Uhl's house, the problem confronting Polye was casually brought up. Uhl suggested the use of an unsaturated organic compound, in particular, allyl alcohol. Following this, Polye conducted tests on switches using Allyl alcohol in the electrolyte which tests resulted in a complete and successful reduction to practice of the invention in issue in September 1958. On the issue of whose invention was reduced to practice, the Court of Customs and Patent Appeals reversed the finding of the lower court and awarded priority to Polye. Of interest for present purpose, however, is the comment of the court regarding the contribution of Uhl. The court held that the invention involved more than the mere general suggestion made by Uhl to Polye to use Allyl alcohol as a hydrogen getter, as the additional limitations in the counts related to features which were not disclosed by Uhl to Polye. These limitations resulted from the work done by Polye and under his supervision in building and testing the switches in issue. The most that could be said of Uhl's contribution was that "he had the intellectual notion that Allyl alcohol could be added to the switch electrolyte, and that it would probably act as a hydrogen getter". Then citing *Agawam Woolen Co v Jordan* and *Land v Dreyer*, the court held that there was no showing that Uhl invented or suggested the entire invention as embodied in the combination of elements claimed in the counts in issue. His suggestion to use Allyl alcohol in the electrolyte was not a conception of the entire invention of the counts but was the "mere existence of an intellectual notion that a certain thing could be done, and if done, might be of practical utility". At most, what Uhl did was to render partial aid to Polye. His idea was not "complete and operative and such as would enable a person skilled in the art to reduce the conception into practice without any further research or exercise of the inventive skill".

It is clear from the above discussion that the whole issue was centred on who should be regarded as the inventor of the patented device. The issue was on sole inventorship, whether it be Polye or Uhl. It is submitted that the decision would have been different if the case was argued on the basis of joint inventorship. Since it was accepted that

63 *Polye v Uhl* 140 USPQ 584 (CCPA 1964), per Judge Smith, at 586-588.

64 *Ibid.* At the time the invention in issue was made, Polye was in the employ of Bendix Aviation Corporation. The Polye application, filed 28 January 1960, was entitled "Electrolyte for a sealed liquid level current control device". Uhl, at the time of the filing of his application, on 12 February 1959, was a chemist employed by American Cyanamid Company. Uhl's application had since matured into US patent granted 8 March 1960, entitled "Level Switches".

Uhl had rendered partial aid towards the conception of the entire invention, he would have answered to the description of a joint inventor had the issue been argued on this basis. It is submitted that in principle, there is no reason why those who have contributed towards the realisation of the invention should not be deemed to be joint inventors. The collaboration need not have to result from a formal arrangement, but could result from an informal setting. However in this kind of situation there will be problems associated with ownership of the patent granted on the invention. It would be hard on the employer of someone in the same situation as Polye that he would have to share the ownership of the invention with Uhl, with whom he had no knowledge of, and of whom he may not even have known. There would also be the question of whether an employee has the authority to bind the employer to a legal relationship with a third party without the knowledge and consent of the employer. Hence the need to stress the element of mutual agreement to collaborate in the definition of joint inventorship. In the above situation, since there was no mutual agreement to collaborate, joint inventorship would not exist, despite the contribution of Uhl, his contribution being deemed to be gratuitously given. However, in principle, the mutual agreement need not be formally based.

The above definitions still do not help in the determination of joint inventorship in specific situations where the parties involved may have participated in a project which gives rise to an invention, but where their involvement may not be clear-cut. The case law, however, sheds considerable light on the difficult issues relating to the nature and extent of involvement in questions of joint inventorship.

2. Amount of conceptual contribution required

Joint inventorship is present when two or more persons collaborated together to conceive a solution to a problem. Each person in this inventive entity has contributed in some way to the final formulation of the conception of the invention. However, further analysis of the respective "contributions" needs to be carried out before one can conclude that the several contributors are joint inventors of a particular invention. The first question is the amount of contribution that should be put in by each one of them to qualify for joint inventor status. Should there be a certain threshold of contribution to qualify? Fortunately the courts have adopted a pragmatic approach for the resolution of this problem. In a refinement to the above description of joint inventorship, Judge Holtzoff in *Monsanto Co et al v Kamp et al*⁶⁵ clarified the role, amount and extent of contribution required from each of the co-inventors. He said that "each needs to perform but a part of the task if an invention emerges from all of the steps taken together. It is not necessary that the entire inventive concept should occur to each of the joint inventors, or that the two should physically work on the project together. One may take a step at one time, the other an approach at different times. One may do more of the experimental work while the other makes suggestions from time to time. The fact that each of the inventors plays a different role and that the contribution of one may not be as great as that of another, does not detract from the

65 *Monsanto Co et al v Kamp et al* 154 USPQ 259 (D.D.C. 1967), per Holtzoff, District Judge, at 262.

fact that the invention is joint, if each makes some original contribution, though partial, to the final solution of the problem". This, then is the answer to the popular misconception that for a joint invention to arise, the parties must work side by side, thinking out the same idea, and that there was no part of the invention which was not made by all of them.⁶⁶ The above case further clarifies that for joint inventorship to arise there is no requirement for unity of time or place or contribution.⁶⁷ The judge in *Consolidated Bunging Apparatus Co v Woerle*⁶⁸ admirably expressed it thus:

When two persons are jointly engaged in the work of invention, it must always be extremely difficult to determine how much of the successful result is due to each. The mere fact that two or more persons unite in an application for a patent as the product of their joint inventive effort, certainly creates a very strong presumption that the device is the result of their united ingenuity. It may be that the conception of the entire device is due to but one of them; but the other makes a suggestion of practical value in working out the idea, and making it operative. But that suggestion may be the very thing that the first failed to think of, and which was need to make the conception a success.

