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Identifying 'the invention' in Inventorship Disputes.

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Abstract

This article focuses specifically on the ascertainment of "invention" in inventorship disputes which arise from joint innovative engagements. Joint inventorship gives rise to several questions including: what the invention consists of; the quantum of collaboration supplied by parties; what significant contributions have been made by the respective parties; and whether there has been joint conception. This paper is concerned only with the definition and identification of "the invention" in patent entitlement disputes. It argues that the sum of inventive concepts disclosed in the specification, rather than the claims, should be the touchstone for determining of what constitutes the invention in such contexts. This article submits that the technical details contained in the specification should be preferred to the claims when one is considering inventorship in such cases because: a) the disclosure contained in the specification predates the claims; b) the claims derive their existence from the specification's disclosure; c) the specification provides the technical background through which the claims could be understood in circumstances of ambiguity; d) the specification serves as a measure of proportionality between a protection sought and the technical contribution furnished; and e) the specification avoids inequitable assertions of entitlement in inventorship disputes.

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Introduction

This article hinges on the issue of entitlement to patents through inventorship under UK patent law and also seeks to incorporate a comparative analysis of American law on the same subject. It seeks to discuss the equitable standard for determining what the "invention" is in inventorship disputes. In the UK (and other conventional patent regimes) it is the devising of an invention through innovative processes or means that gives rise to a patent claim.[1] It is pertinent, therefore, to note that although there might be other means – such as by law and equity – through which entitlement to patents may be secured, the primary source of obtaining a patent is through an inventorship claim.[2] As a result it is necessary to have proper measures for ascertaining who true inventors are.[3]

Given the complexities of modern technologies and the corresponding high degrees of specialisation in science and technology fields collaborative engagements have become the norm in the inventive processes.[4] Accordingly, the question of "who supplied the inventive concept behind the invention?" now arises with greater frequency.[5] This is not merely an academic consideration: the strong connection between inventorship and ownership means that this issue could affect the exploitation of a patent.

Where there has been joint efforts towards an inventive end and a dispute arises thereafter in relation to inventorship, three questions will usually arise: a) What is the invention?; b) Who contributed to the invention?; and c) Was there joint conception?[6] As noted, this article focuses specifically on the first of these: the identification of "an invention" as the subject-matter of inventorship disputes.

As collaboration increases ascertaining inventorship – or in other words determining the source of an invention, is by no means a simple matter – and in fact this area has seen a surge in litigious attention. In the American case of *Mueller Brass co. v Reading Industries Inc.*[7] the court lamented the intricacies of ascertaining inventorship in joint collaborations, describing

[1] Historically, some patent regimes existed which granted monopoly rights for reasons other than inventive merit. These reasons included: politics, affiliation with the government of the day and being first to introduce a novel trade or manner of manufacture into the territory. Notable examples of such systems include the Ventian patent system statutorily promulgated in Venice in 1474 and the England system which existed around 1545. See A Mossoff, "Rethinking the Development of Patents: An Intellectual History, 1550-1800" (2001) 52 *Hastings Law Journal* 1255- 1322 at 1266 See also G Mandich, "Venetian Patents (1450-1550)" (1948) 30 *Journal of the Patent Office Society* 166- 224.

[2] D Cox, "Academic dilemma? Antipodean and New World directions on the ownership of inventions" (2012) 7(2) *Journal of Intellectual Property Law & Practice* 135-145;See also K Liddell, "Patent Entitlement Claims: Markem Overruled" (2008) 67(2) *Cambridge Law Journal* 256-260.

[3] H. E Potts, "The Definition of Invention in Patent Law" (1944) 7(3) *Modern Law Review* 114-115.

[4] See L Sung, "Collegiality and Collaboration in the Age of Exclusivity" (2000) 3 *DePaul Journal of Health Care Law* 411-439.

[5] A Kriss, "Misrepresentation of Inventorship and the Inequitable Conduct Defense: *PerSeptive Biosystems, Inc. v. Pharmacia Biotech, Inc*" (2002-2003) 12 *Fed. Cir. B.J.* 285-330.

[6] This was discussed by Justice Laddie in his first instance judgement in *University of Southampton Application*s [2005] RPC 11, at paragraph 220, noting that: "First, it is necessary to identify the inventive concept or concepts in the patent or application. Secondly, it is necessary to identify who came up with the inventive concept or concepts. He or they are the inventors. Thirdly, a person is not an inventor merely because he "contributes to a claim". His contribution must be to the formulation of the inventive concept".

[7] *Mueller Brass co. v Reading Industries Inc* 176 USPQ 361 (1972).

it as *"one of the muddiest concepts in the muddy metaphysics of the patent law*". In the UK case of *IDA Ltd and others v University of Southampton and others*[8] Lord Justice Jacob acknowledged the upsurge in inventorship litigation, saying:

> Finally, we were told that in very recent years there has been (and are) a rash of entitlement cases before the Comptroller. No-one really knew why this jurisdiction (which in my time at the Bar was moribund) has recently come alive. There was some speculation about an increase in joint ventures, or an increase in the appreciation of the significance of patents. None of them really explain it…[9]

What is meant by "invention" for the purposes of inventorship is not settled in the UK. The meaning of this concept is still a matter of competition between the inventive concept of the claims and specification.[10] An understanding of the functional differences between the claims and the specification is beneficial in highlighting this competition between the claims and specification.[11] The provisions of s 14 of the UK Patent Act describe the functions of the specification and claims. Section 14(3) describes the specification as that which shall 'disclose the invention in a manner which is clear enough and complete enough for the invention to be performed by a person skilled in the art'. Section 14(5) describes the claim(s) as defining the matter for which protection is sought, in clear and concise language, supported by the specification and relating to an invention or to a group of inventions which are so linked as to form a single inventive concept. The essence of discussing the relationship between the specification and claims is simply to show the functional differences between both, with the ultimate intent of pointing out which of the two should be considered the 'invention' in entitlement contexts.

This article argues that the statutory vacillation of the term 'invention' between the claims and specification need not create difficulties if that competition were given a context-specific settlement. Such a context-based approach, as argued in this article, should be settled in favour of the specification due to nature of the relationship between the specification and claims. More specifically, the collection of embodiments disclosed in the specification both preludes and forms the origin of the claims.[12] Additionally, the specification provides the yardstick for measuring the extent of protection deserved by the claims. It also serves as a source of claim interpretation and it bears a greater likelihood of stability across the patent lifecycle than claims.

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[8] *IDA Ltd and others v University of Southampton and others* [2006] EWCA Civ 145.
[9] Ibid, para. 44.
[10] *Chartered Institute of Patent Attorneys Guide to the Patent Acts* 6th ed. (Thomson Reuters (Legal), 2009), at 202.
[11] C Cotropia, "Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms"(2005) 47 *William & Mary L. Rev*. 49-133.

[12] M Risch,"The Failure of Public Notice in Patent Prosecution" (2007) 21(1) *Harvard Journal of Law & Technology* 179-232 at 182 which states that: "A valid patent application must contain several different, statutorily defined elements. First, the patent application must describe the nature of the claimed invention and enable a PHOSITA to recreate and use the invention. This description is called the "specification." Following the specification there must be a list of "claims" to the invention "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

Beyond these functional differences, there are also 'efficiency'[13] reasons for the choice of specification over the claims. Such an approach would aid both the avoidance of fragmented ownership interests in a granted patent and with the prevention of a specious assumption of an inventor's status. While judging inventorship through the periscope of the specification would lead to a result of either common/joint ownership or nothing the alternative, judging by the claims, is more likely to create a situation of fragmented ownership instead. This is because in light of the fact that the UK Patent Act 1977 does not have provisions enabling joint ownership of a patent in circumstances where a party has contributed to only a claim. Therefore a claim-by-claim approach could place ownership along the lines of disparately owned claims, thus creating room for a morass of complex ownership situations. For example, a patent may be solely owned by A, but a claim in that patent may be jointly owned by A and B; or a patent might be jointly awarded to A and B, but rights to exploit that patent could be divided between A and B on the basis of the claims differently attributably them. This however is in contrast to the US position. This is because the provisions of s 116 of the US Patent Act allow a party who has significantly contributed to even just one claim to count as an inventor. Finally, an approach adjudging inventorship from the standpoint of the specification would also forestall issues of spurious inventorship, something which the claim-by-claims approach is susceptible to.

1. Relationship between inventorship and ownership in UK Patent law

It is arguably natural that the deviser of an inventive concept should be the owner of the patents granted on such an invention.[14] Indeed, that deviser[15] is the object of the patent system's reward philosophy.[16] Chandra corroborates this position, noting that:

> Bodily or mental powers require an implementation to act through and a material to act upon in order to create something. The thing that is created becomes the property of the person who has mixed his labour, powers or talents with it. Thinking about property, therefore, has been informed by considerations of the origin of the material. The creator was seen to be the legitimate holder of that property. Right-holding is thus linked to ownership, with a proprietary control over the domain specified as the object of the right.[17]

[13] An approach can be said to be efficient when at minimal cost(s) or efforts, resources are put to the best use possible to achieve the most socially or economically desirable outcome(s). See R Cooter, "Liberty Efficiency and the Law" (1988) 50(4) *Law and Contemporary Problems* 141-163, at 142.

[14] V Denicolo and L Franzoni, "The Contract Theory of Patents" (2004) 23 *International Review of Law and Economics* 365–380.

[15] See *University of Southampton Applications*, RPC 2005, 220 at 234, where Justice Laddie defined the deviser as the natural person who came up with the inventive concept.

[16] M Fisher, "Classical Economics and Philosophy of the Patent System" (2005) *Intellectual Property Quarterly* 1-26.

[17] R Chandra, *Knowledge as Property: Issues in the Moral Grounding of Intellectual Property Rights* (Oxford University Press, 2010), at xxiii.

