

Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office - Extended

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Cecil D. Quillen, Jr., Ogden H. Webster, and Richard Eichmann*

Introduction

The earlier study by two of the authors (Quillen and Webster), published in the August 2001 issue of *The Federal Circuit Bar Journal*,¹ estimated the rigor of the examining activities of the U.S. Patent and Trademark Office (USPTO) for its fiscal years 1993–1998. The study utilized data for continuing applications for those years provided by the USPTO² and data for the same fiscal years from the USPTO's Annual Reports as published on the USPTO's website.³ Two measures of rigor were determined: Allowance Percentage and Grant Rate.⁴ Allowance Percentages were also determined for the European

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¹ Cecil D. Quillen, Jr. & Ogden H. Webster, *Continuing Patent Applications and Performance of the U.S. Patent and Trademark Office*, 11 *FED. CIR. B.J.* 1 (2001).

² The continuing applications data for the earlier study were provided by the USPTO pursuant to a request under the Freedom of Information Act (FOIA). See FOIA Request No. 00-044.

³ The USPTO website is located at <http://www.uspto.gov>.

⁴ Allowance Percentage is the number of applications allowed divided by the number filed, with appropriate corrections to take into account those that are continuing applications claiming benefit of the filing dates of prior applications, and, in a more refined calculation, with a time lag allowance to approximate the time required for examination. Grant Rate is the number of applications granted during the reporting period, divided by the number of disposals in the reporting period (applications granted plus those abandoned). Corrected Grant Rates for the USPTO are calculated by correcting the number of applications reported as abandoned to take into account those in which prosecution of the subject matter of the abandoned application was continued in a continuing application.

Patent Office (EPO) for 1978–1999 and for the Japanese Patent Office (JPO) for 1988–1999. The study also reported Grant Rates for the USPTO, EPO, and JPO, as presented on the Trilateral Website⁵, as well as corrected Grant Rates for the USPTO. The study found that Allowance Percentages and Grant Rates for the USPTO, when corrected for continuing applications, are as high as 95–97%, and are substantially higher (i.e., less rigorous) than corresponding performance measures for the EPO or JPO.⁶ Table 7 of the previous publication summarizes the results of the earlier study.⁷ Table 7 of the earlier publication also reports a determination by Harhoff, Scherer and Vopel of the percentage of the 1977 cohort of German patent applications that became patents.⁸

A number of studies have found discontinuities in various patent-related statistics following formation of the United States Court of Appeals for the Federal Circuit in 1982. For example, John F. Merz and Nicholas M. Pace, in a study published in the August 1994 *Journal of the Patent and Trademark Office Society*, reported significant increases in patent litigation, patent application filings, and patent grants attributed to formation of the Federal Circuit.⁹ Robert Hunt, in 1999, reported similar increases in application filings and patent grants.¹⁰ In addition, John H. Barton reported an especially dramatic increase in the ratio of intellectual property lawyers to research and development expenditures in the United States subsequent to the formation of the Federal Circuit.¹¹

These studies suggested to the authors the questions of (1) whether there were changes over time in the rigor of the USPTO's examining activities, and (2) if so, whether such changes, like those noted in the previously mentioned studies, could be attributed to formation of the Federal Circuit.¹²

As a consequence, data were sought from the USPTO to enable the earlier study to be extended to include at least the 1975–2000 time period so as to

⁵ The Trilateral Website is located at <http://www.uspto.gov/web/tws/twsindex.htm>.

⁶ Quillen & Webster, *supra* note 1, at 3.

⁷ *Id.* at 21 tbl.7, "Summary."

⁸ *Id.* at 11–12.

⁹ Jon F. Merz & Nicholas M. Pace, *Trends in Patent Litigation: The Apparent Influence of Strengthened Patents Attributable to the Court of Appeals for the Federal Circuit*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 579, 587 (1994).

¹⁰ Robert Hunt, *Patent Reform: A Mixed Blessing for the U.S. Economy?*, BUS. REV. FED. RES. BANK PHILADELPHIA, Nov.–Dec. 1999, at 15, 17 fig.2, "Patent Activity."

¹¹ John H. Barton, *Reforming the Patent System*, SCIENCE, Mar. 17, 2000, at 1933, 1933.

¹² Figures 1 and 2, based on USPTO Annual Report data summarized in Appendix I, illustrate the discontinuities in application filings (Figure 1) and application allowances and patent issuances (Figure 2). The plotted numbers are for utility, plant, and reissue (UPR) applications and patents, which is the way much of the data are grouped and reported by the USPTO.

span 1982, the year of formation of the Federal Circuit. Unfortunately, although USPTO Annual Report data for the years 1973–2000 were obtained, the USPTO apparently did not begin keeping computerized records until 1979. Therefore, continuing applications data before 1980 are regarded by the USPTO as incomplete and unreliable, and even the 1980 data may not be very reliable.¹³

The absence of complete and reliable data as to continuing patent applications prior to 1980 means that there are insufficient data for years earlier than 1982 to be fully confident of conclusions as to the effect of the Federal Circuit on USPTO performance. Nonetheless, this study finds a progressive deterioration over time in USPTO performance subsequent to formation of the Federal Circuit as measured by Allowance Percentages and Grant Rates when corrected for continuing applications. For example, the three-year composite Allowance Percentage with a two-year lag to allow for prosecution time, corrected for continuing application filings, rose from 69% in 1984 to 95% in 2000.¹⁴ Similarly, the Grant Rate, corrected for continuation and continuation-in-part application filings, rose from 72% in 1984 (the lowest in the extended study), to 98% in 2000.

It had been suggested in connection with the earlier study that it is possible for patents to be granted on both a continuation application and its parent application even though both are by definition for the same invention.¹⁵ To the extent that this may be true, the earlier study may overstate the Allowance Percentages and Grant Rates reported therein. Access to additional data, however, has enabled us to estimate the extent to which such Allowance Percentages and Grant Rates may have been overstated.

John R. Allison and Mark A. Lemley, for their study *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, compiled a database of a random sample of 1000 utility patents issued between 1996 and 1998.¹⁶ It is possible from their database to identify those patents, among the 1000, that were granted on continuing applications (i.e., continuations, continuations-in-part, or divisionals).¹⁷ Then, by inspecting the image of the patent copy as

¹³ The authors are grateful for the work by Robert Fawcett of the USPTO's Office of General Counsel and USPTO Information System Specialist Peter Toby Brown for finding and forwarding the data on which this extended study is based. These data were provided pursuant to a FOIA request to the USPTO. See FOIA Request Nos. 01-183, 01-291, and 01-327. Processing fees for obtaining and providing the data were waived by the USPTO.

