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BOX 2 OF 3 – OA # 17336 NARA # 14574

IP WORKING GROUP

INTELLECTUAL PROPERTY WORKING GROUP

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RESUMES/CLINTON ADMINISTRATION

REGULATORY REVIEW

**REFLECTIONS ON THE NEC WORKING GROUP
QUESTION NO. 2**

**Submitted by the
COUNCIL OF ECONOMIC ADVISORS
U.S. PATENT AND TRADEMARK OFFICE**

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Question 2: Is the protection currently available for intellectual property of the appropriate scope to encourage both initial and subsequent innovations?

1. *Introduction* As drafted, the Question includes all areas of intellectual property, i.e., patents and copyrights, as well as protection for trademarks, trade secrets, and integrated circuits. Given that the purpose and structure of each of these areas are very different, it is believed preferable not to discuss the issue of "scope of protection" generically for all areas. As a result, we have chosen to limit the Question to patent protection in the interests of promoting useful discussion.

2. *Background* The protection afforded by a patent is defined by the claims enumerated in the patent grant. These claims are word pictures that define the limits of protection similarly to old deeds to land. For example, a very broad claim to a chair could be drafted as follows:

I claim a seating device comprising a horizontal support surface attached to a vertical support member.

All applications must include claims. Applicants normally include a series of claims that go from broad to narrow coverage of the invention.¹ Although examiners must evaluate these claims in light of a number of statutory requirements, the requirements of "novelty" and "nonobviousness" are the major

¹ A more narrowly drafted claim to a chair follows:

I claim a seating device comprising a horizontal support surface having four vertical support members attached perpendicularly to the support surface.

Note, the owner of a patent with the above claim could not practice the claimed invention without permission of the owner of a patent containing the claim presented in the text. The patent containing the narrower claim is generally referred to as a dependent patent, its use is dependent on authorization to use the invention claimed in the dominant patent.

requirements that affect the scope of protection. To be "novel" the claimed invention must be new as defined by section 102 of title 35 of the United States Code.² Furthermore, the differences between the claimed invention and the prior art must not be obvious to one of ordinary skill in the area of technology to which the invention pertains.³

Examiners will search the records of the U.S. Patent and Trademark Office to discover the documents that contain technological information most closely related to the applicant's invention. They will compare the claims to this information. If the claimed invention is identical to one in the information found by the examiner the claim will be rejected as lacking novelty. If the invention is novel, but the examiner believes that the claimed invention is obvious in light of information discovered, the claim will be rejected on that ground. Applicants have the opportunity to narrow the scope of the claims to obviate these rejections. Thus, "crowded" technologies typically enjoy narrow patents, while pioneer technologies will receive broader patents.

Generally speaking, the "novelty" requirement tends to be objective, while the "nonobviousness" requirement tends to be very subjective. Thus, the less rigorous a test used to determine "nonobviousness" -- the broader issued claims will be. The appropriate nature of the "nonobviousness" requirement will be the subject to a public hearing conducted by the U.S. Patent and Trademark Office on July 20.

3. *Hypothetical* Inventor A invents a new and nonobviousness chemical composition used as a herbicide. He applies for and obtains a patent on the composition, disclosing a process for making the herbicide. Inventor A now may exclude others from making, using, or selling the composition.

Inventor B subsequently invents a new process for making the composition that is different from the process disclosed by Inventor A. The only use for B's process is to make the composition patented by Inventor A.

Inventor C subsequently invents a new process for making the composition. This process is conducted using genetic engineering techniques rather than conventional methods. This process is far cheaper and environmentally sounder than the processes invented by Inventors A and B.

² Section 102 is reprinted in Attachment 1.

³ Section 103 is reprinted in Attachment 2.

Inventor D subsequently invents a new composition. This composition, while more effective on some crops than of Inventor A, is an adaptation of Inventor A's invention and is covered by the claims of Inventor A's patent.

4. *Discussion* Under current law, Inventors B, C, and D must obtain permission of Inventor A before they may practice their respective inventions. Indeed, Inventor A's invention likely stimulated Inventors B and D, with little real contribution to society. Inventor C, while also stimulated by Inventor A, produced a far more valuable contribution. On the other hand, Inventor A must obtain permission from subsequent Inventors B, C, and D to practice their respective inventions, although there would be little incentive on A's part to practice B and D's inventions..

Inventor A's interest in granting licenses will depend on the commercial value of the improvement, whether the improvement was patented or unpatented, and other business factors. Generally, the subsequent inventors would want a cross-license from the owner of the dominant patent.

Some have expressed concern that if Inventor A's patent contains broad claims, subsequent inventors will not enter into research in the area of technology of the invention. Thus, they allege innovation will be stifled.

If, however, claims are not sufficiently broad to give a reasonable assurance that Inventor A will recover the costs of developing the compound and will make a profit, Inventor A may have insufficient incentive to invest in the creation of the invention resulting in the dominant patent.

Also, some express concern that if Inventor A's patent contains broad claims, subsequent inventors may find it difficult to use or market their technology because of the dominant patent.

If, however, the subsequent inventions have commercial value (like Inventor C's invention would likely have), the bargaining power of the subsequent inventors and the owner of the dominant patent will be commensurate with the relative commercial value of their technological contributions.

Therefore, the question arises whether there is any need for the Government to intervene where market forces are adequate to balance the commercial equities. Those countries that have legislated on this question, such as Japan with its dependent patent compulsory license, have created a mischievous weapon which Japanese industry has used to achieve bargaining leverage against competitors, especially those from the United States.