This postulation is supported by s 7(2)(a) of the UK Patent Act 1977, the interpretation of which was considered in *Rhone Poulenc Rorer v Yeda Ltd*[18]. In this case the UK House of Lords, overruled *Markem v Zipher*[19], a decision of the Court of Appeal where Jacob LJ had previously held that inventorship itself could not be the basis for a claim to entitlement. In the House of Lords, Lord Hoffmann expounded on the interpretation of s 7(2)(a) and stated that:

> In saying that the patent may be granted primarily to the inventor, section 7(2) emphasises that a patent may be granted only to the inventor or someone claiming through him. The claim through an inventor may be made under one of the rules mentioned in paragraph (b), by which someone may be entitled to patent an invention which has been made by someone else (the right of an employer under section 39 is the most obvious example) or the claim may be made under paragraph (c) as successor in title to an inventor or to someone entitled under paragraph (b)
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> …[T]he first step in any dispute over entitlement must be to decide who was the inventor or inventors of the claimed invention. Only when that question has been decided can one consider whether someone else may be entitled under paragraphs (b) or (c).[20]

In essence, Lord Hoffmann interpreted s 7(2) as meaning that the inventor is the primary grantee of the patent, being the chief object of the patent system. However, other persons may be entitled for legal reasons – such as by virtue of contract, employment obligations, succession or equity – to dispossess the inventor of that entitlement or to derive it from the inventor. Similarly, Seymour holds that the question of inventorship takes primary position in entitlement contests as he argues that the interests which any person might hold over a patent are only derived by reason of a connection with the original inventor.[21]

2. Subject-matter of inventorship disputes

When a court is seized with an inventorship dispute, the primary concern of the court is to ascertain who the inventor is. As stated in the Australian case of *Row Weeder Pty Ltd v Nielsen*,[22] any determination of a question predicated on inventorship can only be rightly disposed of by ascertaining what person(s) have supplied contributions that have had material effect on the final conception of the invention in issue. Thus in the UK case of *University of Southampton Application*[23] Laddie J ruled that a question bordering on inventorship involves:

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[18] *Rhone Poulenc Rorer v Yeda Ltd* [2007] UKHL 43.
[19] *Markem v Zipher* [2005] R.P.C. 31.
[20] *Rhone-Poulenc Rorer Inc v Yeda Ltd*, see note 17 above, paras. 18-19 *Cf*. the American case of *University Patents Inc v v. Kligman*, 762 F.Supp. 1212, 1218-19 (E.D. Pa.1991) where the court said inventorship should always supply " the starting point for determining ownership of patent rights.".
[21] S B Seymour, "My Patent, Your Patent, or Our Patent? Inventorship Disputes Within Academic Research Groups" (2006) 16 *Alb. L.J. Sci. & Tech*. 125-167.
[22] *Row Weeder Pty Ltd v Nielsen* (1997) 39 IPR 400
[23] *University of Southampton Application* [2005] R.P.C. 11, paragraph 39. *Cf* E Gifford and A Goldstein, "Ownership of intellectual property" in A Goldstein, (ed.), *Patent Law for Scientists and Engineers* (CRC Press,

(a) identifying the inventive concept(s) underlying the invention; and (b) identifying who came up with the inventive step(s) contained in the invention.[24]

It is the first of these questions that is the central focus of this paper: What exactly is the invention? It should be borne in mind that in order to determine what the invention is the inventive concepts underlying the invention should first be ascertained. The question of what the invention is spurs much debate, with some arguing that the invention is the sum of inventive concepts contained in the specification[25], while others holding that it is the patent claims that constitute the invention.[26] Janicke avers that the meaning of the 'term' invention is protean and flexible, depending upon the legal considerations at hand.[27] The varying meaning of 'invention' in the UK is recognised at s 125(1) of the 1977 Act, which states that:

> …. (A)n invention for a patent for which an application has been made or for which a patent has been granted shall, unless the context otherwise requires, be taken to be that specified in a claim of the specification of the application or patent, as the case may be, as interpreted by the description and any drawings contained in that specification, and the extent of the protection conferred by a patent or application for a patent shall be determined accordingly [emphasis added]

This reflects the fact that the meaning of 'invention' will depend on the context at hand. Contexts for this purpose could range from infringement, validity, entitlement, to actual conception.[28] Thus, for example, when in general patent law parlance we talk of the infringement of an invention our minds jump immediately to the patent claims, as it is these claims that earmark the patentee's monopoly.[29] Also, it is through patent claims that we

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1st edition 2005) at 101, who postulates that there are two steps to take towards a just determination of such a question; (a) identify those who contributed the disputed subject matter and (b) determine if the subject matter was recited in a patent claim. Goldstein's position does not necessarily represent the US practice. In *Trovan v Sokymat SA*, 299 F.3d 1292, 1302 (Fed. Cir. *2002*), the Federal Circuit held that the invention had to first be determined then a comparison is made between the invention and contributions made by the putative inventors.

[24] See note 6 above.

[25] O Liivak, "Finding Invention" (2012) 40(57) *Florida State University Law Review* 57-103 at 59 which states: "For some, the invention is a very a narrow concept tied directly to actual physical thing made by the inventor. That narrow definition can provide well-defined boundaries but many object arguing that, though, clear, it would provide far too narrow protection. In particular, such a rule would prevent patent protection from reaching after-arising technology – a type of patent scope that, though controversial, has been available in some form for quite some time. For others the invention is a broader concept encompassing some more abstract idea behind the actual thing created by the inventor".

[26] P. G. Gattari, "Determining Inventorship for US Patent Applications, Intellectual Property and Technology Law Journal" (2005) 17(5) *Intellectual Property and Technology Journal* 16-19 at 16 which states that "Because an inventorship determination focuses on the invention *claimed* and not merely *described* in a patent, the first step in an inventorship analysis is to determine the scope and meaning of the claims".

[27] P Janicke, "The Varied Meaning of "Invention" in Patent Practice: : Different Meanings in Different Situations", in 4 Patent Law Perspectives, at App. 1 (Donald R. Dunner et al., eds., 1970) as cited in *In re Faizulla G. Kathawala* 9 F.3d 942 (Fed. Cir. 1993)

[28] R Feldman, "Inventor's Contribution", 2005 6 *UCLA J.L. & Tech.* available at http://repository.uchastings.edu/cgi/viewcontent.cgi?article=1155&context=faculty_scholarship

[29] *Per* Lord Russell of Killowen in *Electric and Musical Industries Ltd v Lissen Ltd* (1938) 56 RPC 23, 39: "The function of the claims is to define clearly and with precision the monopoly claimed, so that others may know the exact boundary of the area within which they will be trespassers. Their primary object is to limit and not to extend the monopoly. What is not claimed is disclaimed. The claims must undoubtedly be read as part of the

determine the validity of patents in terms of novelty, inventiveness, sufficiency/enablement and industrial applicability.[30]

For example, on the question of inventive step in *Conor v Angiotech*[31] Lord Hoffmann said that: "*the invention is the product specified in a claim, and the patentee is entitled to have the question of obviousness determined by reference to his claim and not to some vague paraphrase based upon the extent of his disclosure in the description".*[32] However, when it comes to issues bordering on the conception of an idea which forms the basis of a patent application it is submitted by Vivien Irish that, the disclosure document or specification is what should be considered.[33] This is because the specification provides an insight into the background of the invention. But what is unclear is what 'invention' means in entitlement circumstances? This is the question which this article attempts to grapple with, and it will be suggested - in line with the view of Vivien Irish - that the specification should be the subject for consideration in this context.

3.1 Shifting meaning of 'Invention' in inventorship disputes in the UK

As can be deduced from Lord Hoffmann's quotation above, taken from his judgment in *Rhone Poulenc Rorer*, any determination of the 'invention' in entitlement contexts also affects the proprietary rights in a patent.[34] If the invention is determined upon the basis of the patent claim then only those persons who have made a technical contribution to its conception are inventors. Accordingly this means that where there is a multitude of claims and varying entities partook in conceiving each claim, inventorship and thus entitlement, will be determined on the basis of each claim and contributions thereto. This will inevitably result in fragmented ownership of the patent.

Where however the patent specification or disclosure is the starting point for determining inventorship, material contribution to the conception of the general technical idea contained in the specification is sufficient to earn the status of sole inventor or of co-inventor, and put one at the threshold of entitlement. This hinges on the principle that qualifying as an inventor requires one to have materially influenced the conception of the inventive concept.[35]

As pointed out by Lord Justice Jacob,[36] litigation founded on inventorship disputes is only a relatively recent occurrence in the UK patent system. The body of case law on this aspect of

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entire document and not as a separate document; but the forbidden field must be found in the language of the claims and not elsewhere." *See also* Kirin Amgen v Hoechst, [2004] UKHL 46

[30] J Needle, "Patent Decisions: Infringement and Validity" (2008) C.I.P.A.J. 37(7), 394-395.

[31] *Conor v Angiotech* [2008] R.P.C 28

[32] Ibid, para. 17.

[33] V Irish, "How to Read a Patent Specification" (2000) *Engineering Management Journal* 71-73 at 71, which states that "The normal process is that an inventor generates an idea that she believes is new and solves a problem she is working on; she writes a description and sends it to a patent attorney who can either be an employee of the company the inventor works for, or an external agent in private practice."

[34] See D Meale and S Moore, "House of Lords simplifies the law on patent entitlement" (2008) J.I.P.L.P. 3(2), 76-78.

[35] See University of Southampton Application [2005] R.P.C. 11, paragraph 39

[36] See note 8 above.

patent law is, therefore, somewhat new and evolving. Notwithstanding this, there have been some relevant decisions which have touched on inventorship, and in particular upon the question of what an invention is in the context of entitlement. There are two cases in particular that are at the forefront in the evolution of this aspect of law [37]: *Viziball Ltd's Application*[38] and *Norris Patent Application.*[39] Tibor is of the view that the approaches used in these cases are same,[40] but it is argued here that they are in fact different.

The first of these cases, *Viziball Ltd's Application,* involved two erstwhile friends Godin and Christie. Godin had furnished the technical idea of 'flexible retro-reflectors' while Christie has supplied the idea of 'recesses'. These concepts where applied to fast moving balls or projectiles to improve their visibility on television or video recording. In their approach to the dispute the courts considered the invention(s) to be that set out in the patent claims, and therefore that inventorship could only be based on contributing to the conception of claims. The court (just as the Hearing Officer had at the Patent Office had done) set out first to identify the inventive concepts[41] lying at the heart of the specification and, upon determining this, went on to consider each claim in turn seeking to find what party's inventive concept had been material to the conception of that particular claim. It was upon this basis that inventorship was attributed between the litigants. The court held that claims which bore both technical contributions were to be jointly owned, but claims which were founded on the distinct technical contributions were to be singularly owned by its devisor. This is the claim-by-claim approach.[42]

In *Norris's Patent*, however, the Court took a different approach from *Viziball*. In this case, the patent in issue related to a device for the automatic determination of the refractive index of a sample fluid. Two cardinal technical aspects (i.e the optical and control aspects) were encompassed in the overall inventive concept disclosed in the specification. It was found that N had solely conceived the optical aspect, while G had made the control aspect in collaboration with N. The court (affirming the decision of the Hearing Officer) took the view that patent rights arise not just from granted applications but also 'yet-to-be-granted' applications too. Therefore the patent specification or disclosure ought to be the starting point of inventorship in entitlement contests, not the claims. The court thus looked into the specification's technical contents to determine joint inventorship. Although it was acknowledged that the control aspect of the invention was the only contribution which G had partaken in, the court found both G and N to be the co-inventors of the patent as a whole. The

[37] C Ailsa and S Ayrton, "Is Making the Invention not Enough? Analysis of the Court of Appeal's Approach to Entitlement in Markem v Zipher" (2006) 28(1) *European Intellectual Property Journal* 51-56
[38] *Viziball Ltd's Application* [1988] R.P.C. 213
[39] *Norris Patent Application* [1988] R.P.C. 159
[40] Z.G Tibor, "Entitlement Disputes: A Case Review" (1990) 12(10) *European Intellectual Property Journal* 382-387. However, it is submitted that Tibor failed to appreciate at the time of his writing that *Viziball* took the 'claim-by-claim' approach while *Norris* took the 'holistic' or 'specification' approach.
[41] Inventive concepts in this context can be taken to mean the technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art (See G Gregor and D Gibbins, "Inventive Concept: Is It A Good Idea?" (2005) 27(5) *European Intellectual Property Review* 170-175).
[42] D Brook, N Macfarlane, "Entitlement Disputes" (2006) 1(2) *Journal of Intellectual Property Law & Practice* 86-88.

