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SUEPO Working Paper

A Quality Strategy for the EPO

“The PTO during the 1990s ‘reengineered’ itself, declaring its mission to be ‘helping our customers to get patents’. This is an indefensible position for a quasi-judicial administrative agency that is trusted with representing the public interest in deciding whether to issue patents. While the job of the PTO is certainly to issue good patents, it is also to reject bad ones. The idea that applicants, rather than the public at large, are the intended beneficiaries of the patent system cannot help but to contribute to the push to issue patents regardless of quality”.

Mark Lemley,
Rational Ignorance at the Patent Office,
Northwestern University Law Review,
Vol. 95, No. 4 (2001), p. 1495 ff, note 3.

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<http://www.suepo.org/public/docs/2002/quality.pdf>

SUMMARY

This working paper reviews some of the criticism raised in the literature concerning the lack of quality of issued patents and discusses the means to remedy the present situation. Patents provide the patent holder with a temporary monopoly to use the patented invention, and thereby they involve a social tradeoff between the incentive to invent and the barrier to competition they create. The overall balance of the patent system will be economically beneficial to society only if the right conferred to the patent holder is commensurate with its contribution to the existing state of the art.

In a pure *registration* system, the control of patent quality is left to the courts, generally in the framework of infringement litigation. However, due to the cost of litigation, a large number of invalid patents remain unchecked. Large portfolios of low quality patents have a substantial threat value against competitors and the public at large (for which it might be cheaper to pay license fees than to fight an expensive and perhaps ruinous litigation). Moreover, the need to file large numbers of low quality patents for mere defensive purposes can lead to “patent races” which divert resources out of productive activities into the “patent game”. In such a system, patents might harm competition and even reduce innovative activity. The role of an *examining* patent system is to guarantee a sufficiently level of quality of issued patents, so as to protect the public from extortion effects due to high litigation costs. Hence, patent offices are established in the public interest and not as service providers to individual patent applicants.

Patent quality involves substantial and procedural requirements. The principal substantial requirements are the standard of patentability (involving an accurate determination of the relevant prior art, novelty assessment, and above all the right level of inventive step or non-obviousness) and the scope of protection (avoiding overbroad claims relatively to the teaching of the patent application as filed). Procedural requirements aim at equal treatment of all stakeholders in the patent system (patent applicants, their competitors, and the public at large); they include procedural fairness, timeliness and affordability). Although there may be certain tradeoffs between these requirements, each of them has a value of its own and produces effects on the economy as a whole. It would therefore be irresponsible to “cut corners” on some of these requirements, but diminishing returns and the need to optimise resource allocation have to be taken into account.

Economic studies have revealed several indicators of quality, or rather of lack of it. These studies provide useful insights in the work of patent offices and regarding adequate standards of patentability. However, as pointed out in the studies themselves, such investigations have inherent limitations; due to the diversity of relevant quantitative and qualitative parameters, and their variation across technical fields and from one application to the other, monitoring a set of econometric indicators is not sufficient to ensure a consistently high patent quality. Instead of using a purely mechanistic approach, patent examiners must exercise their judgement to deal with individual cases each having their own characteristics. Patent examination is more like a craft than an industry.

Hence, in addition to developing and refining indicators of quality, assuring patent quality requires to provide the resources, the framework and the incentives for examiners to best exercise their discretion and judgement. In addition to adequate training (which looks much like an apprenticeship) and appropriate time allowances, examiners should be encouraged to look beyond the narrow scope of their daily work (e.g. through contacts with, and the study of the work of, industry, patent attorneys and infringement courts). The most useful framework for sharpening and harmonizing the examiners’ judgement is within the examining divisions, provided their composition is varied and their members take the time to effectively fulfill their functions. Cross-functional teams, delegation of responsibilities, and the involvement of staff in the administration of their units, are further ingredients to foster a true quality culture.

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INTRODUCTION

During the last years, the patent system has been increasingly criticised for the poor quality of issued patents.¹ Monopolies are granted for alleged inventions which are either already known, or whose contribution to the existing knowledge barely justifies the social cost of a restriction to free competition. Moreover, the scope of claims granted by patent offices is often criticized for being overbroad and confers a protection which goes beyond the inventor's contribution to the prior art.

The problem is due at least in part to the patent offices having to struggle with an increased workload, for which qualified examining staff cannot be recruited, trained and retained in sufficient numbers and sufficiently quickly. They are thus faced with increased "backlogs" of untreated patent applications, resulting in legal uncertainty both for the applicant and for the public, and in order to get rid of this stock of applications, there might be a temptation to "cut corners".²

Hence there have been calls for reform of the patent system, either by improving the administration of the patent offices themselves³, or by relying more heavily on private parties as a supplement, or even an outright alternative to the patent offices⁴. Many of these studies originate from US sources, but they often look at the patent systems of other countries as well, and in any case, their conclusions are of such a general validity that they are equally applicable to the European patent system.

Besides being more in line with public interest, increasing the standards of patentability might also help keeping the workload of examining offices at a manageable level, since there is no longer a need for industry to file large numbers of low quality patent applications for mere defensive purposes. This was in fact one of the reasons invoked by industry at the end of the 1960's to support the creation of a European Patent Office, in view of the then existing workload problems of the national patent offices, which made it difficult for them to keep a high level of patent quality.⁵

The EPO will be able to justify its existence only if it fulfills the public's expectations as to the high quality standard of the examination it performs. To define an adequate quality policy, one has to ask what the purpose of a patent office is in the first place. This should be derived from the EPO's legal mandate as given by the EPC (section I below). Only then will we be in a position to determine how quality can be defined (section II), continuously monitored (section III), and above all continuously improved ("quality assurance", section IV).

¹ See e.g. J.H. Barton, "Reforming the Patent System", *Science* Vol. 287 (17 March 2000), pp. 1933-1934; *The Economist*, April 8th 2000 issue, "Who owns the knowledge economy" (leader) and "Patent wars" (pp. 85-89). See also J. Yates, "Visit of EPO delegation to Finland and Sweden 22-26 June 1998", in *EPO Gazette* 16/98 (07.09.1998), pp. 10-11 (see in particular page 10, right hand column: visit to Scania).

² See *The Economist* (supra note 1) page 89 ("Patent nonsense") citing an anonymous examiner, according to which the easiest way to dispose of a file is to grant a patent (while rejections take a disproportionately larger amount of time); since examiners get their points, and sometimes their bonuses, according to their number of disposals, the incentive for rejection is not particularly high.

³ See e.g. Robert P. Merges, "As many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform", *Berkeley Tech. L. J.* Vol. 14, p. 578 (1999); John R. Thomas, "The Responsibility of the Rulemaker: Comparative Approaches to Patent Administration Reform", *Berkeley Tech. L.J.* Vol. 17, p. 799 (2002).

⁴ See e.g. John R. Thomas, "Collusion and Collective Action in the Patent System: A proposal for Patent Bounties", *U. Illinois L. Rev.*, Vol. 2001, No. 1, p.305; Mark Lemley, "Rational Ignorance at the Patent Office", *Northwestern University Law Review*, Vol. 95, No.4, p. 1495 (2001).

⁵ See F. Panel, "Qu'attend l'industrie du brevet européen ?", in *Colloque CEIPI, Journée d'étude de la propriété industrielle et de la mise en valeur de la recherche* (24-26 September 1969).

I. THE LEGAL MANDATE OF THE EPO

According to Article 4(3) EPC, “[t]he task of the [EPO] shall be to grant European patents”. This does not mean that *any* application should result in a granted patent.⁶ On the contrary, European patents are delivered only for inventions meeting the conditions set out in Articles 52 ff. EPC (in particular novelty and inventive step), after an examination procedure (Articles 90 ff. EPC) which might result in refusal or grant (Article 97 EPC). Hence, the primary role of the EPO is to *examine* applications, and only then to grant those found to meet the EPC requirements; after all, the EPC speaks of “examining divisions” and not of “grant divisions”.⁷

However, due to the complexity of the matter, patentability standards do not lend themselves to a precise definition in legal terms. Hence a need for interpretation of the EPC in the light of the goals pursued by the legislator (so called *teleological* interpretation). To that effect, we have to look at the role of the patent system in general (section A below) and at the function of *examining* patent offices in particular (section B). This will help seeing the mission of the EPO in the proper light (section C).