¹⁴ 1984 is the first year for which such a three-year composite Allowance Percentage can be calculated.

¹⁵ Quillen & Webster, *supra* note 1, at 4 n.17.

¹⁶ John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2100 (2000).

¹⁷ Allison and Lemley were kind enough to loan us use of their database for this purpose.

it appears in the USPTO patent database,¹⁸ one can ascertain those in which a patent has also been granted on the parent application.

Using the Allison and Lemley data, we identified 297 patents (of the 1000) that had been granted on continuing applications (i.e., continuations, continuations-in-part, or divisionals) and determined that the USPTO had granted patents on 92 of their parent applications (31%). We also determined that 141 patents had been granted on continuation applications, and that patents had been granted on 19 of the 141 parent applications (13% of the 141, 6.4% of the 297).

The Allison and Lemley data covered calendar years 1996–1998, while our earlier study dealt with the USPTO’s fiscal years 1993–1998. This overlap is sufficient to permit at least an estimate of adjustments that would result from taking such continuing applications and patents into account.

Adjusted results are as follows: First, when the earlier results are adjusted to take into account the effect of continuation applications where both the parent application and the continuation application resulted in a patent (19), the two-year lagged Allowance Percentage was reduced from 95% to 92%,¹⁹ and the overall Grant Rate was reduced from 97% to 95%.²⁰ Second, when the earlier results are adjusted to take into account *all* continuing applications (i.e., continuations, continuations-in-part, and divisionals) in which patents were granted on both the parent and the continuing application (92), the two-year lagged Allowance Percentage was reduced from 95% to 83% and the overall Grant Rate was reduced from 97% to 85%. These latter adjusted numbers are about the same as the numbers obtained in the earlier study when the two-year lagged Allowance Percentage and the Grant Rate were determined on the assumption that all divisional applications could be regarded as “original” applications.²¹ Both are still substantially higher than comparable numbers in the earlier study for the European and Japanese Patent Offices,²² again suggesting that the U.S. Patent Office is less rigorous than the other patent offices, which was a conclusion of the earlier study.

¹⁸ See Patent Full-Text and Full-Page Image Databases at <http://www.uspto.gov/patft/index.html>.

¹⁹ See *infra* app. IV, “Corrected and Adjusted Allowance Percentages.”

²⁰ See *infra* app. V, “Corrected and Adjusted Grant Rates.”

²¹ See Quillen & Webster, *supra* note 1, at 17 tbl.2, “B - Percentage of Original Plus Divisional Applications Allowed,” and at 20 tbl.6, “B - Net Abandonments = Total Abandonment Less Continuation and Continuation-In-Part Applications.”

²² See *id.* at 21 tbl.7, “Summary.”

I. Application Filings

Figure 1, previously mentioned, depicts filings of utility, plant, and reissue (UPR) applications in the USPTO for its fiscal years 1973-2000.²³ The total number of application filings was essentially steady from 1973-1983, except for slight increases in 1974 and 1980-1982. The Federal Circuit began hearing cases in October 1982, the beginning of the USPTO's 1983 fiscal year.²⁴ Commencing with the USPTO's 1984 fiscal year, total application filings began rising, growing from 97,448 in 1983 to 293,244 in 2000, a 200% increase.

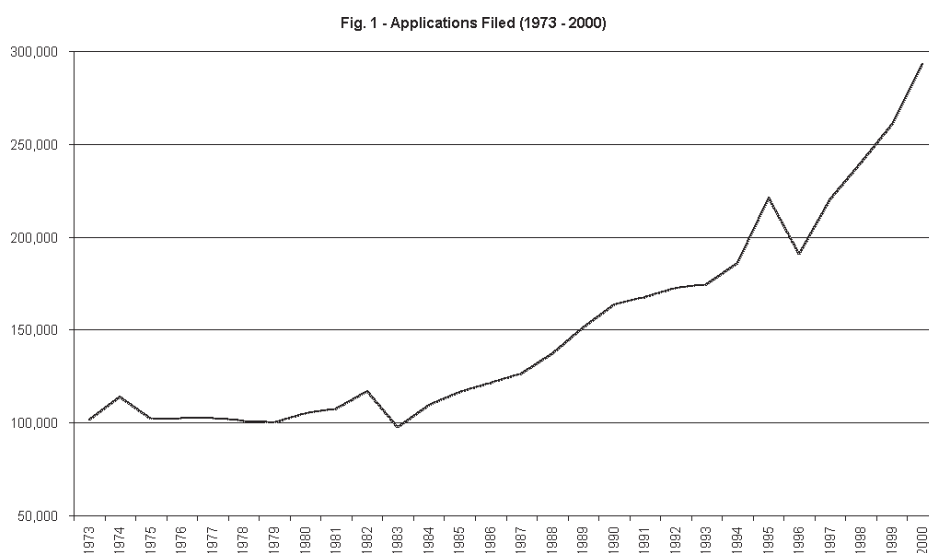


Figure 2, also previously mentioned, depicts the progress of application allowances and patent grants from 1973-2000. The number of application allowances and patent issuances were in decline from 1973 until 1982-1983, when they reached less than about 55,000. Following 1982-1983, they began a steep rise, reaching more than 165,000 in 2000. These findings are consistent with the earlier studies by Merz and Pace²⁵ and by Hunt.²⁶ It is

²³ Data for 1973 and 1974 are presented in the USPTO 1975 Annual Report. See PATENT AND TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, 1975 ANNUAL REPORT 7 (1976).

²⁴ The Federal Circuit began hearing cases on October 1, 1982. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, § 402, 96 Stat. 25, 57 (1982). The start of the fiscal year for the USPTO was moved from July 1 to October 1, beginning in 1977. See PATENT AND TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, 1976 ANNUAL REPORT 1 (1977).

²⁵ Merz & Pace, *supra* note 9, at 585.