court embraced the position that the specification be considered in its entirety, rather than apportioning entitlement on the claim-by-claim basis.[43]

Further cases have continued to grapple with these divergent approaches. In *Henry Bros v Ministry of Defence*[44] the Court of Appeal agreed with the High Court that the 'invention' for entitlement purposes was the core inventive concept disclosed in the specification, refusing to consider each claim as an invention; a position identical to that adopted in *Norris*. In *Minnesota Mining Manufacturing and Co's International Patent Application*[45] the Hearing Officer tried to find a reconciliation for the disparate 'claim-by-claim' and 'holistic/specification' approaches by holding that where the application was yet to be granted and an inventorship contest arose, the specification could best be used to adjudge inventorship but that where the patent application was granted and the claims successfully issued, the claims were to be the 'bone of contention'. The hearing officer said:

> On this point and as *Norris* recognised, I am not forgetting the fact that entitlement proceedings may be launched before there are any claims. However, it is noteworthy that in all three cases, *Norris*, *Viziball* and *Henry Brothers*, the judges and hearing officers involved did in fact turn to the claims to help them identify the inventive concept. The conclusion I draw from this is what where claims exist, it is quite permissible to use them as an aid to identifying the inventive concept. If there were no claims, of course, one would have to identify the inventive concept from whatever material was available.[46]

The Hearing Officer allowed the application to proceed in the joint names of the disputing putative inventors, but apportioned entitlement to the patent on claim-by-claim basis.[47] Upon gleaning what the inventive concepts of the claims were the sources of inventive concepts were ascertained, and on that basis entitlement to the patent was apportioned.

Collag v Merck[48] followed *Henry Bros*. It avoided using the claims alone as the basis for attributing ownership, instead extrapolating the inventive concepts from the specification as a

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[43] The court approved that statement of the Hearing Officer which stated in page 164 of the judgment that: "Claim 1 of the international application is broader in scope than this, primarily because it does not refer to monitoring the rate of change of the output and detecting the maximum rate of change. However, I am not concerned with the precise formulation of the claims. Both sections 8 and 12 make it clear that questions of patent rights can be considered even if no application has been filed, and therefore before claims have been drafted. Moreover, a patent application is not worthwhile until the applicant is in a position to describe his invention in terms such that it can be performed by a skilled person. I therefore need to consider all aspects of the invention. The patent contains details of the mechanical and electronic system used to provide the functions essential for the automatic determination of the refractive index of the sample, and it is clear that these arrangements play a significant part in the viability of the instrument. Although neither side placed much emphasis on this aspect I think it proper that I should consider it."

[44] *Henry Bros v Ministry of Defence* [1999] R.P.C 442-452.

[45] *Minnesota Mining and Manufacturing Co's International Patent Application* [2003] R.P.C. 28

[46] Ibid, at page 555

[47] In order words, the patent was to be granted in the names of both parties but their proprietary entitlement different on the basis of the claims they have devised.

[48] *Collag v Merck* [2003] F.S.R. 16

whole. In *Stalenco Fibre Optics v Bioprogress Tech. Ltd,*[49] however the court took into account *Henry Bros'* 'holistic/specification' approach but adopted the claim-by-claim approach due to the fact that the disputing parties had opted for this as the basis for adjudication of the dispute.[50] Further to this came the first instance decision of Judge Fysh in *Markem v Zipher,*[51] where it was decided that (as though regurgitating *Minnesota Mining and Manufacuring*[52]) where an application had only been filed and claims were not yet advanced it was right to look at the specification, but where the claims had been advance then the claims were to be considered the invention(s). The Court stated that:

> (a) In the case of the granted patents, *a fortiori* when one which has undergone narrowing during prosecution, this is not difficult. I have therefore construed the relevant claims in the usual way. Having done so, I have gone on to inquire whether so construed they cover what as a matter of evidence was clearly devised by the claimant at an earlier time. If that yields an affirmative answer and there is requisite causation (see below), *prima facie* the invention subject of the claim belongs to the referrer.[53]

Judge Fysh, before making this statement, had traced the evolution of the case law on this aspect of patent law. He acknowledged the prevailing position – in which the 'holistic/specification' approach appears to prevail over the 'claim-by-claim' approach – but preferred the latter in on the basis of the facts of the case before him.[54] This is largely because he was convinced, as the facts of the case appeared to him, that the defendants had purloined the inventive concepts of the plaintiff (an ex-employer) which had been kept with them in form of confidential information. Therefore, as the judge considered, justice could best be served if the court was not to be carried away by the specification or disclosure details. The court had to simply look into each claim to see which of them bore the inventive ideas of the plaintiff.

On appeal Lord Justice Jacob, with whom Lord Justices Kennedy and Mummery agreed, restated the primacy of the 'holistic' approach. He distinguished the claims from specification on a functional basis. He emphasized that the claims were only to identify the extent of monopoly the inventor is entitled to. The specification however was to disclose (and enable) the invention upon which claims would be founded. Therefore the determination of

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[49] *Stalenco Fibre Optics v Bioprogress Tech. Ltd* [2004] EWHC 2263 (Pat)

[50] At page 329, the court stated among other things that: "In the present case only one of the applications has resulted in the grant of a patent, but the parties have agreed, sensibly and helpfully, that the issue of inventorship should be determined by reference to the claims of the three relevant PCT applications and that I need look no further into those applications for further or other inventive concepts."

[51] *Markem v Zipher* [2004] R.P.C. 10

[52] *Minnesota Mining and Manufacturing Co's International Patent Application* [2003] R.P.C. 28

[53] *Markem v Zipher* [2004] RPC 10, page 226

[54] Ibid, page 226 ("It is in my judgment not correct always to initiate the enquiry by construing the claims of an application and then deciding, as if the exercise were one of infringement, whether, properly construed, they cover something which the referrer says had been devised by him at some other time. There may nonetheless be cases where, as I have said, the claims submitted with an application may legitimately be regarded as an accurate epitome of the inventive concept or concepts. Whether this is so will depend on the facts.")

inventorship should, in Jacob LJ's view, proceed on the basis of contribution to the chief technical contents of the specification.[55] He built his reasoning upon s 14(5) (d), modelled after Article 82 of the European Patent Convention (EPC), which requires that claims must be so linked as to form one inventive concept;[56] consequently the term 'invention' at application stage cannot be concerned with claims. So too must it be in relation to entitlement questions in all cases, Jacob LJ reasoned, for inventorship questions are concerned with an inquiry into what persons furnished the heart of the invention. He said:

> What one is normally looking for is "the heart" of the invention. There may be more than one "heart" but each claim is not to be considered as a separate "heart" on its own. That is consistent with the view of Laddie J. in *University of Southampton's Applications* [2005] R.P.C. 11.[57]

Jacob LJ consolidated this position further in *IDA Ltd v Southampton University.*[58] Furthermore, in *Welland Medical Ltd v Philip Arthur Hadley*[59] the 'holistic' approach was recently confirmed as the prevailing rule in assessing the subject-matter.

The matter is, however, not so simply settled. The case of *Statoil v Southampton*[60] brings the complexity inherent in the 'holistic' approach to the fore.[61] While Jacob LJ talked about there being one 'singular or general inventive concept' in patent applications – drawing analogy from the Greek fable of the Hedgehog with one broad trick and the fox with multifarious flimsy tricks[62] – *Statoil* (although accepting the 'holistic' approach) explains that there might be situations where there is a plurality or multiplicity of inventive concepts in the specification. This is one point which Jacob LJ did not address squarely in his judgements, which emphasised the 'holistic' element primarily. Mr Hayword as Hearing Officer said:

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[55] K Conlon, Patents, (2006) 28(8) *European Intellectual Property Review* 152-154

[56] *Per* Lord Hoffmann in *Sabaf SpA v MFI Furniture* [2004] UKHL 45 at para. 26 "What the Guidelines do is to state the principle upon which you decide whether you are dealing with a single invention or not. If the two integers interact upon each other, if there is synergy between them, they constitute a single invention having a combined effect and one applies s.3 to the idea of combining them. If each integer "performs its own proper function independently of any of the others", then each is for the purposes of s.3 a separate invention and it has to be applied to each one separately".) See also Marc Wilkinson, Patent: Inventive Step- Collocation and Validity and Infringement, *European Intellectual Property Journal*, 2006.

[57] *Markem v Zipher,* [2005] R.P.C. 31, para. 102.

[58] [2006] R.P.C. 21 stating at page 578: "Next I should expand a little on the "inventive concept" for the purposes of entitlement disputes. *Markem* has already pointed out that one is not bound by the form of the claims, if any. I think there is a great danger in being over-elaborate about this, about dividing the information in a patent into a myriad of sub-concepts, each of which is considered separately. One must proceed more like a hedgehog than a fox. And after all there is supposed to be only one inventive concept in a patent…." See also *GE Healthcare Ltd v Perkinelmer Life Sciences Ltd* [2006] EWHC 214 (Pat); where the court stated the conceiving a claim does not make one an inventor.

[59] *Welland Medical Ltd v Philip Arthur Hadley* [2011] EWHC 1994 (Pat)

[60] *Statoil v Southampton* O/204/05

[61] N Briggs, "Entitlement" (2006) 28(12) *European Intellectual Property Review*, 611-616

[62] *IDA Ltd v University of Southampton*, note 8 above, at para. 43, Per Jacob LJ who states "I think there is a great danger in being over-elaborate about this, about dividing the information in a patent into a myriad of sub-concepts, each of which is considered separately. One must proceed more like a hedgehog than a fox. And after all there is supposed to be one only inventive concept in a patent, see 14(5) (d)."

> This is point has not been clearly addressed in any of the recent authorities. There is a hint at it in paragraph 25 of *Stalenco* that in this respect granted patents are different from patent applications, but it is not clearly stated and would in any case be *obiter*. It seems to me that whilst section 14(5)(d) requires there to be an inventive concept that links all the claims, it doesn't exclude the possibility of other inventive concepts being present. Accordingly, and in the absence of clear authority to the contrary, I am not going to rule out the possibility that there could, for inventorship and entitlement purposes, be more than one concept or "heart" in a granted patent. *Equally, it is clear I should not be scouring the specification looking for inventive concepts in every nook and cranny*?[63][Emphasis added]

He ends with the position that, in such situations, the claims should be consulted to elicit the precise nature of the inventive concept. This seems on the surface a plausible approach to take situations where the inventive concepts are plural and may or may not link to form one singular inventive concept, especially in light of the fact that s 26 of the UK Patents Act 1977 shields such invention(s) from being impugned in any proceeding once it has been granted.

3. Avoiding the 'claim-by-claim' quagmire

It is, however, the argument of this article that any approach based upon the consideration of the claims should be avoided in its entirety, irrespective of situations in which there may be multiple inventive concepts. The unsuitability of the 'claim-by-claim' approach to the UK's circumstances therefore forms the next topic of discussion. It is important in this regard to demonstrate the demerits in the claim-by-claim approach in a manner which builds upon and goes beyond Jacob LJ's reasoning.