5. *CEA Comments on the PTO Discussion* In the past, discussions about the appropriate extent of intellectual property protection were framed around a tradeoff between the social benefits of encouraging innovation and the social costs of allowing some successful innovators to price well above even the risk-adjusted average cost of developing and producing the results of their innovation. Some suggest that intellectual property protections have been strengthened in the past decade with this tradeoff in mind, at least partly in response to the post-1973 productivity growth slowdown.

Today's discussion is about a different tradeoff: whether innovation can best be encouraged by facilitating initial innovations or follow-on ideas. This tradeoff raises the possibility that, in recent years, intellectual property protections may have been strengthened too far.

We cannot appeal to systematic empirical economic evidence in order to understand the effects on innovation of changes to the scope of patent protection;⁴ such evidence does not yet exist. We must instead employ other approaches: looking at the way hypothetical cases are handled under the patent laws, and applying insights from economic theory.

If narrowing the scope of patents appears worthwhile, it could be accomplished in at least two ways. PTO (or the courts), in issuing (reviewing) patents, could systematically become more skeptical about the broadest patent claims.⁵ Alternatively, patent owners could be compelled to award licenses (at reasonable rates) to innovators who cannot use their new ideas without the permission of the patent holder.

Two economic insights bear on whether narrowing patent scope these ways would encourage innovation:⁶

- (1) When the second innovator cannot use his innovation without the permission of the first, the second innovator may be in a poor

⁴ These comments are framed in terms of patent protection rather than the broader category of intellectual property rights for consistency with the PTO discussion.

⁵ This outcome would not necessarily require a conscious effort to review patents differently. A patent review process that allowed opponents of awarding a patent or industry experts a greater opportunity to present information about novelty or obviousness to the patent examiner before the patent issues would probably lead to more narrow patent scope on average.

⁶ The article by Suzanne Scotchmer distributed along with this memorandum discusses the economic issues more fully.

bargaining position. The possibility that this situation would arise, may discourage potential innovators from undertaking R&D effort in areas likely to produce follow-on inventions.

(2) Policies that encourage follow-on innovation by reducing the value of an initial innovation may discourage initial innovations.

These propositions are obviously in tension. Narrowing patent scope may favor follow-on innovation for reasons suggested by the first proposition, but it may discourage initial innovation for the reason set forth in the second proposition.

The tension between the two propositions varies according to the industry setting. In particular, markets with strong "network effects" (that make each user value a good more as additional users also adopt it) give a powerful advantage to a firm that effectively sets a standard for the industry (frequently the first firm to enter).⁷ That advantage can amplify the effective protection conferred by the firm's intellectual property rights (broadening their effective scope or lengthening their effective term). For example, the advantage conferred on Kodak by its ability to set film formats, or the advantage conferred on IBM originally and Microsoft more recently by the DOS operating system, may have this character. To the extent these types of industry standards are protected by intellectual property, narrowing the scope of that protection may enhance the prospects for successive innovations (film or operating system improvements) without markedly inhibiting the prospects for initial innovations.

On the other hand, in markets in which the technological opportunities do not favor cumulative invention, narrowing patent scope will not encourage innovation. For example, if the technology of identifying new drugs mainly involves screening plants randomly chosen from nature, the scope of patent protection would have little effect on the (limited) prospects for successive innovation. But if the technology of identifying new drugs involves modifying existing biological materials, the prospects for successive innovation are greater, increasing the likelihood that innovation in the aggregate will be enhanced by narrowing patent scope.

⁷ Network effects are common in communications networks and in industries in which consumer hardware choices depend on their forecast about the availability of software. In such markets, once one firm obtains a small market share advantage, its approach to interconnection may quickly become the industry standard. Once a standard develops, it may be difficult to supplant in the market even by alternatives that are technically superior, thus conferring advantages on the firm with the right to the standard.

These tradeoffs are made concrete by the PTO hypothetical case. In the example, society would most like to encourage the successive invention of Inventor C (which is cheaper and higher quality than Inventor A's original product). Society also benefits from the invention of Inventor D (because that invention is superior in some applications), and could also benefit from the process invented by B (for example if that process spawns additional innovation more readily than A's process, or if input price changes make the new process cheaper). But we would not want to encourage these inventions through a method that would have markedly inhibited the initial incentives of Inventor A.

The example suggests why Inventors B, C and D might have been discouraged from undertaking the research that leads to their inventions. These inventors must reach a licensing agreement with Inventor A in order to profit from their inventions. But in each case, A is in the stronger bargaining position because A makes out perfectly well with the status quo (no license) while B, C and D do not. If C or D do create their inventions, those inventions are likely to be employed, as PTO points out in its discussion of the example, C and D probably will reach some sort of licensing agreement with A.⁸ But that observation does not bear on whether the existing scope of patent protection is optimal. Recognizing A's bargaining power when it comes time to obtain a license, C and D may be less enthusiastic than society would desire to do what the example postulates: spend resources to create inventions that build on A's invention.

As PTO emphasizes in its discussion of the hypothetical, any method we might adopt to encourage B, C and D is likely to discourage A's initial R&D effort to some extent. But that observation does not tell us whether the existing intellectual property protections strike the right balance between favoring initial and successive inventions in order to maximize innovation generally.

⁸ B's invention may not (and probably should not) be employed, unless market conditions come to give it a cost advantage.

Attachment 1

Title 35

§ 102. Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

Attachment 2

Title 35

§ 103. Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.