²⁶ Hunt, *supra* note 10, at 17 fig.2, "Patent Activity."

significant to note that application filings from 1973 to 1982–1983, depicted in Figure 1, were essentially flat while application allowances and patent grants were declining, suggesting increasing rigor by the USPTO until 1982–1983.²⁷

Fig. 2 - Applications Allowed/Patents Issued (1973 - 2000)

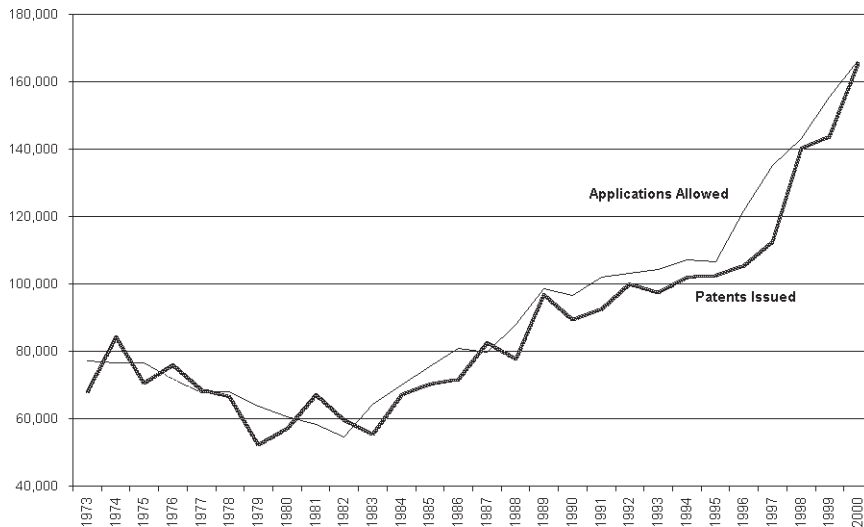


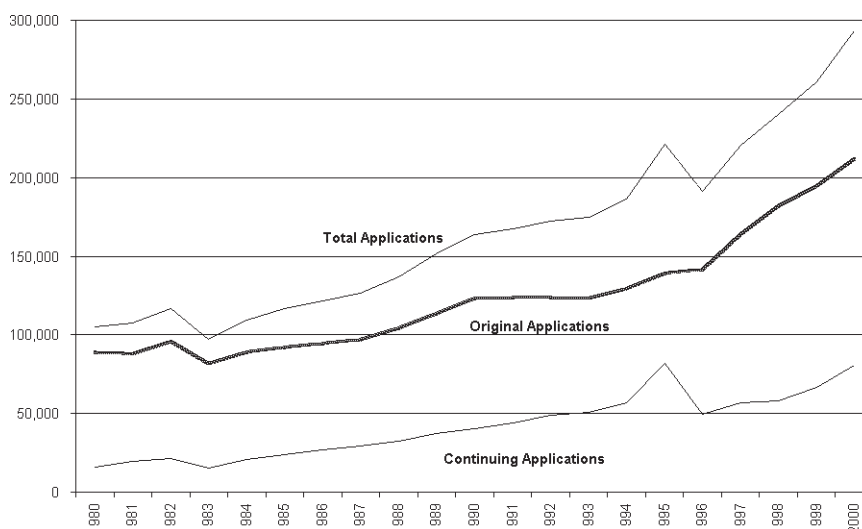
Figure 3 depicts filings of UPR applications for 1980 through 2000, including filings of continuing applications (i.e., continuations, continuations-in-part, and divisionals) that claim the benefit of the filing date of a previously filed United States patent application.²⁸ The numbers of continuing applications increased from 15,598 in the USPTO’s fiscal year 1980 to 80,957 in 2000, a 419% increase. The increase over the 1983–2000 time period was 425% (80,957/15,425).

Figure 3 also shows the number of “original” applications filed during the USPTO’s fiscal years 1980–2000. “Original” applications are those that do not claim the benefit of the filing date of an earlier filed U.S. patent application (i.e., are not continuations, continuations-in-part, or divisionals).

²⁷ Perhaps up until 1982–1983, the USPTO was responding to the observation by the Supreme Court in *Graham v. John Deere Co.* that “We have observed a notorious difference between the standards applied by the Patent Office and by the courts” and the Court’s admonition for “the Commissioner [of Patents] to strictly adhere to the 1952 Act as interpreted here.” *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966).

²⁸ Data as to continuing applications for 1980–2000 were provided by the USPTO pursuant to FOIA Request No. 01-183, and are included in Appendix I. As previously noted, reliable data for continuing applications for years earlier than 1980 are unavailable. *See* FOIA Request No. 01-291.

Fig. 3 - U.S. Patent Applications (1980-2000)

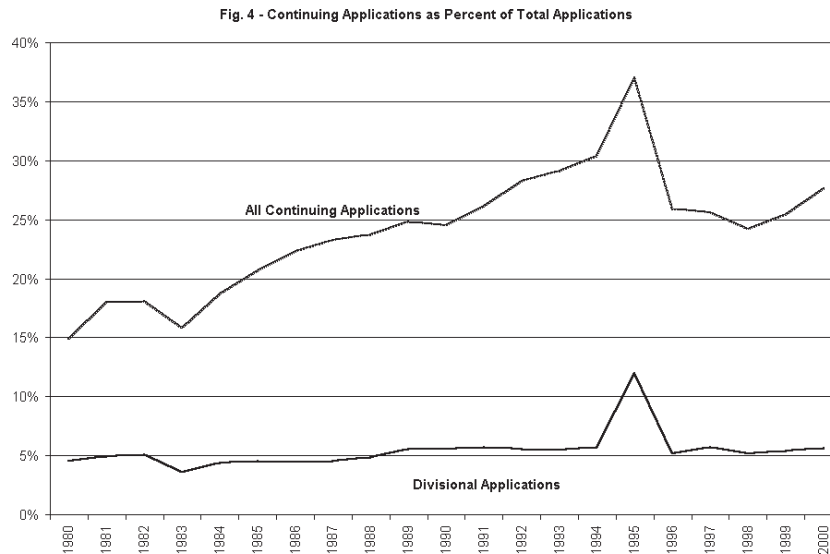


The number of original applications is determined by subtracting the number of applications claiming benefit of the filing date of an earlier application (i.e., continuations, continuations-in-part, and divisionals) from the total number of applications filed. The number of original applications increased from 89,448 in 1980 to 212,287 in 2000, a 137% increase. Over the 1983–2000 time period the increase was about 160% (212,287/82,023).

The disparity in the increase in numbers of continuing applications and original applications (419% vs. 137% for 1980–2000, 425% vs. 160% for 1983–2000) means that an increasing proportion of the USPTO examination workload is devoted to the examination of applications whose subject matter had already been before the USPTO and was (or could have been) examined by the USPTO. Consequently, a decreasing proportion of the USPTO’s time is available for the examination of original applications.

Figure 4 illustrates this disparity. It depicts filings of divisional applications and all continuing applications in the USPTO for the USPTO’s 1980–2000 fiscal years as the percentage of total UPR applications filed in those years. The total number of continuing applications as a percentage of total UPR application filings increased from 15% in 1980 to 28% in 2000. The number of divisional applications remained essentially flat over this time period at about 5%, except for the “spike” in 1995.²⁹

²⁹ The “spike” in divisional application filings in 1995 is almost certainly due to divisional applications being filed in advance of the effective date of the legislation changing the patent term to twenty years from the earliest claimed U.S. application date so that patents granted on such divisional applications would be entitled to a term of seventeen years from their issue date.