In this regard practice in the USA offers a valuable point of comparison, as the USA has an age-long established 'claims-centric' Patent system.[64] The American patent jurisprudence is arguably the most engaged and exploited in the world of today, judging by the preponderance of patent litigation.[65] However while there is much that can be learnt from the US position, such lessons must be sieved with caution. This is particularly the case with respect to inventorship. The American patent jurisprudence places a high premium on the claims in inventorship and entitlement matters, principally because the claims are considered to form

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[63] *Statoil v Southampton,* note 61 above, at para. 43

[64] G S. Rich, "The Extent of Protection and Interpretation of Claims—American Perspectives*"*(1990) *21 Int'l Rev. Indus. Prop. & Copyright L.* 497 at 499 which states "[T]he name of the game is the claim.", as cited in John Duffy, "*On Improving the Legal Process of Claim Interpretation: Administrative Alternatives*" (2000) 2 Washington University Journal of Law and Policy 109-166, at footnote 7. See also Giles S. Rich, "Are Letters Patents Grants of Monopoly?" (1993) 15 W. *New Eng. L. Rev.* 239-255.

[65] *See* Kimberlee Weatherall and Elizabeth Webster, "Patent Enforcement: A Review of the Literature" (2014) 28 Journal of Economic Surveys 312-343

the epicentre of granted patents and thus are taken to represent the 'invention'.[66] Contributing to just one claim is enough to qualify as a co-inventor in the USA.[67]

This article argues that for three fundamental reasons it would be necessary for the UK to avoid this approach. One is reason, which is developed below, is that it would not be in sync with the universal spirit of patent law philosophy with regard to the functional relationship between the specification and claims. The second is that the provisions of the UK Patents Act 1977 do not acknowledge the claim-by-claim approach, nor is there legal precedence to support it. Adopting it therefore, it is submitted, will allow a propensity for a fragmentation of ownership over a granted patent. The third is that will create opportunities for false inventorship assertions. Each reason will now be expounded upon in turn.

4.1 The relationship between the specification and claims.

Four arguments can be advanced towards drawing this distinction between patent claims and specification on the basis of the functional relationships between both; these arguments are however connected. They are as follows:

1) that the specification, being a compendium of the inventor's disclosure, serves as the quid pro quo for patent protection,
2) that the specification functions as the touchstone of proportionality between the disclosure made by the inventors and the scope of legal monopoly sought through patents,
3) that the specification provides a background to understanding the inventor's invention as expressed in the claims, and
4) that the specification has more stability, than the claims, across lifecycle of the patent.

A juxtaposition of the claims vis-à-vis the specification when it comes to each of these four arguments will be of assistance.

The first argument concerns the disclosure on the basis of which patent protection is granted. It cannot be overemphasised that the quid pro quo of a patent grant is the disclosure of an invention[68], in such a manner that it can be reproduced.[69] The disclosure contains the new technical teaching which the inventor has furnished any given technical field with; it enables

[66] J Miller, "Enhancing Patent Disclosure for Faithful Claim Construction" (2005) 9 *Lewis and Clark Law Review* 177-230.
[67] D Hricik et al, "Save A Little Room For Me: The Necessity of Naming As Inventors Practitioners Who Conceived of Claimed Subject-Matter" (2005) 5(1) *Loy. L. & Tech. Ann.* 1-51.

[68] For a discussion of this point, see, R Benjamin, "Note: The Disclosure Function of the Patent System (Or Lack Thereof)" (2005) 118(6) *Harvard Law Review*2007-2028 which states that"As the Supreme Court explained in *Kewanee Oil Co. v. Bicron Corp*, "the disclosure of patent applications adds to the public's "general store of knowledge" and "is assumed [to] stimulate ideas and the eventual development of further significant advances in the art."'
[69] Sections 14(3) and 72(1)(c) of the UK Patent Act 1977

the dissemination of information about the invention.[70] The disclosure of this technical teaching is contained in the patent specification. In the recent American decision of *Arlington Industries, Inc v Bridgeport Fittings, Inc*,[71] Justice Lourie (after considering the specification as the 'heart' of the patent) went on to say:

> But, at bottom, we are reading a patent specification to see what the inventors invented, what they disclosed, and how they conveyed that information. A patent is a teaching document. In almost all cases, the inventors, and their patent solicitors, knew what was invented and generally disclosed their invention in competent language.[72]

Fromer, in making a case for the centrality of the specification, argues that the teaching essence of the specification can be perceived from the audience it is addressed to.[73] The specification is addressed to technicians who intend to put the invention into effect in any fashion, while that the claims on the other hand are addressed to legal persons who are concerned with the extent of monopoly entitled to the inventor[74]. There is corroboration for this position from Giles Rich,[75] as he said on another occasion that:

> What the inventor regards as his invention has very little, if anything, to do with most claims. Claims are drafted by attorneys and agents. Their wording ultimately must satisfy patent office examiners that they distinguish, distinctly and with particularity, from all prior art known to them…It is the claims that have determined what infringes the patentee's right to exclude, construed in the light of the specification…[T]he claims are the measure of the patentee's right to exclude rather than the measure of what was invented.[76]

Liivak is of the view that the true "invention" is that which is embodied in the specification; explaining further that these embodiments put together bear the requirements of patentability which are abstracted or modified into what is called 'claims'.[77] This point further addressed below. The specification covers the technical field to which the invention relates, the background art, a statement of the invention, its advantages and detailed drawings or

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[70] B Lu, "Disclosure requirements for patent application: Article 29 of the TRIPs Agreement and a dimensional exploration" (2012) 34(5) *European Intellectual Property Review* 336-342("Court of Appeals for the Federal Circuit……observed that "disclosure is the first role of a patent". Scholars also have argued in favour of disclosure's deserved centrality in the patent system.")

[71] *Arlington Industries, Inc v Bridgeport Fittings, Inc* No. 10-1025 (Fed. Cir. Jan. 20, 2011), at pages 2-3

[72] Ibid

[73] J Fromer, "Patent Disclosure" (2009) 94 *Iowa Law Review* 539-606 at 567. See also M Janis and T Holbrook, "Patent Law's Audience"(2012) 97 *Minnesota Law Review* 72-131.

[74] Fromer, Ibid.

[75] Rich noted that "[T]he name of the game is the claim". See note 63 above.

[76] G S. Rich, "Foreword" in F. S. Kieff et al., *Principles of Patent Law*, 4th ed. (Foundation Press, 2008) at v–vi

[77] O Liivak , "Rescuing the Invention from the Cult of Claims"(2012) 42(1) *Seton Hall L. Rev* 1-54 . See also O Liivak, "Finding Invention" note 27 above; See also M Lemley, "Point of Novelty" (2011) 105(3) *North Western University Law Review* 1253-1280 . T Chiang and L Solum, "Interpretation-Construction Distinction in Patent Law" (2013) 123 Yale Law Journal Volume 123, 2013, pp. 530-614. See also T Chiang, "Defining Patent Scope by the Novelty of the Idea" (2012) *89 Washington University Law Review* 1211-1268.

instructions on how to put the invention into practice.[78] The specification serves as a compendium of the invention showing that the technical teaching for which legal monopoly is sought is in the inventor's possession.[79] This is why Jacob LJ succinctly calls the inventive concepts disclosed in the specification the 'Eureka moments',[80] simply because they predate those in the claims.

Akin to Jacob LJ's view is that of Cotropia. Cotropia explains that an invention could be perceived from two perspectives: the 'external invention' angle and the 'claim-centred' angle.[81] About the external invention, he says: "*Under the external invention, the technical information and discussion contained in the patent's specification define the invention"*.[82] In relation to the claim-centered angle, however, he holds that: "*The claim-centered invention, in contrast, is defined by the patent's claims"*.[83] He professes conviction that the best approach to identifying invention is to go by the external invention angle, and one of the reasons he gives (which is identical to that of Jacob LJ) is that external invention relates to inventive technical information possessed by the inventor before an application for patents is embarked upon.[84]

The 'Eureka moments' (i.e. the inventive steps or concepts, if there are more than one) must combine together to form a single technical teaching in the specification. Otherwise there would be a mere 'collocation' without any interaction or connection between them.[85]Both Article 82 of the EPO and the s 14(5)(d) of UK Patent Act require that the inventions must connect so as to form a single inventive concept at the time of application, although it is

[78]D Bainbridge, *Intellectual Property*, 8th ed.,(Longman, 2010), at 402-411.
[79]Earnest Lipscomb III, *Lipscomb's Walker on Patents* (The Lawyers Co-operative Pub. Co, 1985) Vol. 3, Sect.10:1
[80] *Markem v Zipher*, [2005] R.P.C. 31, paragraph 98
[81] C Cotropia, What is the "Invention"? (2012) 53 Wm. & Mary L. Rev. 1855
[82] Ibid
[83] Ibid
[84]Ibid, page1896 ("The "external invention" is an invention that exists independently of the patent document and prior to the filing of the patent application. The inventor defines it by engaging in some real-space activities and recognitions, which can range from the simple — notes and diagrams on a tablecloth — to the complex — the actual building and commercialization of the invention before filing the patent application.
External invention requires the inventor to conceive of the invention prior to filing. Conception, as patent law defines it, is the "formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice." This idea, "so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation," is the external invention. It may or may not be communicated to anyone prior to patent filing, but it has a concreteness that facilitates its use in real space.
This external invention finds its way into the patent document via the specification. The specification contains many details about what the inventor thinks and has done regarding the invention.")
[85]*Per* Lord Tomlin in *British Celanese Ltd v Courtaulds Ltd* (1935) 52 R.P.C. 171 , 193 "a mere placing side by side of…integers so that each performs its own proper function independently of any of the others is not a patentable combination, but that where the…integers when placed together have some working inter-relation producing a new or improved result then there is patentable subject-matter in the idea of a working interrelation brought about by the collocation of the integers." See also C Winter, "Patents: infringement - collocation of known integers precluding inventive step - obviousness - gas burners" (2002) 24(2) *European Intellectual Property Review* 19-20.

enough that there is a technical relationship between these technical features.[86] Even where the determination of the interconnection between inventive steps relates to the claims,[87] such assessment will be done in the light of the specification.[88]

The claims, on the other hand, are the 'definition' of the invention as opposed to the 'description' of the invention contained in the specification. Chisum explains that the claims serve to identify what the inventor regards as his invention for patentability purposes[89] and therefore the extent and bounds of protection sought.[90] Each claim is considered as if it were in its own right as a patent[91]. More so, each claim is considered a solution to a given technical problem[92].