A. The role of the patent system

By the temporary monopoly they confer, patents provide an incentive to create and disclose technical innovations, which benefits the economy and society as a whole. On the other hand, the monopoly artificially reduces free competition and thus entails a social cost. As a consequence, throughout modern history, the benefits of the patent system, and sometimes its very existence, have always been questioned with more or less virulence.

What can be considered the first patent law in the modern sense, the British “Statute of Monopolies” of 1623-24, was in fact a law to forbid the arbitrary grant of monopolies and privileges by the sovereign, with the exception of patents to the “first and true inventor” of a new manufacture, which were deemed useful to society. The United States Constitution of 1787 stresses the need for patents to “promote the Progress of Science and the useful Arts”. During the 19th century, there was a strong anti-patent movement, partly reflecting the doctrine of economic liberalism prevailing at the time, but partly also due to abuses of the system. In 1869, the Netherlands even abolished their patent system altogether, not to reintroduce it until 1910-12. By the time, the abolitionist movement had faded all over the world, in line with a rise of protectionism, but also with the provision of strong examining offices in some large industrialised countries to prevent past abuses of the system (see below). Today, criticism of the patent system is on the rise again (see the introduction).

⁶ Some have argued from the use of the term “grant” in Article 4(4) EPC that in case of doubt, the application should be allowed (as opposed to refused). We believe that, when seen in context, the stress in Article 4 is rather on the words “European patents”, as defined in Article 2 (i.e. a patents having legal effects in each of the designated contracting states). The use of the definite article in the German and French wording of Article 4(3) (“*die* europäischen Patente”, “*les* brevets européens”) suggests that its intention is to entrust the examination of European patents *exclusively* to the EPO; this seems to preclude a system of mutual recognition as sometimes envisaged within the framework of WIPO and the PCT.

⁷ One can only be puzzled by the term “*grant* division” inadvertently used in certain EPO documents (see CA/132/02, page 62, item 14). Such a lapsus, Freudian as it may be, is all to revealing of the mindset prevailing in certain quarters of the EPO.

A widely cited macroeconomic analysis of the patent system, which also reviewed the above history, was performed in 1958 by the economist Fritz Machlup for the U.S. Senate.⁸ Some criticism raised in this study is still mentioned today:

- The incentive role of patents is not always certain, since many innovations would have been created or disclosed anyway. In any case, the benefits of this incentive must be put in balance with the macroeconomic costs of monopoly and reduced competition (direct social cost). A reduced incentive to innovate might even result from patents which block too big an area of technology.
- In addition, there is an indirect social cost if excessive resources are diverted by “rent-seekers” out of productive activities into the “patent game”.⁹ In particular, a low standard of patentability (many patents for new, but trivial inventions) forces companies to file large numbers of patent applications for mere defensive purposes, thus entering a patent race which absorbs resources that might otherwise have been devoted to innovation.¹⁰
- On top of this, one should not forget that there is also a social cost in the “administration” the patent system, i.e. in the human and financial resources devoted to the obtention and enforcement of patent rights, including patent offices, patent attorneys and patent courts.

Nevertheless, there is presently a relative consensus that patents can constitute an economically beneficial incentive, provided that the granted monopoly is commensurate to the inventor’s contribution to society, both regarding:

- a sufficient level of inventive activity (as opposed to mere novelty in the narrow sense);
- a reasonable scope of protection (avoiding overbroad claims).

The question is who will act as the gatekeeper to ensure the patentability standards are met.

B. The function of an examining patent office

There are basically two systems in use for assessing patent validity and setting patentability standards. In the *registration system*, the patent is merely filed with the administration and the determination of patentability is left to the courts, mostly at the occasion of infringement litigation. In the *examination system*, a specialized agency performs a preliminary validity check, though validity may still be contested later on in court.

An example of the first system is France, where it was long considered inadmissible to let the executive (i.e. the administration) arbitrarily decide on the “sacred property rights” of the inventor; this was the preserve of an independent judiciary.¹¹ Hence

⁸ Fritz Machlup, *An Economic Review of the Patent System*, Subcommittee on Patents, Trademarks and Copyrights, Committee on the Judiciary, U.S. Senate, Study No.15, U.S. Government Printing Office, Washington, D.C (1958).

⁹ See also Merges 1999 (supra note 3), p.592; Thomas 2001 (supra note 4), p. 319-320.

¹⁰ See EPO Gazette 1998 (supra note 1).

¹¹ see Eugène Pouillet, *Traité théorique et pratique des brevets d'invention* (Paris, 1872), nos. 127 and 585.

patents were merely registered without any validity control. Invalidity had to be asserted by the alleged infringer before a criminal court (since at that time, infringement was a criminal offense also for patents, not only for copyright), or had to be requested by an interested party (e.g. a competitor planning to use the invention) before a civil court. On the other hand, if the patent was found invalid, the patentee risked to be condemned to severe damages for having registered a patent "abusively".¹² Hence a high risk both for the patentee and for its competitors (though mutual deterrence seems to have preserved a certain equilibrium).

With time, certain countries (United States 1836, Germany 1877) introduced examination procedures in the modern sense, where patent offices acted as a quasi-judicial body and assessed the allowability of a patent application according to a legal standard. In particular the German patent office had the reputation of high patenting standards (more of 50% of the applications were rejected).¹³ The need for a preliminary examination was felt when increasing numbers of invalid patents were registered:

" [The] major defect of the [U.S.] Patent Act of 1793, which remained the law of the land until 1836, [was] ... that anyone could obtain a patent for anything, merely by paying the requisite fee and meeting the ministerial requirements imposed. It mattered not that the supposed invention had already been patented or had long been known and used. The threat of litigation was sufficient for the owners of apparently invalid patents to obtain substantial royalties from literally hundreds and thousands of farmers, small businessmen, and artisans for whom it truly was cheaper to pay than to be involved in expensive and perhaps ruinous litigation."¹⁴

The aim of an examining system is thus to protect third parties, who do not necessarily have the resources to check patent validity or fight an infringement litigation, against the substantial threat value of even an invalid patent.¹⁵ Large numbers of invalidly granted patents may create *in terrorem* effects, resulting in holdup licensing and patent thickets by rent-seeking entrepreneurs.¹⁶ This is the more so in systems which, like the US, have statutory provisions for a high presumption of validity of granted patents, i.e. it is up to the alleged infringer to provide conclusive evidence of the patent's invalidity. A patent system which delivers low quality searches and examinations is no better than a registration system, but much more expensive.

By ensuring a consistently high patentability standard, a patent office also saves competitors from the need of filing defensive portfolios of trivial patents, thereby freeing resources for truly innovative activities. Although the patentability standard is ultimately determined by the case law of the courts (including the EPO Boards of Appeal), the examining instances can have a large degree of influence on standard setting, first because they review all applications, and not only the contentious ones, and second, because the quality and soundness of their argumentation can convince the courts to adopt a certain standard.

As a conclusion, examining patent offices are primarily established in the public interest. Although applicants and patentees also benefit from the security given by a strong examining system, which enhances the value of their patents, viewing the patent

¹² Pouillet 1872 (supra note 11), no 582.

¹³ Joseph Kohler, *Handbuch des deutschen Patentrechts in rechtsvergleichender Darstellung* (Mannheim, 1900), p. 9-13.

¹⁴ Edward C. Walterscheid, "The Winged Gudgeon -- An Early Patent Controversy", *JPTOS* Vol.79, p. 533 ff. (1997).