As noted previously, continuing applications claim inventions that are described in earlier filed parent applications, and thus, to a considerable extent, represent “rework” for the USPTO, since the inventions of the continuing applications were, or could have been, examined in the earlier parent applications. Even if all divisional applications are regarded as directed to inventions that are independent and distinct from those of their parent applications and claim subject matter not previously examined by the USPTO, and thus do not represent rework, it is still apparent from Fig. 4 that the amount of rework imposed on the USPTO as a consequence of continuing application filings has increased over time.

In addition, as pointed out in the earlier publication, the ability to file a succession of continuing applications enables patent applicants to avoid final decisions as to the patentability of their inventions.³⁰ The USPTO is thus placed in the position of being unable to rid itself of determined applicants except by allowing their applications. Abolition of continuing applications would enable the USPTO to obtain final decisions as to patentability and would allow the USPTO to rid itself of persistent applicants by some method other than allowing their applications. In addition, abolition of continuing applications would eliminate the rework imposed on the USPTO by such continuing applications and would enable the USPTO to focus on the examination of original applications.³¹ This could result in improved performance by the USPTO.

³⁰ Quillen & Webster, *supra* note 1, at 14.

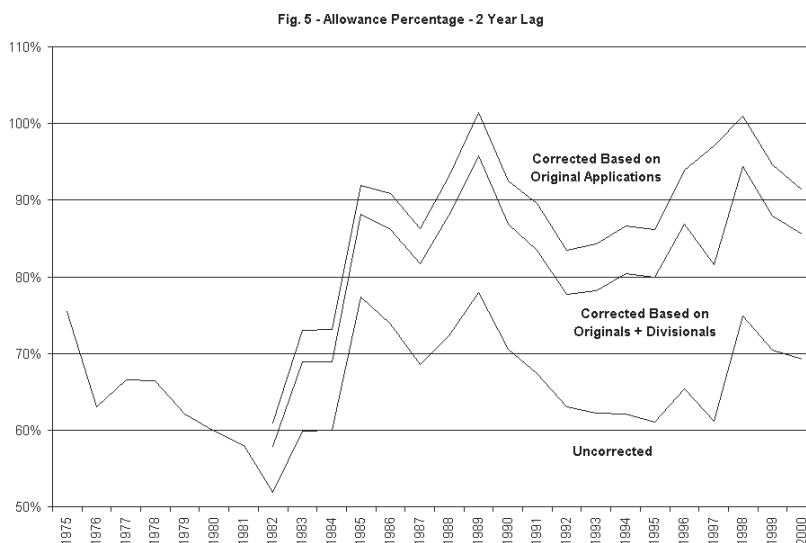
³¹ Abolition of continuing applications would also eliminate, or at least ameliorate, the “hold-up” problem. *Id.* at 6 nn.28–29.

II. USPTO Performance

A. Allowance Percentages

The earlier study determined two measures of USPTO performance, Allowance Percentage and Grant Rate. Allowance Percentage is the number of applications allowed divided by the number of applications filed, with appropriate corrections to take into account the number of applications filed that are continuing applications, and, in our “refined” calculation, with a lag to allow for prosecution pendency.

Figure 5 shows Allowance Percentages, calculated with a two-year lag to allow for prosecution time. The lowest of the three lines is the uncorrected Allowance Percentage based on all UPR applications filed with the USPTO for the USPTO’s fiscal years 1973–2000.³² The top line shows the corrected Allowance Percentage for the USPTO’s fiscal years 1980–2000 based on original UPR applications (i.e., UPR applications that do not claim the benefit of the filing date of an earlier application, determined by subtracting the number of continuing UPR applications from total UPR applications).³³ The intermediate line is the corrected Allowance Percentage for the USPTO’s 1980–2000 fiscal years that results from using original UPR applications plus divisional UPR applications as the denominator (i.e., on the assumption that the subject matter of the divisional UPR application had not previously been examined by the USPTO).



³² Because of the two-year lag, 1975 is the earliest year for which the uncorrected Allowance Percentage can be determined.

³³ Because the USPTO’s 1980 fiscal year is the earliest date for which continuing applications data are available, 1982 is the earliest year for which such two-year lagged Allowance Percentages can be determined.

The uncorrected Allowance Percentage for the USPTO's 1982 fiscal year was 52%, rising to 77% in 1985, and after 1989, falling to below 70% until 1998. Recall that the Federal Circuit began hearing cases in October 1982, the beginning of the USPTO's 1983 fiscal year, which suggests the possibility of a connection between the formation of the Federal Circuit and the decline of USPTO rigor that began with its 1983 fiscal year.

Figure 5 reveals a sharp rise in corrected Allowance Percentages, whether based on original applications alone or on original plus divisional applications, from their initial values of about 60% in 1982 to about 90% by 1985. Both corrected Allowance Percentage values have remained at high levels since 1985.

Figure 6 shows two-year lagged Allowance Percentages for a three-year composite time period. The first data point (on the bottom line) is the uncorrected Allowance Percentage determined by dividing the sum of allowances for 1975–1977 by the sum of applications filed for 1973–1975. Subsequent determinations follow the same pattern (e.g., the 1984 values are determined by dividing the allowances for 1982–1984 by application filings for 1980–1982, etc.).