But the truth is that claims are simply abstractions from the specification, covering a class of embodiments that share only some operating principle or functional idea.[93]Chiang relays a possible example of a situation, originally given by Merges and Duffy,[94] whereby the original (table-top) transistor invented by Bell Laboratories which hinged on the inventive concept of using semiconductor material in conjunction with switch electronic signals, could be stretched to cover micro-transistor and at further abstraction could be stretched to cover transistors systems of modern times.[95] Generally the first independent claim contains core technical features presented in the specification (excluding inconsequential technical matters), and then dependent claims are built upon the first independent claim. There may further be other independent claims dedicated to particular aspects of the inventive concept(s) contained

[86] W 0002/95 (Etikettenbogen) of 18.10.1995, available at http://www.epo.org/law-practice/case-law appeals/recent/w950002du1.html (last accessed 13/03/ 2014). See also see also, T Holbrook, "Equivalency and Patent Law's Possession Paradox" (2009) 23 Harvard Journal of Law and Technology 1-48

[87]This is as opposed to that of the specification, where the question relates to whether the claim relates to a single inventive concept. *See T 94/91*, *Pressure Filters*, http://www.epo.org/law-practice/case-law-appeals/recent/t910094eu1.html (last viewed 13/03/2014) ("…the general inventive concept such as defined in Article 82 EPC cannot be equated with the features recited in a claim or in a particular combination of claims. What should be considered is the inventive concept as defined in the claims with dud regard to the description and any drawings")

[88] W 0006/97 (Foamed pressure sensitive tapes).

[89] This is for the purposes of determining the eligibility of subject-matter: novelty, inventive step, utility and nonobviousness.

[90] D Chisum , *A Treatise on the Law of Patentability, Validity and Infringement*, (Matthew Bender, 1998), Section 8.2[1]. See also D Brennan, "The Evolution of English Patent Claims as Property Definers" (2005) 4 *I.P.Q*. 361-399

[91] C Dent, "Non-overlapping rights: a patent misconception" (2010) 32(2) *European Intellectual Property Review* 58-66

[92]*Johns Hopkins University School of Medicine/Growth Differentiation factor-9* (Case T 1329/04), June 28, 2005 where it was noted that "The definition of an invention as being a contribution to the art i.e. as solving a technical problem and not merely putting forward one, requires that it is at least plausible by the disclosure in the application that its teaching solves indeed the problem it purports to solve."

[93] T Chiang, "The Levels of Abstraction Problem in Patent Law" (2011) 105(3) *North Western University Law Review* 1097-1152.

[94] R Merges and J Fitzgerald Duffy, *Patent Law and Policy: Cases and Materials* 4th ed. (LexisNexis, 2007).

[95] T Chiang, op cit., page 1097

in the specification.[96] This reflects the fact that claims do not have existence of their own independent of the specification.[97]

This takes us to the second argument which is that the specification serves as the touchstone of proportionality between the technical teaching supplied and the proprietary monopoly deserved.[98] It is a trite rule in patent law that the inventor cannot get legal protection beyond that which he has contributed to any given technical field.[99] This is known generally in patent law parlance as the doctrine of 'sufficiency'. In *EXXON/Fuel Oils*[100] the Technical Board of the EPO said among other things:

> …claims must be supported by the description, in other words it is the definition of the invention in the claims that needs support…[T]his requirement reflects the general legal principle that the extent of the patent monopoly, as defined by the claims, should correspond to the technical contribution to the art in order for it to be supported, or justified.[101]

This principle has been reiterated in a cascade of UK reported cases, prominent amongst which is *Biogen v Medeva.*[102] In a more recent UK on 'sufficiency', *Generics v Lundbeck,*[103] the House of Lords, building upon *Biogen v Medeva,* seemed to have arguably misused the phrase 'technical contribution'. This is so because the court adjudged the claims as the technical contribution, when it should have considered the inventive concept disclosed in the specification as such.[104] The implication of this is that it is apt to abrade the primacy of the specification over the claims in inventorship disputes, as it could cause a diversion of focus from the specification to the claims in the search for the inventive concept(s).[105] The term

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[96] J.R. Thomas, "Of Text, Technique, and the Tangible: Drafting Patent Claims around Patent Rules", (1998-1999) *17 J. Marshall J. Computer & Info. L.* 219-275

[97] A X Fellmeth, "Conception and Misconception in Joint Inventorship" (2012) 2(1) *New York University Journal of Intellectual Property and Entertainment Law 73-141* at 94 which states: "For both anticipation and infringement purposes, then, claims do not "define" the invention in the conventional sense; they define the rough outlines of what part of the invention can overcome anticipatory prior art and accordingly what part of the invention the patent protects from infringement. This key distinction between the invention and the claims has unappreciated importance for determinations of inventorship, and especially of joint inventorship."

[98] G Blachman and R Freeland, "The law of insufficiency: Is Biogen still good law?" (2009) 31(9) *European Intellectual Property Review* 478-483

[99] See Brunner, Yingkun and Rudolf Teschemacher, "Sufficiency of disclosure and support of the claims in proceedings before the SIPO and the EPO" (2012) Int'l Rev. Intell. Prop. & Competition L. 390-400

[100] Decision T409/91, *EXXON/Fuel Oils* [1994] O.J. E.P.O. 653,

[101] Ibid, Reason 3.3

[102] *Biogen v Medeva* [1997] R.P.C. 1

[103] *Generics v Lundbeck* [2009] R.P.C. 13

[104] *Cf* The recent case of *HTC Europe Co Ltd v Apple Inc*, and *Apple Inc v HTC Corporation*, [2013] R.P.C 30, where the Court of Appeal considered the term 'technical contribution' to be synoymous with the 'technical effect' of a given claim. (""Technical effect" (in the heading) and "technical contribution" (in the text) appear to be synonymous. In the case T 0154/04, Duns Licensing Associates, the Board referred to

[105] The House of Lord's error appears to have been induced by the unusual facts of the case. In this case the inventive step involved using a method to separate Escitalopram, the pure (+) enantiomer, from Citalopram which was a racemate comprised of (+) and (−) enantiomers. Thus bearing an inventive process and as well as an inventive product. A claim to Escitalopram as a product regardless of whatever method was adopted in creating it was contested as being insufficiently supported by the specification. Although the court found

'technical concept' should relate to the novel and inventive technical information which forms the basis a patent application and subsequently issued of claims if the European Patent Office's jurisprudence were rightly followed.[106] The House of Lord, however, held that the inventive concept or inventive step is simply the kernel of the invention (in this case the disclosed process), while the technical contribution is the evaluation or utilization of the inventive step (the patented product resulting from the process).[107] In truth however both the product and process in this case before the court were technical contributions to the art; only that one was limited (the process), while the other was unlimited (the product). In other words, the inventor could lay claim to the product in issue regardless of whatever process it was derived from, but he could not however claim any other process other than that he had disclosed.

The *Exxon* case had actually used the term 'technical contribution' in relation to the technical teaching contained in the specification but not that contained in the claim. The Board said:

> Although the requirements of Article 83 and Article 84 are directed to different parts of the patent application, since Article 83 relates to the disclosure of the invention, whilst Article 84 deals with the definition of the invention by the claims, the underlying purpose of the requirement of support by the description, insofar as its substantive aspect is concerned, and of the requirement of sufficient disclosure is the same, namely to ensure that the patent monopoly should be justified by the actual technical contribution to the art. Thus, a claim may well be supported by the description in the sense that it corresponds to it, but still encompass subject-matter which is not sufficiently disclosed within the meaning of Article 83 EPC as it cannot be performed without undue burden, or vice versa.[108]

Sufficiency as a doctrine ensures that the monopoly claimed does not exceed the technical contribution.[109] This doctrine applies to cases where an inventor seeks to claim matters which fall within the specification but which are not disclosed or technically taught by it. For example, if chemical A+B+C+D was disclosed in the specification, without B+C being specifically taught or identified, one would not be able to claim B+C. An example of this is seen in *Glaxo Group Ltd's Patent* where the court said: "(u)nexpected bonus effects not described in the specification cannot form the basis for a valid claim of this kind." This position is also the reason why we have selection inventions (i.e. "a particular compound or relatively small group of compounds from the larger groups previously disclosed in broad

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sufficiency on the ground that a product patent covers all methods of making it even if just one method was disclosed, it went ahead to upset an established principle in this aspect of patent law.

[106] See quote below, note 108, from Exxon, Reason 3.5

[107] Generic v Lundbeck, [2009] RPC 13 page 420 ("Inventive concept" is concerned with the identification of the core (or kernel, or essence) of the invention—the idea or principle, of more or less general application (see Kirin-Amgen [2005] 1 All ER 667, paras 112–113), which entitles the inventor's achievement to be called inventive. The invention's technical contribution to the art is concerned with the evaluation of its inventive concept—how far forward has it carried the state of the art? The inventive concept and the technical contribution may command equal respect but that will not always be the case.")

[108] Exxon, note 102 above, Reason 3.5

[109] D J. Brennan, "Biogen Sufficiency Reconsidered" (2009) 4 *I.P.Q.* 476-508.

terms")[110], largely in experimental sciences[111], whereby matters which are intellectually adumbrated in the specification could be specifically selected to form new technical teachings deserving patent grant.

The third argument is concerned with the background against which to understand the inventor's intention.[112] Understanding the intention of the inventor as expressed in the claims has been one of the most convoluted and debated matters in patent law.[113] It is generally agreed in patent jurisdictions that the claims should be the only basis to determine scope of monopoly the patentee is entitled to, but it is also appreciated that words sometimes can be deficient when it comes to fully rendering intention.[114] Literalism in interpreting patent claims will "*leave room for—indeed encourage—the unscrupulous copyist to take make unimportant and insubstantial changes or substitution in the patent which though adding nothing, would be enough to* take *the copied matter outside the claim, and hence outside of the reach of law".*[115]

As a consequence the doctrine of equivalents was espoused to deal with non-literal patent infringement.[116] Therefore it seems right to say that the more claims are broad and certain, the less would be the reliance on the doctrine of equivalents. In *Kirin Amgen v Hoechst Marion Roussel Limited*[117] Lord Hoffmann, with concurrence of other judges, denied the existence of a general doctrine of equivalents in the UK[118]. It was however decided that if patents claims are well drafted they could encompass after-arising technology which built upon the inventive concept of the patent. This possibility would be contingent on "*whether the person skilled in the art would understand the description in a way which was sufficiently general to include the new technology."*[119]

Collins is of the position that the extent to which claims can be used to hold subsequent technologies as infringing depends on the setting or time within which the new technology is

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[110] Philip Grubb and Peter Thomsen, *Patents for Chemical, Pharmaceuticals and Biotechnology* (Oxford,5th edition 2010) 247-248

[111] Sean Seymore, "Heightened Enablement in Unpredictable Arts" (2008) 56 UCLA Law Review 127, at 137 (explaining that experimental sciences are usually molecular sciences such as chemistry and biotechnology that do not lend themselves to predictability because their results are often characterized by uncertainty)

[112] As *per* Judge Bryson, in the US case of *Phillips v AWH Corporation* 415 F.3d 1303, 2005: "The claims of course do not stand alone. Rather, they are of "a fully integrated written instrument''...consisting principally of the specification that conclude with claims. For that reason, claims "must be read in view of the specification, of which they are a part"….As we stated in *Vitronics,* the specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term."

[113] M Meurer and C Nard, "Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents" (2004) 93 *The Georgetown Law Journal* 1967-1975 at 1947.

[114] W R Woodward, "Definiteness and Particularity in Patent Claims" (1948) 46(6) *Michigan Law Review* 755-786.