¹⁵ Merges 1999 (supra note 3), p.595.

¹⁶ Thomas 2002 (supra note 3), p. 802.

office as a service provider for individual applicants would be a dangerous avenue:¹⁷ it is not the individual applicant who determines which level of quality he wants for his patent, but the public interest as set out by the applicable law.

C. The mission of the EPO

The mission statement of the EPO rightly insists on its macroeconomic role of supporting innovation, competitiveness and economic growth. However, by insisting on patent *granting*, rather than on the EPO's more general function of patent *examining*, it gives a distorted view of the result to be achieved. It would therefore be preferable to rephrase the mission so as to insist on its role of gatekeeper of the public interest, namely:

to strike a just balance between the incentive function of patents and the restrictions to free competition they create, so as to optimize innovation and economic growth.

This would be a better starting point to define the standards the EPO aims to set.

II. DEFINING PATENT QUALITY

According to one definition,¹⁸ “‘quality patents’ are [...] valid patents [which may] be reliably enforced in court, consistently expected to surmount validity challenges, and dependably employed as a technology transfer tool”, while according to another definition,¹⁹ “a ‘bad patent’ is a patent that should have been weeded out after a reasonable investment of effort, but was not”. The first definition insists on the benefits of legal security for the patentee, which is a desirable consequence of a quality patent system, but leaves aside the (macroeconomic) equilibrium between costs and benefits of patents. The second definition suggests that there might be a tradeoff between patent quality and resources needed to achieve this, but it does not give an indication either as to what the standard is below which a patent should be “weeded out”.

Whether the patent system promotes innovation and economic growth depends to a large extent on the quality of the end-result of the examination process, i.e. of the decision reached, which has to fulfill certain substantive requirements (section A). But for the system to function optimally, some procedural requirements must also be met (section B). The question then arises to what extent there should be a tradeoff between these requirements (section C).

A. Substantive requirements

In recent times, many discussions have focussed on the problem of patentable subject-matter, in particular in the fields of biotechnology and of computer-implemented inventions.²⁰ Despite their utmost importance, these issues concern specific fields of technology and raise very complex questions. Their discussion would therefore go beyond the scope of the present working paper. Other requirements, like unity of invention and clarity, though of a substantive nature, raise essentially procedural issues (procedural timeliness and excessive use of resources; see e.g. the so called “complex

¹⁷ see also Mark Lemley, “Rational Ignorance at the Patent Office”, *Northwestern University Law Review*, Vol. 95, No. 4 (2001), p. 1495 ff, note 3 (citation on the front page of this paper).

¹⁸ Thomas 2002 (supra note 3), page 802.

¹⁹ Mergets 1999 (supra note 3), page 581, note 6.

²⁰ See e.g. Articles 52(2) and (3) and 53 EPC.

applications”). In the following, we will mainly concentrate on the principal substantive requirements, linked to the justification of the rights conferred to the patent holder.

To deserve its monopoly, the patentee must make a contribution to the existing pool of technical knowledge. In line with all modern patent laws (see in particular Articles 52 to 56 EPC), this requires to determine the relevant state of the art (section 1) and to assess whether the applicant’s contribution to this state of the art is sufficient (in particular the standard of inventive step or non-obviousness, section 2). Moreover, the scope of protection conferred (the breadth of the claims, see Article 84 in combination with Article 83 EPC) must be commensurate to the applicant’s contribution (section 3).

1. State of the art search

According to Article 92(1) EPC, the search is performed on the basis of the claims, with due regard to the description and the drawings. According to Rule 44(1) EPC, the search shall determine the documents available to the EPO which may be taken into account for the assessment of novelty and inventive step. From this it follows that:

- if there are novelty destroying documents, they should be found;
- else, if there are inventive step destroying documents, they should be found;
- else, documents as close as possible to the essential aspects of the inventions should be found;
- the search should have in view not only the claims, but also possible amendments to the claims which can reasonably be expected from the description (as long as they fall within the same inventive concept; see Rule 86(4) EPC).

The two last requirements do not follow immediately from the EPC, but they are necessary in order to avoid that, subsequently, the applicant shifts or broadens the claims to subject-matter which was not searched but which is not new and inventive.

According to a definition proposed in the Working Group “Quality”, a search should be considered of high quality if no further document can be found which would lead to an amendment of the claims (and in particular to a restriction of their scope).²¹ This definition is less stringent than the requirements of the EPC. First it considers a combination of “Y” documents as having the same quality as a novelty destroying “X” document; besides deviating from Rule 44(1) EPC, this approach leads, at the examination stage, to an argumentation which is more complex (and hence more time consuming) and weaker (and hence more easily overturned by counter-arguments of the applicant, resulting in a broader protection than justified). Second, it does not take account of the case where the applicant wishes to broaden the scope of the claims with respect to their initial wording.

Therefore, the principle of searching the “closest” state of the art should be maintained. Sometimes, finding a better state of the art might require a disproportionately high effort as compared to the additional argumentation needed with the documents already found. This is however a matter of “tradeoff” between requirements, to be discussed below.

On the other hand, there might be differing sets of “best” state of the art, which are nevertheless equivalent, so that if one set has been found, the search can be stopped without loss of quality. While it is easily judged whether two novelty destroying

²¹ Later on, this definition was amended by (rightly) including a reference to Rule 44(1) EPC, and by specifying that the search should “find documents which are relevant for the further examination” (which is the least one would expect).

documents are equivalent, the task is more difficult regarding inventive step. What is the “best” document depends in fact on the standard and arguments used for assessing inventive step. Certain documents which might be used to argue lack of an inventive step under a high patentability standard, are useless, and thus need not be searched, if the standard is lowered. Conversely, if these documents are not cited, the corresponding argument against inventive step is unlikely to be developed. There is thus a strong feedback loop between the definition of the best state of the art and that of the standard for inventive step.

2. Novelty and the level of inventive step (non obviousness)

While the assessment of novelty *stricto sensu* does not involve major conceptual difficulties,²² the requirement of an inventive step is as easy to justify as it is difficult to define in operational terms. If patents can be obtained for subject-matter which, though new, would have been obtained anyway within a short period of time by somebody else, patents do not reward the innovators, but those who are quickest at playing the “patent game”. The resulting “patent thickets” discourage competitors from engaging in research in the field, which might well result in less innovation at the macroeconomic level. On the other hand, if the patentability standard is exceedingly high, some research might never be undertaken because the prospect of a reasonable return is too uncertain. Just what standard of inventive step is optimal for which field of research, is still anybody’s guess.

The level of inventive step is notoriously fluctuating from one patent office to the other²³ (the EPO has - traditionally - the reputation of a more stringent patentability standard than the JPO and the USPTO, while that of the German office is said to be even somewhat higher). It also differs between fields of technology (in some fields of chemistry, the patentability standard is said to be one of quasi-novelty).

There have been several economic studies trying to assess the effect of the patentability standard on the innovation rate in a given field of industry.²⁴ Despite the use of mathematical models, these studies can only give qualitative results: on the one hand, the models themselves have to rely on approximations, and even simplifications, in order to remain tractable, and on the other hand, the parameters used are exceedingly difficult to measure or even to define in quantitative terms. But at least, these studies have the merit of being starting points in order to gain more and more useful insights in the economics of innovations and their protection. Available studies suggest that the level of inventive step should take into account the risk of research in the given field (i.e. the uncertainty about its eventual success), and that a high patentability standard shifts innovative activity from low tech industries (where R&D is less productive) to high tech industries. They also suggest that the patentability standard might be tuned to each particular type of industry.

The legal language regarding inventive step and non-obviousness (Article 56 EPC and the corresponding provisions of other patent laws) is vague, and the legislator left it to the administrative practice, under the control of the case law, to fill it with meaning. Such a use of “woolly” legal concepts (or “Generalklauseln” as they are called in

²² However, at least in certain rapidly developing fields of technology, colliding applications and the validity of a claimed priority are frequent issues.