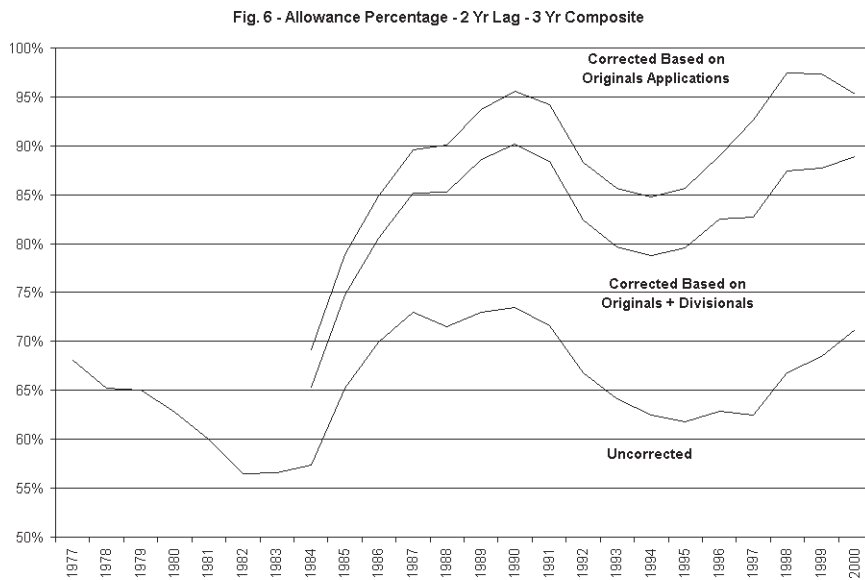
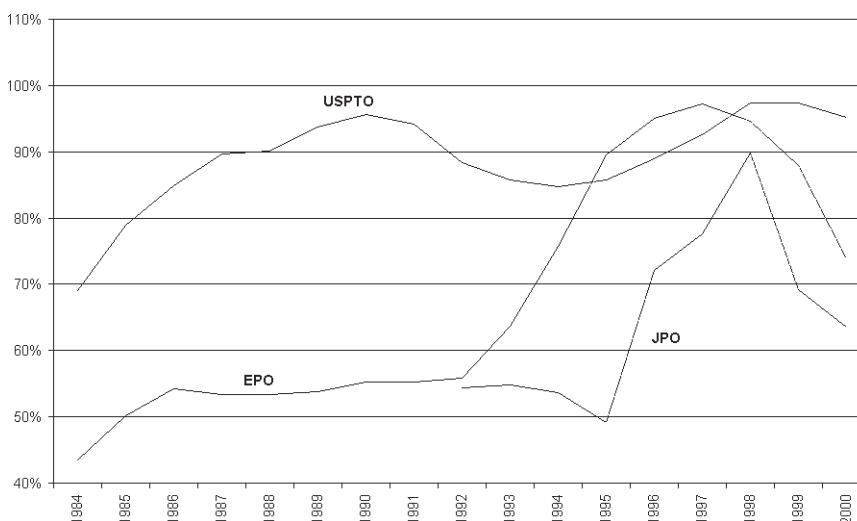


Figure 6 displays the same general pattern as Figure 5. Uncorrected Allowance Percentages are in decline from their initial value in 1977 until 1982–1984, suggesting the possibility of increasing rigor by the USPTO. Uncorrected Allowance Percentages rise sharply from their 1984 values to nearly 75% by 1987, suggesting the possibility of declining rigor by the USPTO. Thereafter the uncorrected Allowance Percentages oscillate between about 60% and about 70%.

The Corrected Allowance Percentages as shown in Figure 6 rise sharply from their 1984 values, initially peaking in 1990 at 90% for the Allowance Percentage based on original plus divisional applications, and at 96% for the Allowance Percentage based on original applications.³⁴ Rising Allowance Percentages indicate declining rigor by the USPTO. Following the 1990 initial peak, both measures of corrected Allowance Percentage decline and then rise again. Fiscal year 2000 values are 95% and 89%, respectively.

Comparative Allowance Percentages (three-year composite, two-year lag) for the USPTO, the European Patent Office (EPO), and the Japanese Patent Office (JPO) are shown in Figure 7. The USPTO Allowance Percentages are based on original applications. Data for the EPO and JPO determinations were obtained from their respective websites (except the JPO data for 2000 were supplied by MITI).³⁵ All of these data are found in Appendix III.

Fig. 7 - Comparative Allowance Percentages (2 Yr Lag - 3 Yr Composite)



Allowance Percentages for the USPTO are substantially in excess of those for the EPO (approximately 30% or more) from 1984 until 1993 when those for the EPO begin a steep rise, exceeding the Allowance Percentage for the USPTO in 1995 and remaining above the USPTO Allowance Percentages through 1997. The EPO Allowance percentage declined sharply, beginning

³⁴ 1984 is the first year for which the corrected two-year lagged, three-year composite Allowance Percentages can be determined for the USPTO because there is no complete and reliable data for continuing application filings prior to 1980. See FOIA Request No. 01-291.

³⁵ The EPO website is located at <http://www.european-patent-office.org>. The JPO website is located at <http://www.jpo.go.jp>.

in 1997, to 74% in 2000, while the USPTO Allowance Percentage remained at 95% in 2000.

The first year for which the three-year composite, two-year lagged Allowance Percentage can be determined for the JPO is 1992. The JPO Allowance Percentage is essentially flat to declining for 1992–1995 and rises sharply commencing in 1996, three years after the sharp rise in the EPO Allowance Percentage. The JPO Allowance Percentage peaks at 90% in 1998, one year after the peak in the EPO Allowance Percentage, and then declines sharply to 64% in 2000.

To recapitulate, Allowance Percentages are measures of the rigor of patent office examination. The higher the Allowance Percentage is, the less rigorous the examination. These charts reveal that for the periods for which comparative Allowance Percentages can be determined (1992–2000 for the JPO and 1984–2000 for the EPO), the least rigorous of the patent offices was the USPTO, except for the EPO in 1995–1997.

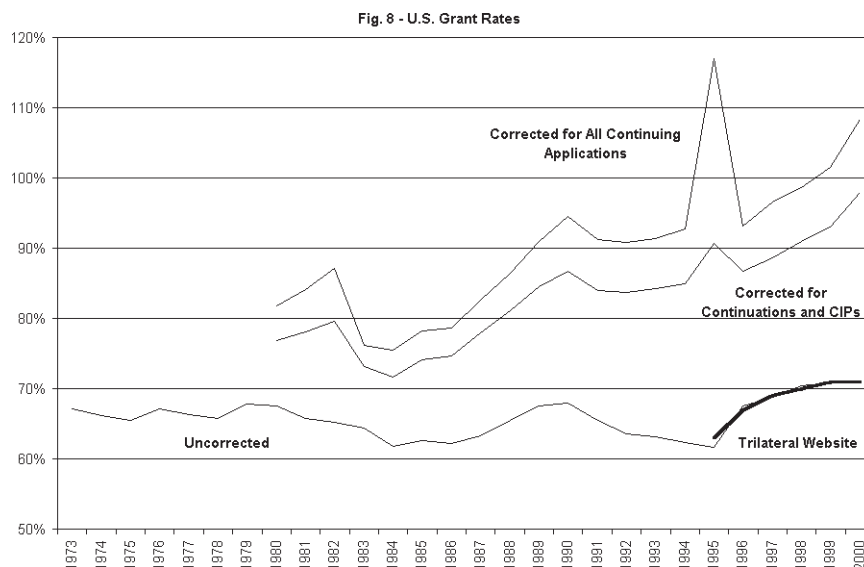
B. Grant Rates

As previously indicated, Grant Rate is another measure of the rigor of the patent examination process. The higher the Grant Rate, the less rigorous the examination process. Grant Rate is defined on the Trilateral Website as “the number of applications that were granted during the reporting period, divided by the number of disposals in the reporting period (applications granted plus those abandoned),” and is reported on the Trilateral Website for the USPTO, the EPO, and the JPO.³⁶

Grant Rates reported for the USPTO on the Trilateral Website, however, are not corrected for continuing applications, even though continuing applications claim subject matter that was disclosed in prior applications and many of them represent renewed attempts to patent subject matter of earlier abandoned applications. Thus, to obtain a true measure of the USPTO’s performance as measured by the Grant Rate, the number of applications counted as abandoned must be corrected to take into account those in which a continuing application was filed in an attempt to patent the subject matter of its abandoned parent application.