[115] *Graver Tank & Manufacturing Co Inc v Linde Air Products Company,* 339 U.S. 605 (1950).

[116] A K. Pechhold, "The Evolution of the Doctrine of Equivalents in the United States, United Kingdom and Germany" (2005) *J. Pat. & Trademark Off. Society* 411-436

[117] UKHL 46 [2005]

[118] *Cf*. Hugh Laddie, Kirin Amgen—the end of equivalents in Europe? (2009) 40(1) *IIC* 3-38.

[119] *Kirin Amgen*, note 117 , para. 80.

compared with purportedly infringed claims and specification.[120]If the setting or time is held to be the time of filing the application then the extent to which subsequent technology is captured will be limited. If however it there is no time frame against which to make this comparison (so long as the patent is not expired) then the specification can be used to catch any new technological adaptation of its technical teaching [121] . This shows that the specification helps in situations where the claims have inadequately claimed a monopoly.

The fourth argument relates to stability. Stability or durability is another factor which distinguishes the claims from the specification. It is a fact that while patent claims are susceptible to being interpreted broadly or narrowly, the specification bears more stability across the lifecycle of the patent, so long as the skilled person in the art could put it to use without undue experimentation.[122] Claims are also protean in nature since while they could be broad at the time of application they could have been thoroughly revised before grant or in fact expunged outright. Additionally the conception of claims could also be determined by economic or market interests or considerations. Thus Jacob LJ said:

> …it is often the practice of patent agents to put in first drafts which are wider than they expect to end up with so as to draw a wide search. As for the final claims in the patent as granted, their form and content will depend upon a number of individual factors—what has turned up in the prior art forcing reduction in scope, what subsidiary claims the patent agent has formulated based on the description and what monopoly is actually thought to be valuable (there is no point in claiming wider).[123]

Details in the specification may admittedly also be revised or eviscerated, but this would mean that claims which could have been founded upon the expunged parts of the specification would not come into light at all. As the claims derive their own lives from the specification[124] the inventor has limited choice over his disclosure in relation to what he claims; for so long as he claims a particular advance in a field of science he must show the difference between his own inventive ideas and those which previously existed[125] and must also supply details sufficient to put the invention in the hands of the skilled man.[126] It follows therefore that the specification bears more stability or durability than the claims.

The economic or market significance of patent claims influences the protean dynamics of claims. Patent agents, who never even partook in the inventive process, draft claims based on market considerations, so as to be able to secure as much monopolistic breadth as possible. An American case corroborates this proposition; the case of *Solomon v Kimberley-Clark.*[127]

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[120] K E Collins, "Enabling After-Arising Technology"(2009) 34 *Journal of Corporation Law* 1083-1126
[121] Ibid
[122] G.M Whitley, A Patent Doctrine without Bounds: The "Extended" Written Description Requirement, (2004) 71(2) *The University of Chicago Law Review* 617-637.
[123] *Markem v Zipher* [2005] R.P.C. 31, para. 100.
[124] D.J Brennan, "The Evolution of English Patent Claims as Property Definers" (2005) 4 *I.P.Q.* 361-399.
[125] M Meyer, "What's Special About Patent Citations? Differences between Scientific and Patent Citations" (2000) 49(1) *Scientometrics* 93-123
[126] M S Gupta, "Sufficiency of Disclosure in Patent Specification" (2009) 14 *Journal of Intellectual Property Rights* 307-316.
[127] 216 F.3d 1372 (2000)

In this case the court appreciated the possibility that the attorney might have entirely conceived one of the most valuable claims in the patent, but held that this was not enough to make the attorney a joint inventor since he was doing no more than discharging his fiduciary duties towards the inventor.[128] However, in the case of the specification, although it is also drafted by patent agents, the drafting is closely tied to the inventive concepts disclosed by parties involved in the inventive process. Therefore the drafting of the patent specification bears more proximity with the inventive process than the claims which are usually an abstraction from that process.

From the foregoing analysis one can extrapolate that the specification is the sum of inventive concepts provides the heart and backbone upon which the claims find subsistence. Therefore anyone who contributes to the inventive concept or sum of inventive concepts in the specification would have, either alone or in collaboration with others, joined in providing the *quid pro quo* for patent grant; they have supplied the measure of commensuration for patent monopoly, devised the background against which to understand the inventor's intent and facilitated that which is durable and certain in nature. One might also add that it better mirrors the intention of parties if they jointly assembled the technical details of the specification to jointly own claims derived therefrom.

4.2 Claim-by-claim approach and the fragmentation of patent ownership

Another reason the claim-by-claim approach should be eshewed in the UK that there are no body of rules to expediently support it as is the case in the USA. A synopsis on the history of joint inventorship in the USA is firstly necessary to help understand the dynamics and peculiarities of the US position. Thereupon focus will be directed unto exploring why, as a consequence, the UK should avoid this practice owing to the UK's particular circumstances.

Koneckny traces the evolution of joint inventorship in the USA.[129] He starts off by saying that although in the early times of joint inventorship the patent statute(s) never seemed to show aversion towards joint inventorship the courts evinced grave apathy towards the idea. This was reflected in judicial strictures placed on joint inventorship, such as requiring acclaimed joint inventors to contribute to all the claims—the 'all-claims' requirement.[130] This meant that all the claims in the patent had to be simultaneously and substantially contributed to by the co-inventors.[131] This judicial bias towards joint inventorship was induced by the rule that co-ownership of patents resulted in each party gaining an undivided equal entitlement to the rights arising from grants, a situation which would not seem right if parties had unequally forged the claims.[132]

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[128] J.S. Hendrickson, "Solomon v. Kimberly-Clark Corp.: The Federal Circuit Throws out the 112, 2 Regards Clause with Inventor Litigation Testimony" (2001) *32 U. Tol. L. Rev.* 407-450

[129] P Koneckny , "Windfall Property Rights for the Left Out Co-Inventor Who Gets Let into the Patent", 16(1) *Santa Clara Computer & High Technology Law Journal* 141-176

[130] Ibid.

[131] J.F Pearne , "Must Each Inventor Named In A Joint Patent Application Have Made An Inventive Contribution to Each of the Claims Thereof ?" (1976) 58 *J. Pat. Off. Soc'y* 205-236.

[132] Ibid.

Most prominent in this regard was the case of *Worden v Fisher.*[133] In this case the court held all the claims valid except one which had not been jointly worked out by the parties claiming joint inventorship. This jointly invented claim was rejected as invalid. In another case of that time, *Stewart v Tenk*, [134] Stewart and Campbell had contributed separate parts that were combined towards a patented machine. The components of this machine formed the subject-matter of several claims which had been jointly conceived by both, except the tenth claim which was attributed to only Stewart; the court ordered that their contributions be severed and distinctly patented. The court said:

> ….the evidence shows that Campbell did not contribute to the invention covered by the tenth claim. Stewart was the sole inventor of the slicing and coring-knife, and the patent for that, as a separate and distinct part of the machine, should have been issued to him alone.[135]

Similarly in *DeLaval Separator Co. v. Vermont Farm Machine Co*[136] although the parties had jointly contributed to the matters contained in the specification they had not jointly conceived all the claims. The court found that there was not joint inventorship for this reason. There was however an exception in cases where the contribution of the parties were directed toward a combined claim. Thus the court essentially stated that:

> 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.[137]

Another exception arose in circumstances where particular claims had been created by an employer and other improvement claims had been the work of his employees.[138] In such a situation the employee's improvements were attributed to the employer as natural annexations of his inventive ideas. This reasoning was followed in *International Carrier-Call & Television Corp. v Radio Corp. of America,*[139] with the court holding exceptionally that the employer would not be entitled to improvements which were radically distinct from that which the employer intended. There was a further extension of this reasoning in *General Motors Corp. v. Toyota Motor Co.*[140] In this case two employers had worked different claims

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[133] *Worden v Fisher* 11 Fed. 505 (E. D. Mich., 1882).
[134] *Stewart v Tenk* 32 Fed. 665 (S.D. Ill., 1887).
[135] Ibid.
[136] *DeLaval Separator Co. v. Vermont Farm Machine Co* 126 F. 536 (C.C.D.Vt. 1903)
[137] *Thropp & Sons v. DeLaski & Thropp Circular Woven Tire Co*, 226 Fed. 941 (3rd Cir. 1915)
[138] *Agawam v Jordan*, 74 U.S. 583 (1868) "…where the employer has conceived the plan of an invention and is engaged in experiments to perfect it, no suggestion from an employee, not amounting to a new method or arrangement which in itself is a complete invention, is sufficient to deprive the employer of the exclusive property in the perfected improvement. But where the suggestions go to make up a complete and perfect machine, embracing the substance of all that is embodied in the patent subsequently issued to the party to whom the suggestions were made, the patent is invalid because the real invention or discovery belonged to another."
[139] *International Carrier-Call & Television Corp. v Radio Corp. of America* 143 F.2d 598.
[140] *General Motors Corp. v. Toyota Motor Co* 667 F.2d 504 (1981)

without being under the technical direction of their employer. Nonetheless the court held that that there was joint inventorship under the reasoning that the invention was created for the purposes of their employer.

However, where none of these exceptions arose the claims had to be severed and separate applications had to be pursued. *In re Sarett*[141] is a case which confirms the implication of ruling against joint inventorship as the court said:

> It should be clear that the patent could not legally contain a claim to Sarett's sole invention under existing law because it would not have been the invention of the joint patentees. This rule of law forces the filing of distinct applications in many situations resembling that before us and creates the complexities and delays which could be avoided under a less rigid statute.[142]

However, as Fasse explains, there were cases such as *SAB Industri AB v Bendix*[143] which cast doubt on the existence of the 'all claims' rule on the basis that it had no foundation in statute or the patent office rules.[144] Fasse however posits that cases such as *Mueller Brass v Reading Industries* [145] did not clearly express doubt on the rule, but decided in favour joint inventorship despite acknowledging the difference in persons who had fashioned the claims.[146]

To clear doubts and to encourage joint technological engagements the law was reformed.[147] The 1984 amendment to s 116 of the American Patent Act of 1952, which was made to effect this change, provides that:

> When an invention is made by two or more persons jointly, they shall apply for patent jointly and each make the required oath, except as otherwise provided in this title. Inventors may apply for a patent jointly even though (1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of the patent.