It must not be thought that the contribution of each person claiming joint inventorship must be something that is novel *per se*. This is not so, since the suggested incorporation of an old feature or element into the nascent invention may be the turning point which leads to achievement of the final conception. In a similar vein, it is not necessary that each of the contributions should of itself be inventive. It may be that a particular idea, even though not inventive, is the spark which leads to the solution sought after. It can then be said that, but-for that uninventive contribution, the final solution may not have been arrived at by the process of lateral thinking. What is important is that these ideas are essential progression to the completion of the final inventive concept.⁶⁹ This is particularly so where the contributions of individual

66 See PL Bowtell, "The True and First Inventor", *Transactions of the Chartered Institute of Patent Agents*, Vol LXXVI, Session 1957-58, at C75, where at B103, Mr AE O'dell, a participant during the discussion, mentioned that United States examiners seemed to approach joint inventorship on this basis. He, Mr O'dell, described this as nonsense.

67 See also *DeLaski & Thropp CWT Co v Wm R Thropp & Sons Co* 218 F458, at 464, (DNJ 1914), aff'd, 226 Fed 941 (CCA 3rd Cir 1915), "In order to constitute two persons joint inventors, it is not necessary that exactly the same idea should have occurred to each at the same time, and that they should work out together the embodiment of that idea in a perfected machine. The conception of the entire device may be due to one, but if the other makes suggestions of practical value, which assisted in working out the main idea and making it operative, or contributes an independent part of the entire invention, which is united with the parts produced by the other and creates the whole, he is a joint inventor, even though his contribution be of comparatively minor importance and merely an application of an old idea." The decision of the District Court in that case was affirmed by the Court of Appeals for the Third Circuit, in an opinion by Judge Woolley. He stated in *Wm. R. Thropp & Sons Co v De Laski & Thropp CWT Co* 226 F 941 (CCA 3rd Cir 1915), at 949, that, "In a machine containing as many elements as this one, it is not to be thought nor by the law required, that the inventive conceptions of two inventors shall develop simultaneously. One may conceive a general or imperfect outline of an entirely novel thing, which, without the conception of another developing it and giving it body, might never amount to invention; but if the conceptions of one supplement and complement the conception of the other, the result might be invention, and therefore joint invention".

68 *Consolidated Bunging Apparatus Co v Woerle* 29 Fed. 449 (CCND III 1887), quoted in JO Tresansky, "Inventorship Determination", (1974) 56 JPOS 551, at 567.

69 In the words of counsel in *Staeng Limited's Patents* [1996] RPC 183, at 189, one may have contributed "the spark that ignited the fire", however, both "were blowing on the fire". In such a situation, both should be considered as joint inventors.

members of a team, taken separately, have no inventiveness, but when combined together is clearly new and inventive and, therefore, patentable, a good example being in the case of a combination patent.

It would seem to follow from the above that when the invention is a "single idea" type invention, there can not be joint inventors involved in conceiving it.⁷⁰ Kirby argues that a claim which defines an invention of the "single idea type" must be a sole invention and that, therefore, there cannot be joint inventorship, citing *Quincey Mining Co v Krause et al* and the *Welsbach* case.⁷¹ However, as has been correctly pointed out, depending on the circumstances, even a "single idea" type of invention could be the result of joint inventorship.⁷²

3. Contributions not constituting joint inventorship

Doctrine of employee improvement

It is not all suggestions made by one person to another which will entitle the person making the suggestions to be considered as a joint inventor. A distinction has to be made between whether the suggestions are subordinate suggestions which merely