²³ This is easily seen by comparing the fate of identical applications with different offices, and for which the offices have the same consolidated search results at their disposal.

²⁴ See e.g. R. P. Merges, “Uncertainty and the standard of patentability”, *High Technol. L. J.*, Vol. 7, No. 1 (Spring 1992), p. 1-70; R. M. Hunt, “Patentability, Industry Structure and Innovation”, *Working Paper No. 01-13, Federal Reserve Bank of Philadelphia* (August 2001), available from <<http://www.phil.frb.org/files/wps/2001/wp01-13.pdf>>.

Germany) is often encountered in various fields of law (see e.g. the concept of “negligence” in torts law) and has been shown to make sense from an economic point of view.²⁵ In short, although a precise definition might increase legal certainty, this certainty turn out to be an illusion in complex matters. Where numerous parameters are involved, whose balance differs from individual case to individual case, an overprecise definition, though well intentioned, may lead to perverse effects due to unforeseen circumstances (so called problem of “inadequate fit”; see also the problem of legal loopholes). Instead of investing a lot of resources searching an illusory “perfect” legal definition (which increases the work load of the legislator, including lengthy consultation with interested circles, lobbies, etc), it might be more cost efficient to have a division of labour between the legislator, the executive and the judiciary. Administrative practice and case law make their decision on a case by case basis (and under conditions of transparence, i.e. decisions must be accessible to the public), which allows similar treatment for similar cases, but also taking into account subtle differences. Moreover, differences between technological fields, as well as the change of circumstances with time, can be taken into account.

With time, the case law of the Boards of Appeal has developed a number of “rules of thumb”, which are flexible enough to fit varying circumstances, but which nevertheless help achieving more objective decisions (in particular the problem-solution approach and its numerous refinements, as well as the “secondary indicia” of inventive step). Moreover, the rules of thumb may be refined with new insights on the process of innovation and its economics.²⁶ Experience shows that when applied carefully, the case law of the Boards of Appeal contains a sufficient arsenal of rules to minimize the subjectivity of decisions (e.g. when counter-arguments of the applicant to a lack of inventive step objection can be invalidated by a further case law rule). Further consistency of decisions can be achieved through what might be called “harmonisation by symbiosis”, i.e. the exchange of ideas taking place in examining divisions of changing composition within a given field or between related fields. Of course, the success of this approach requires that examiners have the time to study and to apply the case law (see discussion below about quality assurance).

3. Scope of protection and sufficiency of disclosure

The scope of protection is closely linked to the actual disclosure of the patent application (and hence to its enrichment of the existing knowledge). It concerns both the examination stage (breadth of the claims granted, Article 84 in combination with Article 83 EPC, as well as Article 123(2) EPC) and the enforcement stage (often an infringement litigation, Article 69 EPC). Hence, the examining office can only have a partial influence on this parameter, but because the two stages are linked, examiners should be aware of all aspects of the problem. In other words, examiners should not only be concerned by the wording of what they grant, but also by the way it may be used after grant.²⁷

²⁵ Ejan Mackay, “Les notions floues en droit ou l’économie de l’imprécision”, *Langages*, No. 53 (1979), p. 33-50.

²⁶ The usefulness of such “rules of thumb” is also recognized by economists: see Merges 1992 (supra note 23), p. 36. For interesting insights in the mental process of problem solving and invention see Richard Sietmann, “Erfinden nach Plan. TRIZ-Methodik hilft dem Aha-Effekt auf die Sprünge”, *c’t* 23/2001, p. 96 ff., and references therein.

²⁷ One sometimes hears the argument that Article 69 is too complex for examiners and that they have no experience with it. This is not only a debilitating view of the examiners intellectual skills, it moreover disregards the realities of the “patent game”, as shown e.g. by the recent *Festo* decision of the U.S. Supreme Court, regarding the theory of equivalents in relation to prosecution history estoppel (available under <<http://www.supremecourt.us.gov/opinions/01pdf/00-1543.pdf>>)

The above considerations concerning inventive step apply *mutatis mutandis* to the scope of protection. Economic studies show that too broad a scope of protection (relatively to the actual contribution of the inventor) can lead to portfolio races which divert resources from the actual innovation process and may even block entry of new competitors in the field.²⁸ As for inventive step, the case law of the Boards of Appeal, when thoroughly applied, provides the necessary tools to achieve to a large extent consistency in decisions, if only examiners have sufficient time for training and coordination with colleagues.

In addition to the end-result of the decision reached in patent examination, the way examination is performed can also have a certain influence on the promotion of innovation and economic growth and must therefore not be neglected.

B. Procedural requirements

In one way or another, all procedural requirements amount to ensure equality of treatment between economic players, and hence to avoid distortions of competition and free market.

1. Procedural fairness

The basic provision is Article 113(1) EPC (right to be heard), supplemented by Article 116 (right to oral proceedings), as well as Rule 86(3) EPC in combination with the case law of the Boards of Appeal (exercise of the examining division's discretion in consenting to further amendments). The aim of these provisions is not (only) to please the individual applicant, but also to ensure that the examining division can reach an enlightened decision, which takes due account of all circumstances of the case, how complex it may be. Thereby, equal treatment of all applications is ensured.

Procedural fairness requires the provision of a reasonable amount of resources (in particular time and number of communications; see below: tradeoffs). On the other hand, the system should not be abused by delaying tactics of the applicant, since timeliness is also an important aspect of the system.

2. Timeliness

Timeliness of the search and examining procedure is often presented as a service to the applicant. Experience shows that, especially for examination, the applicant not unfrequently prefers a final decision to be delayed. However, pending applications, not unlike invalid patents, have a threat value against competitors.²⁹ Hence, legal certainty and equal treatment of all economic players (patentee and third parties) require that the decision about an application's allowability be taken as soon as possible.³⁰ This again raises the question of the proper amount of resources.

²⁸ See R.P. Merges and R.R. Nelson, "On the Complex Economics of Patent Scope", *Columbia Law Review*, Vol. 90, No. 4 (1990), p. 839-916; Rosemarie Ham Ziedonis and Bronwyn H. Hall, "The Effects of Strengthening Patent Rights on Firms Engaged in Cumulative Innovation: Insights from the Semiconductor Industry" (Draft, June 2001), available from <http://emlab.berkeley.edu/users/bhhall/hz_libecap.pdf>.

²⁹ This speaks also against a system of deferred examination; see Panel 1969 (supra note 5), p. 5.

³⁰ The practice of "divisional" (EPC) or "continuing" (US) applications, if unrestricted, might void the legal certainty provided by procedural timeliness, since it might keep the actual rights derived from an initial application pending for a very long time; see also Cecil D. Quillen, Jr. and Ogden H. Webster, "Continuing Patent Applications and Performance of the U.S. Patent Office", *Fed. Circ. Bar J.*, Vol. 11, No. 1 (August 2001), p. 1-21.

3. *Affordability*

The examination process consumes resources and hence has a cost at least at the macroeconomic level.³¹ These costs can be supported by the tax payer (if the patent office is entirely publicly financed) or by the applicant (examination fees, which may even generate a benefit for the public purse),³² or even be shifted to third parties (mostly to competitors, through opposition and invalidity litigation, in case of a lite examination or a pure registration system). The repartition of these costs should be so as to ensure equal treatment between economic players and to avoid distortions in competition. Moreover, whatever the level of resources devoted to examination, its use should be as efficient as possible.

One should however be aware that the cost of examination is but a fraction of the total costs of the patent system, even of the prosecution costs (let alone the social costs of a bad patent). Hence savings on resources devoted to examination have only a marginal effect, at least as compared to the social costs involved by a low quality patent system. Though any waste of resource should of course be avoided, this fact should always be borne in mind when discussing possible tradeoffs between various quality requirements.