Figure 8 depicts determinations of three Grant Rates for the USPTO. The bottom line is the uncorrected Grant Rate for the USPTO, calculated from data from USPTO Annual Reports, and not corrected for continuing application filings. Superimposed for the years 1995–2000 are USPTO Grant Rates as reported on the Trilateral Website.

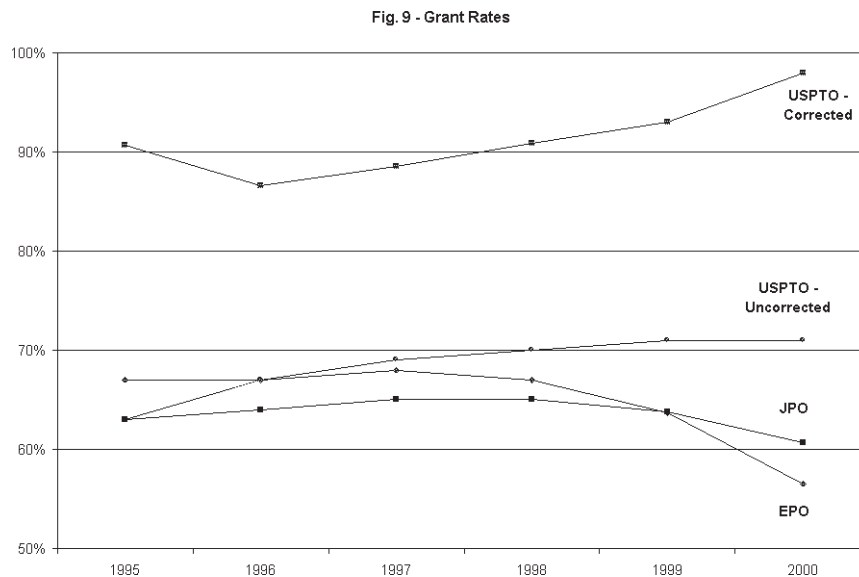
³⁶ See *infra* app. II, “Grant Rates Reported on the Trilateral Website” at <http://www.uspto.gov>, <http://www.jpo.go.jp>, <http://www.european-patent-office.org>.



The top line depicts Grant Rates for the USPTO calculated on the assumption that all continuing applications (i.e., continuations, continuations-in-part, and divisionals) represent a renewed effort to seek a patent on the subject matter of a prior abandoned application. That assumption, at least with respect to 1995, 1999, and 2000, is obviously incorrect. The calculated Grant Rate for those years is above 100%, which is not possible. This impossibility undoubtedly occurs because some of the divisional applications claim subject matter that is genuinely independent and distinct from the invention claimed in the parent application that was not abandoned.

The intermediate line is the USPTO Grant Rate calculated on the assumption that continuation and continuation-in-part applications, but not divisional applications, represent an effort to patent the subject matter of a prior abandoned application. Grant Rates by this measure were 77% in 1980, the first year for which corrected grant rates can be calculated, falling to 72% in 1984, and then rising to 98% in 2000. The rise in corrected Grant Rates over time, which is also apparent from the top line plot, is an indication of the declining rigor of the USPTO's examination activities.

Figure 9 plots Grant Rates for the USPTO, the EPO, and the JPO for 1995–2000, as reported on the Trilateral Website. Figure 9 also plots USPTO Grant Rates for those same years, corrected for continuation and continuation-in-part applications. The Trilateral Website Grant Rates for all three patent offices are similar. But the corrected Grant Rates for the USPTO are substantially higher (approximately 20%), illustrating the extent to which the uncorrected Grant Rates for the USPTO on the Trilateral Website may be misleading.



III. Adjustments

As indicated in the introduction, it had been suggested in connection with the earlier study that it is possible for a patent to be granted on both a continuation application and its parent even though by definition both are for the same invention.³⁷ Appendices IV and V set forth the calculations described in the Introduction using information from the database made available by John Allison and Mark Lemley. Allison and Lemley's database was used to determine whether the number of instances in which a patent had been granted on both a continuation application and its parent was sufficient to significantly affect the results reported in the earlier paper. Appendix IV sets forth calculations to determine the effect on Allowance Percentages, and Appendix V sets forth the calculations for Grant Rates.

Corrected Allowance Percentages (Appendix IV) are measured by subtracting the appropriate number of continuing applications from the total number of UPR applications to determine the number of Original Applications, and then dividing the number of applications allowed by the number of Original Applications. The determination of the two-year lagged Allowance Percentage from Table 2A of the earlier paper is reproduced as Calculation 1 in Appendix IV using the numbers supplied by the USPTO in 2001 instead of the numbers supplied in 2000.³⁸ Calculation 2 in Appendix IV is the adjustment for the number of continuation applications in which a patent was

³⁷ Quillen & Webster, *supra* note 1, at 4 n.17.

³⁸ The numbers supplied by the USPTO in 2001 differ slightly from those supplied in 2000. The differences are so small that the calculated Allowance Percentage remains unchanged.

granted on both the parent application and the continuation application, which, as seen from the Patents Granted on Continuing Applications table, comprised 6.4% of the total number of continuing applications (297). Reducing the number of continuing applications by that percentage yields the Adjusted Continuing Applications line (Total = 330,921). Subtraction of the Adjusted Continuing Applications from the Total UPR Applications filed gives the adjusted number of original applications. Adjustment of the calculated Allowance Percentage for the six-year period, allowing a two-year lag for prosecution pendency, reduces the Allowance Percentage to 92% (from 95%). Calculation 3 adjusts on the basis of all continuing applications (i.e., continuations, continuations-in-part, and divisionals) in which a patent was granted on both the parent application and the continuing application (31%). Adjustment on this basis yields an Allowance Percentage of 83% which is still substantially in excess of the Allowance Percentages determined for the EPO and the JPO in the earlier study.