70 See the statement of the principle in *Welsbach Light Co v Cosmopolitan Incandescent Light Co* 104 F. 83 (CCA 7th Cir 1900), per Woods, Circuit Judge, at 86. "In his testimony one of them had said that the first thought of overcoming the difficulty about transporting mantles by dipping the mantle into a liquid was his; that he thought of it one night in bed; that the next day he tried it with paraffin; ... The patent contains two claims. The first, which is in suit, is for a single thought, the described improvement in strengthening incandescent mantles, consisting in coating the completed mantle with paraffin or other suitable material. That thought might well have come to one when in bed, and have been put to the practical test the next day, as testified. It is difficult to apprehend how two could have shared in the conception. The second claim, however, is distinctly different. It is for a method of forming incandescent mantles, consisting of a number of steps, the combining of which, to produce the desired result, may well have been the joint achievement of two or more minds". ; and *Quincey Mining Co v Krause* 151 F 1012 (CCA 6th Cir 1907), per Lurton, Circuit Judge, at 1017, "In describing their invention, the specifications include as one element of their device 'a descending conduit or passage, E, leading out through one side of the mortar.' .. It is next said that the evidence tends to show that this idea of placing the outlet inside of the mortar was the thought of but one of the patentees, and therefore could not be the subject of a joint patent. If a claim covered but a single idea, it would be difficult to conceive how it could be patented by two; but, when a claim covers a series of steps or a number of elements in a combination, the invention may well be joint, though some of the steps or some of the elements may have come as the thought of but one. Such is the invention here patented, and it would not be fatal to this patent if the fact is that Krause, Sr, gave birth to the best thought connected with a combination claim, which covers more than the place of the location of the discharge outlet. This distinction is drawn in *Welsbach Light Co v Cosmopolitan Incandescent Light Co* 104 Fed 83, 86".

71 See note 70 for citations.

72 P Kirby, "The Claim-by-Claim Approach", *Transactions of the Chartered Institute of Patent Agents*, Vol LXXXIII, Session 1964-65, C69, at C79. As was rightly pointed out by a participant, Mr CW Morle, at B144-145, "Mr Kirby gives as an example of the "single idea" the *Welsbach* case of dipping the mantle in paraffin. On the face of it that seems to be a single idea, but one man may have said, "If we dip it in something it may be all right," and another may have said, "Yes, and I think paraffin will do". We can state that it is a single idea only if we know the circumstances in which the invention took place. In reply, Kirby conceded, at p B153, that this was often more dependent on the circumstances that gave rise to the invention, rather than being something inherent in the inventive idea itself. Contra the illogic of allowing the mental act of one brain to be credited to more than one body mentioned in J Phillips and A Firth, *Introduction to Intellectual Property Law* (Butterworths, London 2nd Ed 1990) at 57.

provides an alternative method of carrying out the invention in practice, albeit more efficiently, and one which is critical to the actual working of the invention.⁷³

The UK case of *Allen v Rawson*,⁷⁴ was concerned with whether a person who had contributed in some way to the final form of the invention could be regarded as a joint inventor. At first instance Erle J observed to the jury that “if a person has discovered an improved principle, and employs engineers, or agents, or other persons, to assist him in carrying out that principle, and they, in the course of the experiments arising from that employment, make valuable discoveries accessory to the main principle, and tending to carry that out in a better manner, such improvements are the property of the inventor of the original improved principle, and may be embodied in his patent; and, if so embodied, the patent is not avoided by evidence that the agent or servant made the suggestion of that subordinate improvement of the primary and improved principle”.⁷⁵ On appeal, the Court decided unanimously in favour of the patentee. The substance of the judgement is that when the conception of the invention is complete without the improvements suggested, which merely enables the conception of the inventor to be more easily carried into effect, the inventor has the right to adopt them without having to join the persons suggesting the improvements as joint inventors.⁷⁶

73 See, for example, *Allen v Rawson* 135 ER 656 (1845). See also, *Smith's Patent* (1905) 22 RPC 57, per Buckley J, at 61, adopting the approach in *Allen v Rawson*, “Now beyond that, supposing that Smith did make ... in the course of the elaboration of this thing some trifling suggestions from time to time, as to what should be done by way of altering the model and working out the conception which Youlten had in mind, is he entitled to that? ... Even if Smith did take some small part in making some suggestions as to the way of carrying this out, those are not matters which entitle him to take out a patent in respect of them. It is quite clear from all the materials in the case that Youlten was the moving spirit, the dominant person. Youlten prepared the draft specification. ... He was the person who was conceiving the idea, and presenting the idea which was only worked out through the instrumentality of Smith”. : *Goddin and Rennie's Application* [1996] RPC 141 (Court of Session), per Lord Cullen, at 178-180.

74 *Allen v Rawson* 135 ER 656 (1845), at 659-663. For the facts, see note 15.

75 *Allen v Rawson* 26 LondJ 269 (1845), at 283.

76 *Allen v Rawson* 135 ER 656 (1845), per Tindal CJ, at 665-667, “The real question is, whether or not the improvements suggested by Shaw and Milner were of such a serious and important character as to preclude their adoption by Williams as parts of his invention. ... The patentee, in his specification, after describing the double or compound revolving apron, thus refers to that which is called Shaw's suggestion ... This is, obviously, a mere matter of convenience suggested to and adopted by the inventor. It would be difficult to define how far the suggestions of a workman employed in the construction of a machine are to be considered as distinct inventions by him, so as to avoid a patent incorporating them taken out by his employer. Each case must depend upon its own merits. But, when we see that the principle and object of the invention are complete without it, I think it is too much that a suggestion of a workman, employed in the course of the experiments, of something calculated more easily to carry into effect the conceptions of the inventor, should render the whole patent void”. The other judges agreed that the improvements of Shaw and Milner were subordinate to the main principle of William's invention and that Williams had the right to adopt and embody them in his own specification. See Maule J and Cresswell J, at 666.