C. Can there be a tradeoff between these requirements ?

Each of the above quality requirements has a value of its own³³ and produces tangible effects on the economy as a whole. It would therefore be irresponsible to “cut corners” on one requirement (let’s say state of the art search or level of inventive step), in order to promote another requirement viewed in isolation (let’s say timeliness or affordability), without a prior assessment of the social costs involved. This does not mean that the resources devoted to a given aspect should be without limit. On the one hand, the law of diminishing returns should be taken into account, and on the other hand, for a given amount of resources, these should be allocated optimally.

It would be unrealistic to disregard the law of diminishing returns, though the exact level of “return” sought is debatable. As an example,³⁴ a search in a certain field may statistically yield 95% of all relevant documents if it takes 2 days and 99% of all documents if it takes 2.5 days, while it may be necessary to raise it to 4 days or above to get 99.9% (possibly because not all relevant documents are in the patent office’s documentation or in the relevant classes). One could consider it reasonable to increase the average search time to 2.5 days, in view of the marginal effect of such an increase on overall patenting costs, as compared to the social cost of an invalid document; even if one considers this additional time as slightly wasteful, it could give the examiner opportunities for learning effects, which would lead to an increase of quality as a whole. Conversely, if reducing the search time to 1.5 days yields only 90% or even 80% of all relevant documents (since we enter the region where the return curve “steepens”), such a reduction would have disproportionate effects on quality and hence be irresponsible.

³¹ See Machlup 1958 (supra note 8)

³² Note that even in an applicant financed system, all fees are equal regardless of the complexity of the application or its field (as long as it pertains to a single inventive concept). Hence, even in this system, there is a “socialisation” of costs between applicants.

³³ They may sometimes be conflicting in case of procedural misuse. For instance, procedural fairness may conflict with timeliness, at least when the applicant is uncooperative.

³⁴ The following discussion on search applies of course *mutatis mutandis* to substantive examination, regarding the time needed to argue the patentability requirements and to properly consider the applicant’s comments.

On the other hand, the 1.5 days needed for finding an additional 0.9% of documents would probably be better spent improving our classification, which raises the issue of the optimal allocation of resources. The same issue arises when considering search versus examination time. It would e.g. normally be considered better to find a single “X” document instead of a combination of “Y” documents, even if it takes somewhat longer, because it allows an easier argumentation, and hence a more efficient examination, and moreover reduces the risk of valid counter-arguments of the applicant (and hence a risk for quality). If however, finding a better document appears disproportionately more difficult, a quicker search compensated by a more thorough argumentation might be more appropriate. The best approach depends on each individual case, and requires a good deal of judgement by the examiner. A “standardized” approach and a refinement of existing rules is unlikely to be an adequate substitute for experience and proper training (see below, quality assurance).

Finally, there is the question as to the extent to which the burden of validity review should be shifted to third parties (mainly through opposition and invalidation litigation, but also through such mechanisms like “bounty quest”). Such an approach was suggested by Lemley,³⁵ who argued that it would not be cost effective for the patent office to invest in too high a patent quality, since only a small fraction of all granted patents are actually litigated: investigation of patent quality should hence be left to the concerned parties (competitors, alleged infringers, etc) in those few cases where the granted patent was economically relevant. This opinion was vigorously contested in a recent publication by Thomas.³⁶ In a previous article,³⁷ he had shown that oppositions and invalidity proceedings do not significantly contribute to patent quality improvement: due to collusion between prior art holder and patentee, only a fraction of improvidently granted patents have their validity contested in opposition or invalidity proceedings. The most reasonable approach seems to be that of Merges,³⁸ suggesting a mix of public and private review of patent validity. To expect a “zero fail” rate from the patent office would be illusory, but there is a need for a public guarantee of a sufficient level of quality, to avoid extortion effects due to high litigation costs. Hence, the economies of scale possible in patent offices should be used to perform “commodity” searches in prior art widely available (e.g. patents and scientific publications). An opposition procedure should be provided for prior art more likely to be held by private parties (e.g. prior use). Such a balance seems reasonable, as long as the patent office effectively keeps its data bases and classification (or indexing) up to date, and devotes reasonable resources to search.

How well patent offices fare with their task raises the question of quality monitoring.

III. MONITORING QUALITY

Most bigger patent offices provide for internal quality controls.³⁹ In addition, economic research has been very active in monitoring patent quality, both at macroeconomic level⁴⁰ and as to the value of patents for the individual patent holder⁴¹. As the studies

³⁵ Lemley 2001 (supra note 4)

³⁶ Thomas 2002 (supra note 3)

³⁷ Thomas 2001 (supra note 4)

³⁸ Merges 1999 (supra note 3), page 600-601

³⁹ see e.g. at the USPTO the Patent Quality Review performed by the “Office of Quality Management and Training”, <<http://www.uspto.gov/web/offices/com/oqm/pqrhome.htm>>

⁴⁰ See e.g. the following articles and the references cited therein: John R. Allison & Mark A. Lemley, “Empirical Evidence on the Validity of Litigated Patents”, Draft (1998) available at <http://papers.ssm.com/sol3/papers.cfm?abstract_id=118149>; Quillen et al. 2001 (supra note 29); Stuart J.H. Graham, Bronwyn

suggest, the evidence they provide on patent quality is at best empirical. This raises the question as to what extent patent quality can be measured (section A) or at least what could be relevant quality indicators (sections B and C). In these sections, we focus on the primary and most visible aspects of quality, those relating to search and substantive examination (which also correspond to our “primary” product). But search and examination quality in turn depends on other tasks performed at the office, and itself has an influence on the post-grant stage; since quality improvement is a continuous process, the insights gained from these first indicators will provide feedback on further factors of quality to be monitored (section D).

A. Can quality be measured ?

Two pitfalls are to be avoided when it comes to control quality. The first one is to say that quality can not be measured anyway, and that therefore, it is pointless to care about it. The second one is to consider that econometric measurements alone, if only they are sophisticated enough, are sufficient for a reliable quality control.

The studies cited above rely heavily on statistical evidence, and it is proverbial knowledge that the interpretation of statistics should always be viewed with a certain degree of caution. As befits scientific honesty, the authors admit the limitations and purely empirical character of their studies. Such studies can nevertheless yield valuable insights, as long as one does not indulge in blind faith.

1. The difficulty of quantitative measurements

The difficulty of quantitative measurements results both from the reliability of the underlying data and from the economic model used for their interpretation. The underlying data, though carefully collected, might be inherently unrepresentative (e.g. studies on patent invalidation in litigation encompass only the tiny fraction of patents which *are* litigated, while the big majority, which is never litigated, is left out in the dark). The collected data are then subjected to mathematical modelling (often taken from game theory) in order to gain economic insights. As everybody who ever worked in the “exact” sciences knows, such models are never a complete account of reality, but are only used to test hypotheses on a restricted number of parameters. This is the more so for the “dismal” science of economics.

2. The dangers of blind faith in quantitative results

As pointed out by Merges,⁴² even the microeconomic valuation of patents is nearly impossible *ex ante* and difficult enough *ex post*, not to speak about macroeconomic valuations:

H. Hall, Dietmar Harhoff, and David C. Mowery, “Post-Issue Patent ‘Quality Control’: A Comparative Study of US Patent Re-Examinations and European Patent Oppositions”, *NBER Working Paper 8807* (February 2002), available at <<http://www.nber.org/papers/w8807>>; Iain M. Cockburn, Samuel Kortum, and Scott Stern, “Are All Patent Examiners Equal ? The Impact of Characteristics on Patent Statistics and Litigation Outcomes”, *NBER Working Paper 8980* (June 2002), available at <<http://www.nber.org/papers/w8980>>.