The implication of this is that where a party worked in conjunction with others towards a given technical end contributing to at least one, but not necessarily to all, of the claims he

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[141] *In re Sarett* 327 F.2d. 1005, 140 U.S.P.Q. 474 (C.C.P.A. 1964).
[142] Ibid.
[143] *SAB Industri AB v Bendix* 199 U.S.P.Q. (BNA) 95, 104 (E.D. Va. 1978)
[144] W Fritz Fasse, "The Muddy Metaphysics of Patent of Joint Inventorship: Cleaning Up After the 1984 Amendments to s. 35 U.S.C 11" (1992) 5 *Harvard Journal of Law and Technology* 153-208, at 188
[145] *Mueller Brass v Reading Industries* 176 USPQ 361 (1972)
[146] Fasse, op cit., footnote 282
[147] G Slowinski and Z, K William, "Protecting IP in Collaborative Research" (2008) 51 *Research-Technology Management* 58-65.

became a co-inventor and entitled to combine his own separately contrived elements with others to form a single patent.[148]

However the amendment of s 116 without also amending ss 261 and 262 **(**governing ownership of patents) in the self-same Act meant that:

> each co-inventor presumptively owns a pro rata undivided interest in the entire patent, no matter what their respective contributions. Several provisions of the Patent Act combine to dictate this rule……Thus, a joint inventor as to even one claim enjoys a presumption of ownership in the entire patent.[149]

This position has received fierce criticism.[150]Justice Newman in her dissenting judgement in the same case, *Ethicon,* took the view that it would be inequitable to allow a person to who had merely contributed to a single or few claims to assert equal ownership rights with those persons who had substantially contributed to the totality of the invention.[151] Despite this vigorous dissent, the majority's position continues to prevail. Merely contributing to a claim therefore allows in the US one to become a co-owner bearing equal rights to those who devised the core inventive concept(s).[152]
The UK neither has a history nor practice similar to that of the USA on this subject, which makes it necessary that when disparate claims in a granted patent are ascribable to discrete entities in a collaboration, ownership over the ensuing patent should be commonly owned. However, the idea of adopting statutory provision(s) as in the USA to allow ownership on the basis of claim contribution would pave way for inequity and unfairness in inventorship matters, as persons who have marginally contributed to the overall inventive concept (although who may have significantly contributed to a claim or two) would assume an equal status as an inventor.

When the patent claims have a degree of technical contiguity but are owned by different persons the result may be competing, complimentary, or blocking patents (or a combination of these).[153] Claims are complementary when they can be combined to form one composite

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[148] W Fritz Fasse, op cit. pages 201-202
[149] *Ethicon Incorporation v United States Surgical* 135 F.3d 1456, 45 U.S.P.Q.2d 1545 (Fed. Cir. 1998)
[150] T Guledjian, "Teaching the Federal Circuit New Tricks: Updating the Law of Joint Inventorship in Patents" (1999) 32 *Loyola of Los Angeles Law Review* 1273-1302.
[151] *Per* Justice Newman in *Ethicon Incorporation v United States Surgical*, note 147 above, "The panel majority, confirming this error, holds that Mr. Choi's contribution to two claims means and requires that Yoon "must now effectively share with Choi ownership of all the claims, even those which he invented by himself." That is incorrect. As I have discussed, the law of shared ownership was founded on shared invention, a situation that admittedly does not here prevail. Whether or not Mr. Choi is now properly named under §116 because of his contribution to two claims, he is not a joint owner 1 and he does not have the right to grant a license under all fifty-five claims. No theory of the law of property supports such a distortion of ownership rights. Thus I must, respectfully, dissent from the decision of the panel majority."
[152] *Israel Bio-Engineering Project v. Amgen*, Inc., 475 F.3d 1256, 2007. See also *Lucent Techs., Inc. v. Gateway, Inc*., 543 F.3d 710, 2008.
[153]G Goller, "Competing, Complementary and Blocking Patents: Their Role in Determining Antitrust Violations in The Area of Cross-Licensing, Patent Pooling and Package Licensing" (1968) 50 *J. Pat Off. Soc'y* 723-753.

(inventive) entity;[154] Inventions are blocking when the use of one is likely to infringe the other;[155]and inventions are competing when they serve as alternative to each other.[156]

Let it be imagined that a patent is granted for Chemical *A+B*, to be used as a new dental formulation. Integer *'A'*, devised by Mr X, has the capacity to clean tainted or stained enamel. Integer *'B'*, conceived by Mr P, is able to treat gum infections. Additionally Mr. Z comes up with the idea of combining integers *'A'* and *'B'* in paste form, a form which was originally difficult for Messrs X and P to achieve. Integer *'A'*, integer *'B'*, and *'A+B'* all qualify as independent claims.

If inventorship is considered along the claim-by-claim lines then the result would be that Mr. X would not be able to exploit matters falling within integer *'B'*-based claim(s) and the paste-based claim(s); Mr Y would not be able to practice matters falling within integer *'A'*-based claim(s) and the paste-based claims; and Mr Z not be able to practice integers *'A'* and *'B'* singularly except in their combined form as paste. Thus integers *'A'* and *'B'* would become complementary inventions, while integers *'A'* and *'B'* would serve as blocking patents against the paste-based combination of both integers, and *vice versa*. Let it be further assumed again that Mr. Z's laboratory assistant, Mr W, comes up with a claim based on combination of integers *A* and *B* in tablet form. The paste-based claims and the tablet-based claims will then become competing inventions.

Thus it becomes obvious that the claim-by-claim approach is apt to cause the fractionalization of patent proprietorship. In general, and particularly in fast advancing sciences such as biotechnology (and also modular or complex technologies) where contiguous improvements to inventive concepts might be hit upon soon after the realization of leading inventive concepts[157], this would pose problems for the exploitation of technology.[158] Those seeking to make use of technological matters contained in different patent claims (of same patent) would have to seek licences from each claim proprietor, and each of these claim proprietors would additionally have to engage in cross-licensing. This will throw up tedious and expensive licensing negotiations (i.e. transaction costs) and, in some cases, will require recourse to administrative remedies such as compulsory licenses.[159] Some inventions (i.e. claims) would eventually be left unexploited or unused because, because they are blocked, need to be assembled in combination with others to achieve their function or there is an alternative which is better and/or cheaper.[160] This could throw up a

[154] Ibid 725
[155] Ibid 723
[156] Ibid 725
[157] E K Steffe et al, "Biotech Collaborations and Maximizing Patent Protection: Two Hypotheticals" (1999) 27(2) *AIPLA Quarterly Journal* 149-188.
[158] R.A. Merges, "Brief Note on Blocking Patents and Reserve Equivalents: Biotechnology as An Example" (1991) *73 J. Pat. & Trademark Off. Soc'y* 878-888 at 878.
[159] D Nicol and J Nielson, "Australian Medical Biotechnology: Navigating a Complex Patent Landscape" (2005) 27(9) *European Intellectual Property Review* 313-318
[160] J Bejcek, "Mergers and New Technologies" (2005) 36(7) *IIC* 809-835

morass of complexities that come with patent thickets[161] or and patent anti-commons[162]--market failure. Applying economic theory to patents one can say a patent market failure may be said to arise in situations where economic value(s) which could to be derived from the use of patents cannot be achieved because of bargaining difficulties resulting from a divergence in the ownership of patents.[163]

4.3 Room for specious inventorship assertions.

Discussion on this point builds upon the argument made above that claims are protean and uncertain in nature. Since the choice of claims is discretionary these are not be a dependable starting point to found an inventorship claim. One unscrupulous advantage that it gives to a putative inventor is that, upon being able to show a nexus with other inventive entities or inventors, it allows him to wait till all the claims have been drafted or granted before then launching a claim of inventorship. Tresansky confirms this position upon reviewing American cases on this subject:

> These cases strongly suggest that an inventorship determination should not be made until the specific nature of the contributions of each participant involved in the making of the invention is ascertained and the claims of an application have been drafted in substantially final form.[164]

Sherry opines that although where there are no claims the specification could be a starting point for determining inventorship where an application has not been filed; but in practice this is rarely the case.[165] She holds further that where an application has been filed one could assert inventorship on the basis of drafted claims but that if, upon patent grant, the claim which forms the core of one's assertion is not successfully issued then one can be struck out of the list of co-inventors.[166]

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[161] As popularly defined by Carl Shapiro a patent thicket is "a dense web of overlapping intellectual property rights that a company must hack its way through in order to actually commercialize new technology". See C Shapiro, "Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting" available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=273550 (last viewed on 20/11/2013)

[162] As argued by Michael Heller and Rebecca Eisenberg "a resource is prone to underuse in a "tragedy of the anticommons" when multiple owners each have a right to exclude others from a scarce resource and no one has an effective privilege of use." See M Heller and R Eisenberg, "Can Patents Deter Innovation? The Anticommons in Biomedical Research" (1998) 280 *Science* 698-701.

[163] Francis Bator, 'Anatomy of Market Failure.' (1958) 72 The Quarterly Journal of Economics 351 ("What is it we mean by "market failure"? Typically, at least in allocation theory, we mean the failure of a more or less idealized system of price-market institutions to sustain "desirable" activities or to estop "indesirable" activities. The desirability of an activity, in turn, is evaluated relative to the solution values of some explicit or implied maximum-welfare problem.")

[164] J Tresansky, Inventorship Determination, (1974) 56 J. *Pat. Off. Soc'y* 551-573 at 565.

[165] S Murphy, "Determining Patent Inventorship: A Practical Approach" (2012) 13(2) *North Carolina Journal of Law and Technology* 215-246.

[166] Ibid.

More so, using the claims as the starting point could bring about inequity since claims could be subjectively expressed. To avoid subjectivity the approach in the USA (for example as seen in *Trovan v Sokymat SA*[167]*)* is to hold that "*an inventorship analysis, like an infringement or invalidity analysis, begins as a first step with a construction of each asserted claim to determine the subject matter encompassed thereby."*[168] This way the court seeks to sieve out the inventive concept behind the claim objectively. But the truth is that the inventive concept contained in the claim is only a derived inventive concept; it is an abstraction from the specification.[169]The inventive concept contained in claims are therefore arguably more subjective than those contained in the specification given that the specification relates to established technical information, while the claims are merely protrusions of this. The broader the scope of protection sought, the broader the inventive concept would be, but the narrower the protection sought the narrower the inventive concept would be. Jacob LJ confirms this view in *European Central Bank v DSS*[170] saying:

> Professor Mario Franzosi likens a patentee to an Angora cat. When validity is challenged, the patentee says his patent is very small: the cat with its fur smoothed down, cuddly and sleepy. But when the patentee goes on the attack, the fur bristles, the cat is twice the size with teeth bared and eyes ablaze.[171]

Thus claims could be narrowed or broadened to deny or support a person's claim to inventorship, depending on the circumstances of the case. The same cannot be said for the specification which, beyond describing the ideas supporting the claims, provides a detailed account of the background, contents and history of the inventive concepts contained in it.[172] If an attempt is made to unfairly shrink the inventive concepts of the disclosed in the specification so as to deny another's assertion of inventorship one diminishes the claims that can arise from and be supported by the specification. If, however, the sum of inventive concepts in the specification is left broad then a putative inventor would have to indicate those technical matters contained in the specification which emerged from him; the failure of which denies him entitlement.[173] Hence the specification serves well as the starting point for

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[167] *Trovan v Sokymat SA,* 299 F.3d 1292, 1302 (Fed. Cir. 2002

[168] Ibid

[169]*Network, LLC v Centraal Corp.* 242 F.3d 1347, 1352 (Fed. Cir. 2001) where it was stated that "The role of the specification includes presenting a description of the technologic subject matter of the invention, while the role of claims is to point out with particularity the subject matter that is patented…..The claims are directed to the invention that is described in the specification; they do not have meaning removed from the context from which they arose. Thus the claims are construed to state the legal scope of each patented invention, on examination of the language of the claims, the description in the specification…".