This doctrine was reiterated in the US case of *Agawam Woolen Co v Jordan*,⁷⁷ where the Supreme Court, relying on *Allen v Rawson* held that an employee engaged in experiments to perfect another's concept does not become a co-inventor even if he suggests an improvement, unless the improvement is so significant as to amount to "a complete invention" in and of itself. The above two cases thus stand for the proposition that a person can not be regarded as a joint inventor merely because he makes a suggestion included in the subject of some sub-claims, but only if he is in part responsible for the main principle of the invention.

In *Duplex Envelope Co Inc v Denominational Envelope Co et al*,⁷⁸ the court declared a patent invalid because one of the inventors named in the granted patent was not considered a joint inventor, he having only contributed a very general suggestion that some sort of device should be used to prevent overrunning when the machine was running at high speed. There was no further suggestion as to how this could be carried out in practice. This seems to conflict with the principle discussed earlier that conceptual contribution is an indication of a joint inventorship, as long as the other elements are present. However, an analysis of the case shows that the court was making an overly broad general statement of the principle involved. The finding of facts adopted by the judge shows that the complete general inventive concept had already been achieved by the sole inventor before the suggestion was made. The finding of a sole invention would, therefore, conform with the principle in *Allen v Rawson* and *Agawam*.⁷⁹

Presenting problem to inventor

It may happen that one person tells another that he would like to have an invention to achieve some result, or that a certain line of inquiry should be undertaken. If the second person, based on that prompting, then finds the solution to obtain that result, the invention will be deemed to be made by a sole inventor, the second person, and not the result of joint inventorship between the first and second person. This was

77 The facts at issue in *Agawam Woolen Co v Jordan* (1868) 74 US (7 Wall.) 583, were not dissimilar from those in *Allen v Rawson*. Goulding, the original patentee, had devised apparatus which enabled a spinning jenny to receive filament in the form of continuous roving from a succession of carding machines. Previously the filament had been formed into short rolls which had been spliced using a machine called a billy. Goulding eliminated the billy and used rotating tubes to condense and draw off filaments from the carding machines. Winslow, an employee, was alleged to have introduced certain spools or bobbins for winding the roving instead of the cans from which the roving was formerly spun. Goulding accepted the arrangement as a useful auxiliary part of the invention once a traverser (not suggested by Winslow) had been added to enable the spool to be evenly wound with the roving. The Supreme Court agreed with a submission that although the arrangement purportedly suggested by Winslow was valuable and aided in the accomplishment of the desired result, it could not be regarded as such a material part of the invention described in the subsequent patent as to confer any right upon the party who made the suggestion to claim to be the inventor, or a joint inventor, of the improvement. See Mr Justice Clifford in 74 US 583, at 602-603, and 606.

78 *Duplex Envelope Co Inc v Denominational Envelope Co et al* 27 USPQ 325 (CCA 4th Cir 1935), per Soper, Circuit Judge, at 332.

79 *Ibid* at 329.

neatly illustrated in the case of *Marshall and Naylor's Patent*,⁸⁰ where a petition was issued to revoke a patent granted to the person who had asked another person to invent a device which could perform a certain result. The invention was conceived without any conceptual contribution from the person making the request. The patent was ordered to be revoked on the ground that the workman was the inventor. A similar situation was present in *Jackson's Patent*.⁸¹ The petition to revoke was refused on the evidence showing that the applicant, Brock, had merely communicated to Jackson, the named inventor, the possibility of producing something having certain desired features. How that effect was to be achieved was left entirely up to Jackson without any further ideas from Brock. The same approach is shown in the United States cases. In *The Garrett Corporation v United States*,⁸² the court held that one who merely suggests an idea of a result to be accomplished, rather than the means of accomplishing it, is not a joint inventor.⁸³

The above rule is subject to one exception, however. This is where to identify the problem requires an inventive step, or to put it in another way, the perception of a problem contributes to the required inventive step for the purposes of patentability. In this special situation, the means of answering the problem once posed are obvious to

80 *Marshall and Naylor's Patent* (1900) 17 RPC 553. Walsh presented a petition for revocation of a patent granted to Marshall and Naylor on the ground that he was the first and true inventor, and they had obtained the grant in fraud of his rights. Walsh was a workman in the employment of a company of which Marshall and Naylor were directors. Marshall had asked Walsh to invent a tap which would ... give hot, warm or cold water as required. Walsh worked up the invention, made the drawings and models, and perfected the tap in all details. Marshall paid him 10 pounds for overtime work on the models. See Farwell J, at 555, "I am clear in this case that all that happened as far as regards Mr Marshall was that he came ... with the idea that he would like to have some invention, not even specifying if it was to be a valve - some contrivance or invention - by which water should be heated by steam. The whole of the merit of the invention was due to that very intelligent individual I have seen in the box. I have not the least doubt it is his invention from the first to the last. The result is I must make the Order ... to revoke".