⁴¹ See eg. the following articles with cited references: Dietmar Harhoff, Frederic M. Scherer, and Katrin Vopel, “Citations, Family Size, Opposition and the Value of Patent Rights”, *Working Paper* (October 1999), available at <<http://www.inno-tec.de/forschung/harhoff/citation.pdf>>; Dominique Guellec and Bruno van Pottelsberghe de la Potterie, “Applications, Grants and the Value of Patents”, *Economic Letters*, Vol. 69, No. 1 (2000), available at <http://www.ulb.ac.be/cours/solvay/vanpottelsberghe/resources/Pap_Econ_letters_1.pdf> Dietmar Harhoff und Markus Reitzig, “Strategien zur Gewinnmaximierung bei der Anmeldung von Patenten. Wirtschaftliche und rechtliche Aspekte beim Schutz von FuE”, *Zeitschrift für Betriebswirtschaft*, Vol. 2001(1), available at <<http://www.inno-tec.de/download/forschung/ZfB%201999%20Artikel.pdf>>.

⁴² Merges 1992 (supra note 23), p. 30

“The model’s assumptions regarding private firm valuation of expected costs and benefits are unrealistic enough. The social welfare calculations would take it outside the realm of credibility !”

A first danger would be to measure certain parameters globally and to deduce from them some “one size fits all” conclusions (this would be a bit like having a uniform speed limitation in all cities of a country, and then measure the number of accidents over the whole country as a function of the speed limit; this disregards the fact that both the rate of accident and their seriousness might vary according to local circumstances).

A second danger would be to take too absolute conclusions from spot controls of a limited set of parameters for a limited group of examiners (this is best illustrated by a somewhat simplistic but assuredly hypothetical example: measuring the quality of search from a - possibly weighted - proportion of “X” and “Y” documents cited). Not only do such spot checks lead to erroneous conclusions for lack of relevant parameters, but in addition, they can create perverse incentives (e.g. examiners finding the same documents but labelling more of them as “X” and “Y”).

Hence, though no possible indicator of quality should be neglected, it should never be taken at face value. Its interpretation should always rely on the exercise of judgement.

B. Quantitative indicators

Certain indicators can be obtained from publicly available numbers (“external indicators”), while others relate to monitoring performed inside the office.

1. External indicators

Certain indicators reflect all patents examined by the office (grant rates), while others require the intervention of a third party (opposition, invalidation) and therefore reflect only a tiny fraction of those patents which were not weeded out by the office at examination stage.

a. Grant rates

In a recent study,⁴³ Quillen and Webster compared the grant rate (as a proportion of examined patent applications) for various big offices. They found a grant rate of 87% to 97% for the US (depending on whether continuing applications were included or not), as compared to 67% and 64% for the EPO and the JPO respectively, and 47% for the German Patent Office). Unfortunately the methodology used is not totally clear. It is not clear whether the proportion of grants was taken over the number of final actions for the *same* year, or whether a simple time lag (2 years) was assumed between filing and grant. Moreover, the results are taken over different time intervals (US: 1993-96; EPO and JPO: 1995-99; DPA: applications with a priority date of 1977!).

The model is nevertheless useful and could lead to interesting insights if conducted on a more rigorous basis. This should be easier for the patent offices, since they might be expected to have a better access to their own statistical data. On the one hand, the evolution of the grant rate within a given office could be monitored by the use of sliding averages. Moreover, comparisons between offices at a determined point in time could be performed (this would most meaningfully be done by limiting the comparison to applications belonging to the same family and prosecuted before different offices). It

⁴³ Quillen et al. 2001 (supra note 29)

could even be envisaged to perform the above comparisons for given sectors of technology.

In line with the warning given above, such results should not be taken at face value, but the possible influence of spurious parameters should be looked for (e.g. lower grant rates could result from more low quality applications being filed as part of defensive portfolio strategies, ... or from more applications being withdrawn as a consequence of saving measures during an economic downturn!).

b. Opposition and invalidation rates

As mentioned above, opposition and invalidation proceedings suppose initiative by a third party and therefore affect only a tiny fraction of granted patents.⁴⁴ Moreover, collusion between a patentee and a prior art holder may result in a patent never being opposed or invalidated despite the existence of invalidating prior art.⁴⁵ Hence, the result of such studies can never give an absolute indication about patent quality, though it might be useful for comparison purposes between patent offices.⁴⁶

Despite their lack of absolute character, oppositions and invalidation cases can constitute interesting case studies, from which empirical and qualitative insights might be gained. From a (possibly comparative) analysis of the causes of invalidation or upholding of patents, conclusions can be drawn on improved methods for enhancing examination quality⁴⁷ (see below, quality assurance).

2. Internal indicators

The various quality departments of the EPO routinely perform spot checks of search and examining quality on individual cases. The relevance and effects of such "controls" should be assessed carefully. Though they can yield some interesting results when taken in the aggregate, they can lead to perverse incentives when used as an individual control tool (see above, section III.A.2).

Although the possibility of some examiners outrightly botching their work can never be completely excluded, this should concern only extreme cases, and these are often spotted by their peer group well before the occasional and random "official control" (at least as long the group as a whole has the right attitude towards quality). In that respect, the best guarantee of high quality is the control by the other members of the examining division, provided the composition of the divisions varies from application to application and the members have enough time at their disposal to perform their control task (see discussion below, section IV.B.1).

However, when conducted in the right spirit, internal studies may yield useful results and provide interesting insights.

⁴⁴ See Cockburn et al. 2002 (supra note 39), p. 16: In the U.S., for the period from 1997-2000, there were merely 216 cases where the validity of the patent was contested before the CAFC (the Court of Appeals for the Federal Circuit is competent to hear all patent appeals from the District Courts).

⁴⁵ see in particular Thomas 2002 (supra note 3).

⁴⁶ see Graham et al. 2002 (supra note 39), comparing the quality of US re-examinations and EPO oppositions.

⁴⁷ See e.g. Cockburn et al. "Are all patent examiners equal ?" (supra note 39).

a. *Search quality*

Examiners could conduct “pilot” searches individually or in groups, with the goal of finding the influence of certain parameters, like search time, search strategy, and classification or indexing structure, on the quality of the search result. In particular, the (average) yield curve of a search as a function of time could be measured for different technical fields, and the (average) point of diminishing return be estimated with an increased confidence. As befits a statistical study, the *dispersion* of results could also be measured (e.g. how many searches take a much longer or shorter time than average to find the best documents); this would help the examiners to sharpen their judgement as to when to stop or to continue a search under varying circumstances (only saboteurs or “internal resignees” stop all searches after the same fixed amount of time). This assumes that examiners are allotted at least some “slack” time for continuing searches beyond the normal stop point.

b. *Examination quality*

If it is to go beyond the more formal aspects, examination quality is more work intensive to monitor, in particular as far as inventive step is concerned. In view of the importance of this parameter for overall examination quality, the investment is however worthwhile.

One could e.g. study to what extent the full body of case law of the Boards of Appeal is used and how it affects the outcome of the examination. This would be particularly useful in connection with the applicant’s argumentation: did the examiner use the appropriate reasoning and case law (before or after the applicant’s answer), or did he “give in” after a superficial exchange of arguments). As indicated previously, this could also yield useful results regarding the adequateness of the cited documents, and hence provide feedback to improve search quality.

This kind of study leads us to the boarder of qualitative indicators.

C. Qualitative indicators

More qualitative insights might be gained from what might be called “surveys” of the participants in the patent system. If conducted properly, such surveys might provide more indications on how to improve the system as could be done by the false certainty of pseudo-mathematical or -statistical results

1. “User” surveys

By users, we mean both the applicants or their representatives, and third parties belonging to the public at large. To be really meaningful, such surveys should not be limited to the own files of an applicant (he is happy when he gets a patent as broad as possible, isn’t he ?). In a world where SME’s deplore the burden of building large patent portfolios for purely defensive purposes,⁴⁸ they could be surveyed about the quality of patents granted to *others*, and about the level of inventive step and the scope of protection which they consider appropriate. As an example, case studies could be conducted by letting users perform a “blind refereeing” of applications or granted patents, if necessary with prior art provided by the EPO.