Corrected Grant Rates (Appendix V) are calculated by adjusting the number of applications reported as abandoned by the number of refiled continuing applications so as to determine a net number of abandoned applications. Corrected Application Disposals are the sum of allowances and corrected applications abandoned (reported as Net UPR Applications Abandoned).³⁹ Net Disposals are the sum of Application Allowances and Net Abandonments, and the Grant Rate is the number of allowances divided by Net Disposals. The determination of the Grant Rate from Table 6A of the earlier paper is reproduced as Calculation 1 in Appendix V. The overall corrected Grant Rate for the six-year period was determined to be 97%.⁴⁰ Calculation 2 in Appendix V is a determination of the Corrected Grant Rate, adjusted to take into account the continuation applications on which a patent was granted on both the parent application and the continuation application (6.4% of the total number of continuing applications). Adjustment of the Grant Rate to take such continuation applications into account reduces the Grant Rate from 97% to 95%. Calculation 3 is the determination of the adjusted Grant Rate taking into account all continuing applications in which a patent was granted on both the parent application and the continuing

³⁹ The negative numbers in 1995 for Net UPR Applications Abandoned in Calculation 1 and for Adjusted Applications Abandoned in Calculation 2 in Appendix V are artifacts resulting from the unusually large number of divisional applications filed in 1995, as is the corresponding number in Calculation 3. See *infra* app. V, "Corrected and Adjusted Grant Rates."

⁴⁰ This determination, like the determination of Allowance Percentages in Appendix IV, used the numbers provided by the USPTO in 2001. Again, the differences between the 2001 numbers and the 2000 numbers are so small that the calculated Grant Rates remain unchanged.

application (31% of all continuing applications). The adjusted corrected Grant Rate on this assumption is 85%, which is substantially above the Grant Rates reported for the EPO, JPO and USPTO on the Trilateral Website.

Conclusion

Examination performance of the USPTO, whether measured by Allowance Percentage or Grant Rate, when corrected for continuing applications, has deteriorated over time. Allowance Percentages (3-year composite, 2-year lag) corrected for all continuing applications went from 69% in 1984 to 95% in 2000. Grant Rates, corrected for continuation and continuation-in-part applications, have gone from 77% in 1980 to 98% in 2000. At the same time, the proportion of applications that are continuing applications has risen from 15% in 1980 (and 16% in 1983) to 28% in 2000.

One question, suggested but not definitively answered by these data, is the extent to which the increase in continuing application filings is responsible for the declining rigor of the USPTO. As noted previously, patent applicants can avoid a final decision as to the patentability of the subject matter of their patent applications by filing continuing applications. Because applicants are not limited in the number of continuing applications they may file, the USPTO can rid itself of determined applicants only by allowing their applications. Therefore, the increase in continuing application filings may itself have caused a decline in the examination performance of the USPTO.⁴¹

The policy questions raised in the earlier paper remain valid in light of the findings herein.⁴² Namely, is the performance of the USPTO as determined in this study, and in the earlier study, acceptable. And, if so, why should we not go to a registration system and avoid the expense of operating an examination system. If the performance of the USPTO, as revealed in these studies, is not satisfactory, then the question becomes what should be done to improve it. And, if we wish to improve the performance of the USPTO, shouldn't we abolish continuing applications so that the USPTO will be able

⁴¹ Numerous authors have addressed the problem of USPTO quality. See Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495 (2001); Robert P. Merges, *As Many As Six Impossible Patents Before Breakfast: Property Rights For Business Concepts And Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999); John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305 (2001); John R. Thomas, *The Responsibility of the Rulemaker: Comparative Approaches to Patent Administration Reform*, Presented at the Tenth Annual Conference on International Intellectual Property Law & Policy (Apr. 4–5, 2002) and at the Patent System Reform Conference (Mar. 1–2, 2002); Harold C. Wegner, *Enronesque Patent Bookkeeping: Two-For-One Continuation Double Counting and American Patent Flooding* (June 14, 2002) (unpublished manuscript, on file with author at Foley & Lardner).

⁴² Quillen & Webster, *supra* note 1, at 13–15.

to obtain final decisions as to the patentability of subject matter presented in patent applications and avoid having rework imposed upon it. Finally, so long as the USPTO grants a patent for virtually every application filed, are the courts justified in adhering to the clear and convincing evidence standard for overcoming the statutory presumption of validity.