81 *Jackson's Patent* (1905) 22 RPC 384, per Farwell J, at 387. "Mr Brock ... said this: 'I asked only to have the crinkled paper made ... The method of producing the paper was his business, not mine. I made no suggestion as to that. I said if he succeeded in making the paper and uniting it with cloth it would be a very valuable combination'. This is the alleged communication of the invention. Then as to the interview of the 16th February, in cross-examination all that he suggested was that the adhesive should be put on the cloth and not on the paper. The result seems to me to be this - that the buyer of a large firm (Brock) goes with his father-in law, who is engaged in the paper-making trade, to see a paper maker, and they tell him what they want; and it is said that, because they tell him what they want, they have therefore communicated to him a valuable invention. The fact that there was nothing there that Mr Brock at the time thought he had invented is perfectly apparently from his own letter of the 18th May." See also *Ralston's Patent* (1909) 26 RPC 313, where the person who had presented a problem to another to solve was held not to be the inventor in the absence of any evidence that indicated that he had contributed in any other way to the conception of the solution.

82 *The Garrett Corporation v United States* 162 USPQ 569 (US Ct Cls 1969), per Davis, Commissioner, at 573.

83 See also *Solvex Corp v Freeman et al* 199 USPQ 797 (WD Virginia, 1976), per Turk, Chief District Judge, at 799.

a man skilled in the art.⁸⁴ This was, in fact, the line adopted by defence counsel in *Elias v Grovesend Tinplate Co.*⁸⁵ The defence failed merely because the court held that if that was the case, then the invention would not be patentable for obviousness. However, the perception of a problem can only contribute to inventive step for the purposes of patentability if the problem is of a technical nature.⁸⁶

Merely following the instruction of someone else

Similarly, a person who merely follows the instruction of another in performing experiments and collating the results, without more, cannot be regarded as a joint inventor. Since invention lies in the conception of an idea, persons involved in such mechanical tasks obviously cannot be said to be involved in the act of inventing. In *Standard Motor Co's Patent*,⁸⁷ the claim by the petitioner for revocation, Hirst, that he was in fact the first and true inventor was rejected on a finding that Hirst had merely been following the instructions given to him in designing the mechanism. Other cases where the inventor was held to be the man contributing the idea, rather than the man who put it into practice, are *Smith's Patent* and *Sirdar Rubber Co v*

84 *Boeing/Spoiler Device* T225/84, [1986] 5 EPOR 263, Technical Board of Appeal - Reasons for the decisions 8.2., "As a consequence, none of the cited documents gives any indication of a way in which the problem would be solved and, more importantly, the perception of the problem has to be considered as being the main contribution of the inventive merits of the solution claimed". 8.4., "As soon as the solution has been exposed, it falls within the normal considerations of the man skilled in the art to arrange and set the logic control means in order to obtain that a predetermined roll command signal produces a predetermined roll response and the detail of the means for obtaining this result do not need to be introduced in the main claim". See also *Tinely Products Corp et al v Arron, et al* 187 USPQ 257 (CA 2nd Cir 1975), per Conner, District Judge, at 261, "This is one of the not infrequent cases where the inventor's real contribution lies in visualising a desirable result, which once perceived, is easily realised. There may be cases where the perception of a desirable and easily achievable goal raises the overall level of ingenuity required above the statutory minimum, but this is clearly not one of them".; and *Plantronics, Inc v Roanwell Corp* 187 USPQ 489 (SD NY 1975) per Conner, District Judge, at 502, "Of course, it does not negate patentable invention merely to establish that a desirable goal, once perceived, could have been reached by the exercise of routine skill. Patentable ingenuity may be involved in the perception of the goal".

85 *Elias v Grovesend Tinplate Co* (1890) 7 RPC 455, Master of the Roll, Court of Appeal, at 465, "Mr Terrell said ingeniously, ... 'Yes, but then directly Elias has told him his idea, after it has come into his head, it follows, as a matter of course, the machine must be what it is.' But that is fatal to his first point. He is out of one pot into another, so to speak. That is fatal to him, because that shows then that there was not invention - that his idea was a mere adapting of the machine to the new idea. The argument against the second point is fatal to the first. Therefore he is in that unfortunate dilemma".

86 See *Esswein/Automatic Programmer* T 579/88, [1991] EPOR 120, Technical Board of Appeal - Reasons for the decision 3.1.1., "Solving a problem of an abstract, commercial or recreational nature has no immediate influence on the progress of technology and it is significant that the invention mentioned in Article 52(2) EPC constitute the solution to such problems, whose formulation may nonetheless require the exercise of an inventive step. It is therefore clear from these provisions that the European legislator intended that the problem to be solved be of a technical nature".

87 *Standard Motor Co's Patent* (1957) RPC 326, per Wynn-Pary J, at 330, "I find as a fact that between them [Grinham and Turner] they were the inventors, and that the petitioner had in his own mind exaggerated the work which he did in the matter, so that he has become quite immovably persuaded that he was the author of the invention. I am satisfied that there is no evidence on which I could act to find that he was the author of any subsidiary part of the combination such as the use of a gear box with a top cover. In my view, he acted from first to last in carrying out instructions given to him". See also *Norwood's Patent* (1895) 12 RPC 214, per Stirling J, at 226-227, on a similar point.