⁴⁸ see EPO Gazette 1998 (supra note 1).

2. *Expert surveys*

There is a lot of expert advice on patents lying around freely (or nearly so), especially in a wired world. Merely conducting appropriate literature surveys could already give precious indications as to the state of patent quality and possible ways of improving it. Conducting interviews or commissioning studies could help deepen the insights thus gained. Among the experts to be surveyed are economists and legal scholars (some of them are both).

3. *Examiner surveys*

In addition to monitoring directly their work (see above, section III.B.2), examiners should be more systematically surveyed about their assessment of, and feelings about, their work within the examination divisions to which they belong (as to the importance of the examining division as a tool for quality assurance, see also section IV.B.1 below). Anecdotal evidence shows that such surveys can sometimes be very revealing.⁴⁹ They would be the more so if conducted in a more structured way.⁵⁰

D. Refining the indicators: Knowledge capture and feedback

In the preceding sections, we focussed on the work of examiners, and within that, on search and examination. Just spotting the problems in our “end-product” is not enough for achieving quality, we must also provide the means for solving and, in future, preventing them. The quality of the end product depends on that of the remaining components of the workflow, like the extent of accessible prior art, the quality of classification,⁵¹ the formalities work, etc. Monitoring the quality indicators of our core processes, and carefully analysing the results, will reveal further factors which influence this quality, and whose quality needs to be monitored in turn. Through this continuous feedback process, we will be in a position to achieve the end goal of a quality policy: permanent and consistent quality assurance.

IV. ASSURING QUALITY

Quality management is based on a formalised process, as e.g. set out in the family of ISO 9000 norms. The consistency, predictability and above all transparency provided by such an approach can only be welcome, and one cannot but endorse the slogan at the root of quality management:

“Say what you do. Do what you say.”

The whole question however is what the process will be about. It is all too easy to fall into the trap of providing, instead of a formalised process, a process about formalities,

⁴⁹ see e.g. *The Economist*, “Patent nonsense” (supra note 1), p. 89, citing an anonymous USPTO examiner on Mr Aharonian’s site:

“You know what ? I’m sick of finding ridiculous patents every time I look [in my files]. Part of the blame goes to the patent corps. We don’t fight hard enough against the bull – being shovelled by upper management. And of course, that is where the rest of the blame goes. It’s a system that’s burning up, and management just keeps adding fuel to the fire. An why should you care? Hey, management pays you for good patents or for bad, right? In fact, why should you fight with management? Why reject?”

⁵⁰ As an example of an examiner survey, see Cockburn et al. 2002 (supra note 39).

⁵¹ To quote but one example, a privately undertaken study on the impact of stopping the classification of non-patent literature in the field of image processing seems to indicate a decrease in search report quality (interview with an anonymous EPO examiner in 2001).

which loses sight of the substantive issues at stake. Hence, important though formalities are, in the following we will concentrate mainly on substantive aspects of quality management. Moreover, once agreement is reached on the substance, the form easily follows.

To conduct patent quality assurance in the right spirit, it is important to bear in mind that no patent case resembles the other, and that all cases raise different technical and legal issues. Therefore, examination cannot be performed in an automatic and mechanical way.⁵² It is necessary that the examiner exercises discretion and uses his judgement. If something has to be standardised, it is not the details of the examination process, but the framework at the examiner's disposal for the best exercise of her judgement. Consistency does not mean uniformity, harmonisation does not mean standardisation. Examination is more like a craft than an industry. While standardisation characterises the provider of mass furniture, whose products are all identical, harmonization characterises the provider of design furniture, whose products are all individual creations but have the same consistent "look and feel".

Within this spirit, a quality policy for examination should first aim at providing, and constantly improving, the appropriate resources (section A). Since quality rests less on the following of mechanical rules, and mainly on the exercise of judgement, this judgement needs to be formed, refined and harmonized through constant exchanges among those dealing with similar or related matters (section B). These measures will not work, and may even produce perverse effects, if examiners are not given the right incentives (section C).

A. Providing the needed resources

As in any craft, examiners need the appropriate tools, as well as an apprenticeship followed by lifelong learning. Moreover, due to the intellectual nature of the examination process, which hardly lends itself to "industrialisation", the time needed to perform the job properly cannot be compressed indefinitely.

1. Tools

Of course, our tools should be "technically" performing. This ranges from computers which do not hang too often to ergonomic furniture, together with the "one-click" navigation tools for accessing relevant information. However, focus should not be limited to these technical issues, which should improve more or less automatically if feedback from the users is taken seriously. Much more important are the intellectual tools at our disposal.

Such tools comprise e.g. access to relevant prior art (still too limited outside of patents, although things are improving), proper classification and indexing of the prior art (their interaction with search experience and practice is so close that they should not normally be a task to be outsourced), access to legal materials (including not only the EPO regulations and case law, but also materials from outside the office; see below).

Though these tools have been improving in recent times, not least through increased availability of automation and the Internet, they are still provided in a too centralised fashion. In view of the considerable differences between technical fields and even sub-

⁵² Hence a need for skilled scientific or engineering professionals. Entrusting examination work to clerical staff, even with some background in technology, as sometimes suggested, cannot guarantee adequate quality.

fields, there should be much more room for decentralised initiatives by examiners, acting either individually or in groups.

2. *Training the use of judgement*

Since high quality examining requires the proper exercise of discretion, it cannot be learned by mere “instruction” (i.e. learning some standardised rules and procedures). Such instruction is of course needed for some “technical” aspects of the job (e.g. learning the use of the various computer interfaces), but the intellectual part of our job needs a true apprenticeship over several years, to be followed by continuous learning.

The initial training should take several years, and its most important part will be on the job, under the supervision of an experienced examiner, and through interaction within the examining divisions (which will also provide the necessary harmonisation and consistency of quality). Formal training (e.g. academies) should however not be neglected, since it can provide economies of scales for teaching the basic tools and rules. But the real training will take place through the discussion of individual cases, leading to a progressive sharpening of judgement. To that effect, it is important that both trainee and coach be given the right priorities: these should be on learning, not in achieving as quickly as possible a high “disposal” of cases.

The continuous training of experienced examiners should not be limited to matters directly related to the cases they have to treat. Improving judgment abilities requires a broadening of horizon. Examiners should be encouraged to look outside the office, both for technical and legal matters. Some examples for technical improvement are attending conferences, taking university courses to learn new technologies, and even working for some time in an industry research lab to get a better grasp of the mental processes and difficulties of research and development⁵³. Regarding legal aspects, examiners should be encouraged to take the European qualifying exam, to work for some time with a patent attorney or even at an infringement court. Further suggestions will result from what is said below about exchanges.

3. *Time*

The provision of tools and training is of little use without the appropriate time resources. This applies to initial training (reasonable learning curve), to continued training, and to the performance of normal duties. Though an optimal allocation of resources should be sought (see above), and though improved tools can lead to efficiency gains, the intellectual part of our work cannot be compressed below a certain limit if “cutting corners” is to be avoided. In this respect, it would be interesting to compare the time allotted to examination work with that taken by attorneys to draft applications and answer office actions (anecdotal evidence suggests that the latter is much more substantial).

Recent studies by the EPO seem to indicate that our workload is getting under control. Moreover, it seems that the number of filings is somewhat flattening (possibly due to economic circumstances), which is likely to further enhance our control of the workload. This should be used in particular to improve the training of newly recruited examiners, to update our intellectual working tools (in particular classification), and if possible to promote lifelong learning of experienced examiners (e.g. through exchanges with industry or patent attorneys).

⁵³ See Panel 1969 (supra note 5), p. 21.