[170] *European Central Bank v DSS* EWCA Civ 192 (19 March 2008)

[171] Ibid, para. 5.

[172] *Furfix Products Limited v Harold John Andrews* O/021/98, the Hearing Officer explaining that patents could claim matters which are not necessarily disclosed in the specification, said"….there is a fundamental difference to my mind between an application which describes a particular piece of apparatus, and an application which contains no such description, but has claims or statements which include within their scope that piece of apparatus."

[173] *Dr Huang v California Institute of Technology*, Case No. CV 03-1140 MRP., 2004 where it was held that "Even honest and well-meaning people might be tempted to amplify their role in creating such an important invention: this is exactly the concern that the corroboration requirement is designed to address….. The requirement that testimony be corroborated is designed to ameliorate the concern that a party describing his

such considerations. If a party cannot demonstrate his contribution to or influence upon the specification, why should (s)he be allowed an easy route to entitlement by pointing to claims ascribable to him?

The American case of *The Board of Education v American Bioscience, Inc*[174] brings this situation to light. In this case the district court had held that the sole independent claim and its dependent claims could be attributed to the respondents and one of the appellants. On appeal however the court found for the appellants on the ground that the process and starting materials invented by the respondents was not the same as that which had been conceived by the appellants, and could not in fact have brought the claims into being. This shows simply that the court here was concerned beyond the claims, as it inquired into the source of the claims; in other words into the technical teaching responsible for the claims as contained in the specification.

In the very recent case of *Falana v Kent State University*[175] the plaintiff had devised the methods and chemical structure which had made it possible for the defendants to fashion the claimed chemical compounds. The defendants argued that inventorship revolved around the contrivance of claims but that the claim in issue, Compound 9, had nothing to do with the contribution of the plaintiff. The court disagreed, saying:

> The claims of the '789 Patent are not limited to Compound 9. Instead, they claim a subset of the entire genus of naphthyl substituted TADDOLs—those which are RR enantiomers. Falana contributed to the conception of this genus by providing the team of which he was a part with the method for making these novel compounds. Falana's lack of contribution to the discovery of Compound 9 itself does not negate his contribution of the method used by the other inventors to make the genus of compounds covered by the claims at issue.[176]

Here the court was not carried away by the wording of the claims but rather focused upon the whole technical teaching responsible for the claims of the patent issue which Falana (the plaintiff) had played a vital roles in.

One important point to make is that false inventorship claims are contingent upon the nature of the science to which patents relate. It is possible to argue that the cases of *Falana* and *American Bioscience* turned out as they did because nature of the technical field to which the inventions relate[177](namely chemistry). A degree of specificity is necessarily required in such

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actions in retrospect might be tempted to do so in "an unjustifiably self-serving manner."…. This Court must look for corroborating evidence….."

[174] No. 02-1109 (Fed. Cir. June 23, 2003)

[175] *Falana v Kent State University* No. 11-1198 (Fed. Cir. Jan. 23, 2012)

[176] Ibid

[177] B Shaughnessy, "The False Inventive Genus: Developing a New Approach for Analyzing the Sufficiency of Patent Disclosure Within the Unpredictable Arts"(1996) 7(1) *Fordham Intellectual Property, Media and Entertainment Law Journal* 147-228*;* See also *Shering Corp v Gilbert,* 153 F.2d 428 (2d Cir. 1946) which stated that "There is, however, a practical limit upon synthesis, though the extent of that is not fully known, for some of

experimental science fields.[178] The starting materials to a large extent have to be exact, the parameters have to be reasonably precise, quantification has to defined, and so on.[179] These conditions have to be stated in the specification so as to be able to support the claims. This would mean that the levels of abstraction, in form of claims, which could be made from the specification in experimental sciences would highly likely have close proximity with the specification. This does not mean that there cannot be generic claims (Markush claims) in experimental science, but this too would require exacting disclosure details and, as such, the levels of robust abstraction would generally be low.[180] Therefore it appears that for one to have substantially contributed to a claim in experimental science patents one would to have somehow influenced the specification's formulation.

This contrasts with predictable arts—such as electronics, mechanics, IT, etc[181]—where the levels of abstraction that can be made from the specification could be broad. To use the words of Bernard Chao: "In cases where the technology is predictable, disclosing a single embodiment will often allow persons of skill in the art to practice other embodiments".[182] Lemley and Burk have expounded upon the thesis that emergent technical fields are likely to be unpredictable, but mature areas are more predictable and these peculiarities affect the patentability of matters arising from them.[183] Thus, they opine, unpredictable sciences will usually have low inventive step requirements, but high disclosure and enablement requirements. On the other hand, predictable areas are likely to have high-inventive step requirements but lower disclosure requirements. The reasons provided are simply that emergent technologies (usually those arising from experimental sciences) would usually not have been fully explored and thus the average skilled person(s) in the field (for patent law purposes) cannot easily foresee the possible advancement. As such it would be more difficult to show obviousness and elaborate explanation of the invention will be necessary.[184] On the other hand, mature or established fields (usually predictable arts) would likely have been

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the new theoretical compounds might be impossible to create, and some would be so unstable that they would disintegrate either at once or in short periods of varying length. Moreover, while analogy is at times useful, organic chemistry is essentially an experimental science and results are often uncertain, unpredictable and unexpected."

[178]N Lissy, "Patentability of Chemical and Biotechnology Inventions: A Discrepancy in Standards" (2003) 81 *Wash. U. L. Q.* 1069-1097.

[179]M Sampson, "The Evolution of the Enablement and Written Description Requirements Under 35 U.S.C. § 112 In the Area of Biotechnology" (2000) 15 *Berk. Tech. L.J.* 1233 – 1274.

[180] Trevor Cook, *Pharmaceuticals Biotechnology and the Law* (LexisNexis, 2008) at 117-120

[181] *Re Fisher*, 166 USPQ 18 (CCPA 1970) "In cases involving predictable factors such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can without difficulty and their performance and characteristics predicted by resort to known scientific laws"

[182]Bernard Chao, "Rethinking Enablement in the Predictable Arts: Fully Scoping the New Rule" (2009) Stan. Tech. L. Rev. 3 (unpaginated article)

[183] M Lemley and D Burk, "Is Patent Law Technology-Specific?" (2002) 17 *Berkeley Technology Law Journal, Berkeley Technology Law Journal* 1155–1206

[184] T Minssen, "Meanwhile on the Other Side of the Pond: Why Biopharmaceutical Inventions that Were 'Obvious to Try' Still Might Be Non-Obvious – Part I" (2010) 9 *Chicago-Kent Journal of Intellectual Property* 31-33.

overly explored and as such the inventiveness requirement would be heightened, with minimum disclosure required to put the invention into practice.[185]

The two immediately preceding paragraphs therefore demonstrate that just as patentability could depend upon the nature of the art (i.e. whether it is experimental or predictable) so too could the propensity to assert false inventorship. Thus it will be less easy to claim inventorship speciously in experimental arts than predictable arts, even in circumstance where a claim-by-claim approach were followed. As a result applying the claim-centric approach to inventorship in a predictable field will allow for spurious inventorship. For example if A, while working in connection with B, had conceived a matter which happens to form the basis of a claim within a subsequently conceived generic conception of matters (i.e a disclosure) by B but founded upon sum of distinct principles (from those conceived previously by A). This will give reason for A to claim co-inventorship with B, if the claim-by-claim approach were adopted. However, going by the specification rather than the claims in ascertaining inventorship would help avoid such an unfair outcome.

This is what happened in *Markem v Zipher*. The plaintiff (a former employer) purportedly had an inventive idea which they believed had been disclosed to some of defendants (their erstwhile employees) confidentially, with the latter improving on it and leading to the disclosure of a new technical teaching. When a patent was granted to the defendant the plaintiff sought ownership over claims which had been founded on the purported inventive conceive concept(s) they had allegedly disclosed to the defendants. The Court of Appeal, overturning the High Court decision, held that since the plaintiffs could not show their conceptual contribution to the contents of the specification they could not consequently establish ownership to any of the claims arising from the patents. The court found that the supposed inventive concept disclosed confidentially was not in fact confidential as professed and thus was part of the state of the art. If further held that the only likely remedy available to the claimants was a revocation of the claim in issue on the basis on prior disclosure; not joint inventorship.[186] The court however did hold that even if the purportedly usurped inventive concept qualified as 'confidential information' and was subsequently advanced as to form the subject-matter of the specification the Comptroller of patents had sufficient discretion to do justice to the plaintiff (whether by imposing compensation or ordering a licence etc.) but not

[185] *Per* Lord Walker in *Synthon BV v Smithkline Beecham* (2005) UKHL 59, para. 64 which states that "In the case of low-tech invention [for instance a simple agricultural machine such as a hay rake with ground driven wheels….] the simple disclosure of the invention will probably be enough to enable the skilled person perform it. By contrast in the case of a high-tech invention in the field of pharmaceutical science the bald expression of the existence of the invention may have to be accompanied by detailed disclosure enabling the skilled person to perform it."

[186] *Per* Jacob LJ, *Markem v Zipher*, para. 84: "Nor are we impressed by Mr Watson's alleged unfairness. If the subsequent patent consists of material which is not the confidential information of the former employer it can hardly be patentable. It will be old or obvious. The former employer's remedy is not to claim entitlement to such a claim, but to have it revoked. The "unfairness" only arises in relation to such a case. If the employee has taken secret information there will be no unfairness—for the action for breach of confidence as well as an entitlement under s.8 will lie at the suit of the employer."

to declare joint inventorship in such situation: there was no joint conception of the inventive concept(s) contained in the specification.[187]

5. Conclusion

It is argued in this article, after a review of the US and UK practices, that preference should be given to the sum of inventive concepts contained in the specification over those contained in the the claims when it comes to the representation of 'invention' in entitlement disputes. This article argues that the specification should be the fulcrum for determination in inventorship contexts.

This should be the case as, because judging by functional relationship between the claims and specification, the specification represents the *raison d'etre* of the claims. The specification is more stable across the lifecycle of the patent; serves as guide in determining deserved monopoly where claims are disputed (i.e. sufficiency and interpretation of claims); and going by the specification helps to prevent false inventorship assertions. Additionally an approach utilising the specification helps to avoid the fragmentation of entitlement when it comes to a singular patent with several claims.

In summary, except to the extent that claims account for the economic value of an issued patent, the information contained in the specification is technically superior to the claims. This therefore makes the specification the better point of reference in inventorship disputes.

[187] *Per* Jacob LJ, *Markem v Zipher*, paragraph 86: "Oddly, s.8 seems to be drafted in the absence of any recognition of the independent action for breach of confidence (save perhaps impliedly by reason of the s.8(7) power). Neither counsel could explain this. The Report of the Committee to Examine the Patent System and Patent Law (the "Banks Committee Report", Cmnd.4407) which in part led to the 1977 Act recommended that jurisdiction be conferred on the Comptroller to deal with disputes about entitlement but makes no mention of the fact that the law already provided a remedy. One thing the Comptroller's jurisdiction does do is to cover complicated situations where, for instance, an invention is made partly using information in breach of confidence and partly information added to that—where the applicant has added his own ingenuity to robbery."