*Wallington, Weston & Co.*⁸⁸ A similar approach on this issue can be seen in the United States.⁸⁹ The same applies in the case of a person who is involved in overseeing the research directed to be conducted by another.⁹⁰

Persons involved in the mechanical implementation of the final conception

Similarly, being asked to further refine and construct a mechanical device to implement the conception will not qualify that person to be a joint inventor. The patent system is designed to protect invention and encourage inventors, not to give exclusive rights to a person with mere mechanical or design skills. In *Alto Company v Fish Manufacturing Co.*,⁹¹ the defendants alleged in defence that the patent was invalid because Schmidt, the patentee named in the patent, did not invent its subject matter, the real inventor being one Harrison. In finding for the plaintiff, Judge Forman determined that the issue was whether Harrison was paid to invent a machine to solve a particular problem, or to further refine and adjust a cluster-roll slicing machine already at a certain stage of development. Though it was not disputed that Harrison contributed important refinements to the slicing machine mechanism, such refinements were of the type that a qualified engineer and designer, such as Harrison claimed to be, could reasonably be expected to carry out. The fact that Harrison's contribution made the machine commercially practicable, however, by no means established him as the inventor. Quoting the principle enunciated in *Agawam Company v Jordan*,⁹² he held that it was clear that Harrison was called in when Schmidt's progress in developing a cluster-roll slicing machine had reached that plateau

88 *Smith's Patent* (1905) 22 RPC 57, and *Sirdar Rubber Co v Wallington, Weston & Co* (1905) 22 RPC 257. *Kurtz v Spence* (1888) 5 RPC 161, however, seems to be an anomaly. After holding that one Esilmann, a chemist, in the employ of Messrs. Spence, had contributed ideas leading to the discovery, the court relied on agency principle to hold that the two inventors named, Peter and Francis Spence, were correctly designated as inventors - see Kekewich J, at 181, "I have no doubt that many stages in the discovery were due to Mr Esilmann alone. To adopt the language of another science, he may be styled the *inventor inventiens* and likewise the *inventor sine qua non*. For all purposes, except that of being the first and true inventor, he was the agent of his employers. His labours were theirs, he worked in their laboratory and with their materials, as well as with their assistance, and the benefits of his discovery morally and legally, belonged to them.

Am I bound to hold that the agency stopped short of making his employers really the first and true inventors of this process which he in conjunction with them and for their benefit discovered? I know of no authority compelling me to do this, and, in the absence of authority, principle is in favour of a different conclusion. Messrs Peter Spence and Francis Spence declared in the usual way that they were the first and true inventors. I have no doubt that they did so honestly, and in my judgement they were right".

This is an odd decision and cannot be correct in principle. No other authorities could be found whereby the agency principle can be used to credit the employer with the mental conception of his employee.

89 See, on this point, *Mueller Brass Co v Reading Industries* 176 USPQ 361 (ED Pa 1972), per Newcomer, District Judge, at 372. "On the one hand, it is reasonably clear that a person who has merely followed instructions of another in performing experiments is not a co-inventor of the object to which those experiments are directed..."

90 *Solvex Corp v Freeman et al* 199 USPQ 797 (WD Virginia, 1976), per Turk, Chief District Judge, at 799. "King engaged Spindletop to work on the project, and Peter Werth, a research scientist, was assigned the project ... His work [Werth's] consisted of producing threads of different flexibility and tensile strength and having these tested. ... King testified that he instructed personnel at Spindletop to test the threads produced by Werth and he then reported to Werth on the results. ... Unquestionably the present record is readily susceptible of the conclusion that King's contribution to the Werth/King patent was the conception of a general idea and oversight of Werth's progress. It is clear that such a contribution may be insufficient to constitute inventorship. (citations omitted)".

91 *Alto Company v Fish Manufacturing Co* 116 USPQ 331 (DNJ 1957), aff'd per curiam 116 USPQ 306 (CA 3rd Cir 1958), per Forman, Chief Judge, at 334.

92 *Agawam Company v Jordan* 74 US 583 (US Sup Ct 1868), at 602.

requiring a good mechanical engineer. It was also clear that he was not called in and asked, without prior experimentation by Schmidt, to produce a machine which would slice buns in clusters. Therefore, Schmidt was rightly named as the sole inventor. In *Magnus Harmonica Corp. v Lapin Products, Inc*, the court expressly held that an inventor may employ a mechanic to assist him in applying his conceptions without making him a co-inventor.⁹³

A Proposed Definition

From a synthesis of the above three definitions and the discussion thereto, it may be possible to formulate a tighter definition of joint inventorship as:

An invention shall be deemed to be jointly invented when two or more persons collaborated, either expressly or impliedly, to devise the patented invention, and through their mutual consultation and suggestions, contribute towards the complete inventive concept. An invention shall still be deemed to be a joint invention even though (1) the persons involved do not physically work together or at the same time, (2) each does not make the same type or amount of contribution, or (3) each does not make an equal contribution to the subject matter of every claim of the patent.⁹⁴