B. Encouraging exchanges

One of the advantages expected from a centralised patent office in Europe is the “quasi-automatic guarantee of a uniform quality” through “close proximity and concentration of examiners under a single management structure”.⁵⁴ Due to the discretionary nature of their decisions, examiners cannot harmonize their practices through a set of detailed regulations, but only through a process of intellectual symbiosis and cross-fertilisation. In such a natural structure of permanent “quality circles”, quality is achieved not by pressure from the hierarchy, but by drive from the peer group, not by threat, but by encouragement. Exchanges of experience and ideas should take place at various levels.

1. The core team: strengthening the examining division

The EPC has provided that decisions about patent applications are taken collegially by an examining division. Recent criticism regarding the quality of examination suggests that far from being superfluous, this legal institution should on the contrary be strengthened. Though *normally*, each member of an examining division concentrates on particular tasks (e.g. the second member on formal aspects), this does not mean that he performs *only* this task. Each member remains responsible for the whole decision and should decide on a case by case basis how deeply he needs to scrutinize the file. This discretion could no longer be exercised if some members of the division were to be replaced by a formality officer.⁵⁵ It would be equally dangerous to discriminate between decisions to grant or to reject, as does a proposal to leave the decision to grant to a single examiner.⁵⁶ It may well be that grant decisions are those whose quality needs most to be monitored internally.

In addition, the examining division is the natural place both for training new examiners on the job and for providing a continuous exchange of ideas. Since the composition of the division changes for every file, it contributes to a harmonisation of practices and qualities, in particular if it sometimes includes examiners from neighbouring technical fields.

2. Cross functional teams

Cross functional teams are useful to discuss or handle questions of interest either for several technical fields (e.g. some legal matters, handing of complex applications, etc.) or for different functions (computers, formalities, etc.).

3. External exchanges

As mentioned earlier, exchanges with the outside world (industry research labs, applicants, attorney, infringement courts) is an important part of examiner training in that it helps broadening his views. If in addition, such exchanges are conducted in a more structured way (e.g. through surveys, colloquia, working groups, etc.), they might provide a systematic feedback on our quality.

⁵⁴ See Panel 1969 (supra note 5), p. 17 and 20.

⁵⁵ See the proposals in CA/132/02, page 62 (item 14).

⁵⁶ *ibid.*, page 64 (item 20).

C. Giving the right incentives

There has been a lot of talk about the compensation scheme, be it salaries, the career system, or even bonuses, for highly skilled professionals like those employed by patent offices. Though this element should not be underestimated (everybody aims at a comfortable living standard, and salary level has also a recognition value), it should not be overestimated either. As discussed in the wake of the career reform at the EPO, salary differentials between grades are not that high, and the reformed system brought only nominal changes as compared to the salary jumps achievable in the private sector. Though enhanced compensation will always be welcomed, it is unlikely to bring about the kind of less measurable behaviour needed to promote true quality.

This kind of behaviour requires that examiners develop a sense of proudness about their work. They must feel that this work calls for the use of intellectual skills and responsibility, and not for a more or less mechanical following of instructions from above. This can be achieved by the promotion of a quality culture, and by empowerment of examiners for the responsible exercise of discretion needed for high quality examination.

1. Creating a quality culture

Management ought to express its commitment to quality by actions, not only by words (including in the way it handles the appraisal and career system).

First it should set the right priorities. If only lip service is paid to quality, while the actual push is for increased production and productivity figures, examiners will follow the call of the "market": instead of examining applications, they will produce mere "disposals" (to use the jargon of the USPTO). If critical discussion, exchange of ideas and experience sharing is encouraged, examiners will feel that quality is not a vain word and be motivated to promote it.

Second, if a particular measure for improvement is recognised and accepted, it should as a matter of routine be seen to be actually implemented. All too often, big consultation projects are started, ending with a report stating at length that the problems have been recognized (and possibly suggesting some course of action), but then nothing actually changes. To create a quality culture, transparency should increase ("say what you do"), and staff should feel that things do really happen ("do what you say").

2. Individual empowerment: the exercise of discretion

As explained above, due to the nature of examination work, discretionary decisions are necessary and involve the use of judgement. In addition to providing the right kind of training, care should also be taken to avoid too detailed regulations which might interfere with the examiner's discretion. A lot of resources are involved in the elaborations of such regulations, which in the end might prove inadequate, because it is not possible to foresee each and every situation. Overregulation might even create perverse incentives, if examiners, especially in stress situations, feel released from exercising their own judgement and take the more comfortable path of blindly following the rules, even in those cases where they do not fit a particular situation.

But above all, giving the examiners discretion enhances their sense of responsibility and hence their professional motivation, which is the key to the pursuit of quality.

3. Collective empowerment: quasi-judicial self-administration

Examiners should be more involved in the elaboration of existing regulations and in the organisation of work. According to Article 10(2)(a) EPC, the President is competent for adopting internal administrative instructions to ensure the functioning of the EPO, and according to Rule 9(1) EPC, he allocates duties and patent applications to the various departments of the Office. At least de facto, he has already delegated these competences pursuant Article 10(2)(i) EPC.

Since the examining divisions exercise quasi-judisdictional functions in the public interest, there is no reason why a system of self-administration should not be created, similar to that existing with other (quasi-)jurisdictional bodies. This would enhance the examiner's sense of responsibility. Such a system could be built by analogy with the body foreseen in Rule 10 EPC for the Boards of Appeal ("Praesidium", though the adoption of a different name might be considered). The organs of self-administration could be located at the level of the newly created "joint clusters".

They would be competent to adopt and review administrative instructions, as far as they are specific to their respective field of technology and do not interfere with the discretion of the individual examining divisions. They could also supervise the allocation of files and monitor how the cluster masters its workload. This would not only increase transparency, but also make feedback easier as to measures for improving efficiency and quality.

CONCLUSION

Quality patents are those which confer a monopoly right commensurate with the inventor's contribution to the existing knowledge. Otherwise, instead of stimulating innovation, they block it. Economic research has revealed several indicators of quality, or rather of lacking quality. However, due to the diversity of quantitative and qualitative parameters influencing patent quality, and their variation across technical fields and from one application to the other, further ingredients are necessary to ensure a consistently high patent quality. Instead of using a purely mechanistic approach, examiners must exercise their judgement to deal with individual cases each having their own characteristics. Sharpening and harmonising this judgement is best done within the examining divisions, providing their composition is varied, and their members take the time to fulfill their control function. This requires that examiners dispose of a reasonable amount of time to fulfill their task. Reducing examining time in order to master the workload would only bring a short term relieve, since reduced patent quality would force competitors to file even more applications for purely defensive purposes, thereby further increasing the workload.

It might seem more secure and be more comfortable to fine tune the resources needed for examination by relying only on a set of measurable parameters supposed to reflect the quality level. Such an approach disregards however the complexity of the matter and completely neglects the human factor. The sense of control it confers is purely illusory and less controllable consequences might actually result. As one study puts it with subtle diplomacy:

"[Moreover,] 'examiners matter': though highly structured, and carefully monitored by the [patent office], patent examination is not a mechanical process. Examiners necessarily exercise discretion [...] The fact that patent examination cannot be mechanistic, and that idiosyncratic aspects of examiner behavior appear to have a significant impact on the nature of the patent rights that they grant, suggests a significant role for the organization,

leadership, and management of the [patent office]. The management literature recognizes the value of corporate culture in the form of informal rules, common values, exemplars of behavior, etc. in providing guidance as how to exercise discretion. While idiosyncratic behavior of examiners can be controlled to some extent by formal processes such as supervision, selection of examiners, training, incentives etc., the institution's cultural norms necessarily play an important role in their exercise of discretion in awarding patent rights. Policy changes which impact the organizational structure and internal culture of the [patent office] should be careful to take this into account. Efforts to improve visible aspects of the examination process, such as approval times, have the potential to create long lasting and quite subtle changes on less easily measured aspects of the examination process.⁵⁷

⁵⁷ Cockburn et al. 2002 (supra note 39), p. 25.