Effect of Misjoinder and Non-joinder

Because the statutory scheme in the United States patent system requires that a patent should only be applied for by the inventor, the fact that a non-inventor has been joined

93 *Magnus Harmonica Corp v Lapin Products, Inc* 98 USPQ 94 (SD NY 1953), per Conger, District Judge, at 99, "Much of the defendant's argument under this phase has little merit. For example, that Magnus is not the inventor of the mould but rather Hugg, the mechanic he employed, is. ... I do not think anyone will deny that an inventor may employ a mechanic to assist him in applying his conceptions without making him even a co-inventor".

94 The above definition would have the advantage of consistency with the Malaysian and UK statutory definition of work of joint authorship of copyright works. See, for example, s 10(1), CDPA 1988, UK, where a "work of joint authorship" is defined as "as a work produced by the collaboration of two or more authors in which the contribution of each author is not distinct from the contribution of the other author or authors". Under s 3, Copyright Act 1987, Act 332, Malaysia, "work of joint authorship" means "a work produced by the collaboration of two or more authors in which the contribution of each author is not separable from the contribution of the other author or authors". Note: The definition of joint authorship given in the Copyright Act 1956, UK, s 11(2), is the same except that "separate" is used instead of "distinct". *Copinger and Skone James on Copyright* (Sweet & Maxwell London 13th Ed 1991) 153, n 1, observe that the word "distinct" was in fact used in the equivalent provision of the 1911 Act - s 16(3), and that the dictionary definition of "distinct" is "separate". The concept of joint authorship in copyright law is best enunciated in *Najma Hepulla v Orient Longman Ltd & Ors* [1989] FSR 598 (H Ct Delhi), per Mr Justice Kirpal, at 605-610. At 608, the Judge said, "It would follow from the aforesaid that if two persons collaborate with each other and, with a common design, produce a literary work then they should be regarded as joint authors", and at 609, "To me it appears that if there is intellectual contribution by two or more persons, pursuant to a pre-concerted joint design, to the composition of a literary work then those persons have to be regarded as joint authors". See also, *Stuart v Barrett & Ors* [1994] EMLR 448, per Thomas Morison, QC, sitting as Deputy H Ct Judge, at 462-463. See generally, *Copinger and Skone James on Copyright* (Sweet & Maxwell London 13th Ed 1991) at para 7.2; H Laddie, P Prescott, M Vitoria, *The Modern Law of Copyright and Designs* (Butterworths London 2nd Ed 1995) at para 11.22; Khaw Lake Tee, *Copyright Law of Malaysia* (Butterworths, Malaysia, 1994) at para 5.1.1.

in the application (a misjoinder) will result in any patent granted being declared void. Similarly, where one or more of several inventors have not been joined in the application (a non-joinder) the same avoidance of the issued patent will result. To alleviate the harshness of this rule, there are statutory provisions for corrections of errors leading to either a misjoinder or non-joinder.⁹⁵

In Malaysia, misjoinder will not be a ground for invalidation of the patent. This is because by virtue of section 18(1) any person may make an application for a patent, either alone or jointly with another. There is no requirement that an inventor or all inventors must join in the application. Therefore, as long as the patent, or the right to apply for a patent, is owned by the rightful owner, the fact of misjoinder will be irrelevant.

In the case of non-joinder, the Act merely provides in section 22 that where the right to obtain a patent is owned jointly, the patent may only be applied for jointly. Section 18(3) provides that where two or more persons have jointly made an invention, the right to a patent shall belong to them jointly. Breach of section 22 is not expressly made a ground for invalidation. If all the joint inventors have assigned the right to apply for a patent or a granted patent to a third party, or in an employment situation when the invention of the employees is deemed to belong to the employer, the fact of non-joinder in the initial application would not seem to be a ground for invalidation.⁹⁶ This means that under the Malaysian scheme, a defendant is not able to rely on a purely technical defence of non-joinder *per se*.⁹⁷

However, it is submitted that non-joinder will be fatal to validity of the patent where it results in an inventor being deprived of the ownership (in this case, co-ownership) of the patent. Section 56(2)(d), which provides that the patent may be invalidated on

95 See 35 USC s 116 (correction of error in naming inventor in patent application) and section 256 (correction of error in naming inventor in granted patent). For the problems associated with the correction of errors for misjoinder or non-joinder, see DA Roth, and JE Luecke, "The Misjoinder and Non-joinder Pitfalls," (1967) 49 JPOS 219.

96 See s 56(2)(d) and the proviso to s 56(2A) of the Ac. Note that unlike in the US, where the fact that the patent has been granted to a person who is not the inventor is a ground for a patent being declared void, it is different in the Malaysian context, where the ground is that the right to the patent does not belong to the person to whom the patent was granted.

97 For the problems arising should this technical defence be allowed, see PL Bowtell, "The True and First Inventor", *Transactions of the Chartered Institute of Patent Agents*, Vol LXXXVI, Session 1957-58, at C75, where he discusses the problems of identifying the proper inventors in the light of present day collaborative research. He is of the opinion that in some cases the invention could not be attributed to named individuals. In view of this it would be unrealistic and unfair to place upon the employer, who was beneficially entitled to the patent rights, the burden of nominating individual employee inventors, especially as there may be a risk of invalidity in the event of an inaccuracy or mistake. He suggests that it would be fairer to adopt the concept of a "corporate inventor" with reference to inventions arising out of the general developmental activities of a company rather than the personal initiative and work of one or more individuals. However, it has to be noted that his suggestion was made with reference to the situation under the 1949 Patents Act of the United Kingdom where it was a ground for revocation that a patent was obtained on a false suggestion or representation (s 32(j)). Such a ground is no more available under the Patents Act, 1977. In *Carter's Application* (1932) 49 RPC 403, it was held that an application to which the true and first inventor was not a party was void, and that the irregularity could not be cured by amendment, since an application in which the true and first inventor was not made a party was not an application within the statute - see the decision of the Assistant-Comptroller at p 404. However, this was a decision under the Patents and Designs Act, 1907. Under s 1(1) of this statute, an application could only be made by a person claiming to be the true and first inventor, either alone or jointly with another person.

the ground that the right to the patent does not belong to the person to whom the patent was granted, may be applicable in this situation. If the patent has not been granted to all the rightful owners, then it does not belong wholly to those who were granted it. It would appear from the provision that any aggrieved person is entitled to have a patent invalidated on this ground, not merely the person deprived of the initial ownership.⁹⁸ If the patent, although not initially granted to the rightful persons, is then subsequently reassigned to all the rightful owners, this ground for invalidation would then be removed.⁹⁹ This ground of invalidation, may, however, cause injustice because of the difficulty of determining the proper inventors where joint inventorship is involved. It is submitted that a fairer solution would be to allow such a ground, where joint inventorship is involved, to be used only by a non-joined inventor, and only in an entitlement proceedings under section 19.

If there is a non-joinder leading to an inventor being deprived of his right as a joint owner, the deprived inventor should have the possibility of applying to the Registrar or Court for an order to assign the patent to all the persons previously granted the patent, together with the name of the inventor omitted. There is no specific provision in the Act to cover this eventuality. Section 19, mentioned earlier, does not seem to apply directly, being concerned with unlawful derivation of the essential element of the invention from the rightful owner. It is difficult to see how a non-joined inventor who has a claim for joint ownership of a patent can fit his claim under this section, since he may have collaborated in the conception of the invention but may not be able to identify a particular specific element which was contributed by him. A way out of this difficulty would be to add to the power of the court under section 19 to enable it to deal with the question of entitlement to a patent application or patent in the case of joint inventorship and to give it the necessary power to give effect to the determination.¹⁰⁰

A further addition to the Act may also be desirable to enable an inventor who has not been named as such in the application to apply to the court for a declaration that he is the inventor or one of the inventors. This will be particularly relevant in an employee invention which belongs to the employer. In this situation, the omitted employee will not be disputing ownership of the patent, he is interested in the statutory compensation available to him as an inventor. Under the Act as presently constituted, such an avenue is not available. It is proposed that a section similar to section 13 of the 1977 Patents Act be incorporated.

98 Contrast the position under s 72(1)(b) of the 1977 UK Patents Act, which provides that the court or the comptroller may revoke a patent on the application of any person on the grounds, *inter alia*, that the patent was granted to a person who was not entitled to be granted that patent. However, by virtue of subsection (2) of that section, the application may only be made by a person found by the court or the comptroller, on a reference under s 37, to be entitled to be granted that patent. See *Dolphin Showers Ltd and Brueton v Farmiloe and Ors* [1989] FSR 1, *per Aldous J*, at 5-6.

99 See s 56(2A) of the Act.

100 To do justice between the parties and to ensure that a reasonable opportunity is given for the patent to be exploited should there be a demand for it, the power could be used to order that certain claims be deleted and that the non-joined inventor be allowed to file a new application for the deleted matters. Alternatively, the application is allowed to proceed, or the patent remains in the names of the original applicants, but subject to the non-joined inventor being given certain rights under the patent. For an idea of how the power may be exercised under the UK provisions, see *Goddin and Rennie's Application* [1996] RPC 141.

Conclusion

From the above discussion and analysis, it will be appreciated that a proper understanding of the concept of invention is crucial and a prerequisite in the determination of inventorship, and thus who the inventor is. A person who has not contributed to the inventive concept would not be able to claim inventorship. Thus the first step in these inquiries will always have to be the determination of the relevant invention. The next stage then involves the determination of the person or persons who has or have contributed to the inventive concepts. Where there is more than one contributor, then there will be a case of joint inventorship.

Rights may be conferred or lost through the determination of these factual questions. It is hoped that this article may provide not only a clearer understanding of the relevant concepts but enables the determination of these factual issues to be made with more precision and on a correct basis.