Appendix I: USPTO Data and Calculations

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000			
USPTO Annual Reports																															
A1	101,391	113,875	101,911	102,389	102,587	101,304	100,339	105,046	107,513	116,731	97,448	109,589	116,437	121,611	126,407	137,069	151,331	163,571	167,715	172,529	174,533	186,123	221,304	191,116	220,773	240,090	251,641	293,244	251,641	293,244	
A2	101,391	113,875	101,911	102,389	102,587	101,304	100,339	105,046	107,513	116,731	97,448	109,589	116,437	121,611	126,407	137,069	151,331	163,571	167,715	172,529	174,533	186,123	221,304	191,116	220,773	240,090	251,641	293,244	251,641	293,244	
A3	37,654	39,316	40,231	35,119	34,463	35,388	30,260	29,106	30,338	29,099	35,555	43,313	45,083	49,151	46,190	46,351	47,218	45,750	53,703	59,109	60,763	66,460	58,358	61,367	60,102	64,002	68,056	64,002	68,056		
A4	14,747	116,003	116,706	106,903	102,263	103,410	93,921	89,717	88,545	83,583	99,931	113,900	120,488	130,072	125,945	134,221	145,690	142,422	155,717	162,202	165,114	172,153	173,026	180,052	196,607	203,147	219,442	234,256	219,442	234,256	
A5	67,910	84,276	70,684	75,938	68,545	66,523	52,149	57,060	67,128	59,853	55,314	67,214	70,244	71,791	82,635	77,844	96,868	89,551	92,474	100,116	97,386	102,130	102,579	112,646	140,159	143,686	165,504	140,159	143,686		
PTO FOIA Data																															
B1	6,117	8,263	9,144	6,812	9,608	11,992	14,202	15,651	17,158	19,490	20,379	22,852	26,643	28,390	32,053	37,883	24,005	29,123	14,429	13,600	18,362	1,608	5,019	3,753	17,609	25,463	31,148	1,009	3,148		
B2	6,117	8,263	9,144	6,812	9,608	11,992	14,202	15,651	17,158	19,490	20,379	22,852	26,643	28,390	32,053	37,883	24,005	29,123	14,429	13,600	18,362	1,608	5,019	3,753	17,609	25,463	31,148	1,009	3,148		
B3	4,735	5,824	5,953	5,105	6,066	6,778	7,592	8,680	9,615	10,625	11,417	12,586	12,904	13,528	15,988	10,582	11,070	11,595	12,300	13,561	15,988	10,582	11,070	11,595	12,300	13,561	15,988	10,582	11,070	11,595	
B4	4,746	5,277	5,958	3,508	4,822	5,265	5,415	5,762	6,704	8,391	9,131	9,589	9,577	9,602	10,605	26,439	9,853	12,587	11,961	13,688	16,175	399	316	262	399	316	262	399	316	262	
B5	15,598	19,364	21,095	15,425	20,496	24,035	27,177	29,365	32,542	37,496	40,135	43,858	48,766	50,896	56,586	81,918	49,459	56,533	58,146	66,312	80,957	1,608	5,019	3,753	17,609	25,463	31,148	1,009	3,148		
B6	15,598	19,364	21,095	15,425	20,496	24,035	27,177	29,365	32,542	37,496	40,135	43,858	48,766	50,896	56,586	81,918	49,459	56,533	58,146	66,312	80,957	1,608	5,019	3,753	17,609	25,463	31,148	1,009	3,148		
B7	4,746	5,277	5,958	3,508	4,822	5,265	5,415	5,762	6,704	8,391	9,131	9,589	9,577	9,602	10,605	26,439	9,853	12,587	11,961	13,688	16,175	399	316	262	399	316	262	399	316	262	
B8	15,598	19,364	21,095	15,425	20,496	24,035	27,177	29,365	32,542	37,496	40,135	43,858	48,766	50,896	56,586	81,918	49,459	56,533	58,146	66,312	80,957	1,608	5,019	3,753	17,609	25,463	31,148	1,009	3,148		
B9	4,746	5,277	5,958	3,508	4,822	5,265	5,415	5,762	6,704	8,391	9,131	9,589	9,577	9,602	10,605	26,439	9,853	12,587	11,961	13,688	16,175	399	316	262	399	316	262	399	316	262	
B10	15,598	19,364	21,095	15,425	20,496	24,035	27,177	29,365	32,542	37,496	40,135	43,858	48,766	50,896	56,586	81,918	49,459	56,533	58,146	66,312	80,957	1,608	5,019	3,753	17,609	25,463	31,148	1,009	3,148		
Calculations																															
C1	89,448	88,149	95,636	82,023	89,043	92,392	94,434	97,042	104,527	113,835	123,773	123,657	129,537	139,336	141,657	164,240	181,944	194,729	212,287	212,287	212,287	212,287	212,287	212,287	212,287	212,287	212,287	212,287	212,287	212,287	
C2	94,194	93,426	101,594	85,531	93,865	97,657	99,849	102,804	111,231	122,226	132,567	133,446	133,330	133,259	140,142	165,825	151,510	176,827	191,304	208,733	228,724	208,733	208,733	208,733	208,733	208,733	208,733	208,733	208,733	208,733	
C3	15%	18%	18%	16%	19%	21%	22%	23%	24%	25%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	
C4	5%	5%	5%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
D1	60%	58%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	
D2	68%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	
D3	68%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	
3 Year Composite Allowance Percentages (2 Yr Lag)																															
D4	68%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	
D5	68%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	
USPTO Application Dispositions - Corrected																															
E1	74,119	69,181	62,488	84,506	92,804	96,453	102,894	96,580	101,679	108,194	102,287	111,859	113,526	114,218	115,567	91,108	130,593	140,074	145,001	153,130	153,299	153,299	153,299	153,299	153,299	153,299	153,299	153,299	153,299	153,299	
E2	78,865	74,458	68,446	88,014	97,626	101,718	108,310	102,342	108,383	116,585	111,418	121,448	123,083	123,820	126,172	117,547	140,446	152,661	157,361	167,134	169,736	169,736	169,736	169,736	169,736	169,736	169,736	169,736	169,736	169,736	
E3	68%	66%	65%	62%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	
E4	82%	84%	87%	76%	75%	78%	79%	83%	86%	91%	95%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	
E5	77%	78%	80%	73%	72%	74%	75%	78%	81%	84%	87%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%
Grant Rates																															
F1	67%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	
F2	68%	66%	65%	62%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	62%	63%	
F3	82%	84%	87%	76%	75%	78%	79%	83%	86%	91%	95%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	
F4	77%	78%	80%	73%	72%	74%	75%	78%	81%	84%	87%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	
All data copied or calculated from Summary of Patent Examining Activities section of USPTO Annual Reports.																															
B10 B5-R6-B9																															
C1 C1-R10																															
C2 C1-R10																															
C3 C1-R10																															
C4 B9/A1																															
D1 A2/A1 (2 Year Lag)																															
D2 A2/C1 (2 Year Lag)																															
D3 A2/C2 (2 Year Lag)																															

D4 A2/A1 (2 Year Lag, 3 Year Composite)
 D5 A2/C1 (2 Year Lag, 3 Year Composite)
 D6 A2/C2 (2 Year Lag, 3 Year Composite)
 E1 A2/A1 (2 Year Lag)
 E2 A2/A1 (2 Year Lag)
 E3 A2/E1
 E4 See Appendix II

Appendix IV: Corrected and Adjusted Allowance Percentages**Patents Granted on Continuing Applications**

	Continuations		CIPs		Divisionals		Total Continuing Apps	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Parent is Patented	19	13.5%	27	35.1%	46	58.2%	92	31.0%
Parent is Abandoned	111	78.7%	34	44.2%	5	6.3%	150	50.5%
Parent Disposition is Undetermined	11	7.8%	16	20.8%	28	35.4%	55	18.5%
Total	141	100.0%	77	100%	79	100%	297	100%
Parent Patented as % of Total Continuing Apps =	6.4%							

Calculation 1 - Corrected Allowance Percentage (2 Yr Lag) Based on Original Applications

	1993	1994	1995	1996	1997	1998	Total
UPR Applications Allowed	104,351	107,221	106,566	121,694	135,240	143,045	718,117
Total UPR Applications Filed	174,553	186,123	221,304	191,116	220,773	240,090	1,233,959
Continuing UPR Applications	50,896	56,586	81,918	49,459	56,533	58,146	353,538
Original UPR Applications Filed	123,657	129,537	139,386	141,657	164,240	181,944	880,421

Allowance Percentage (2 Yr Lag) Based on Original Applications

Original Applications (1993-1996)	534,237	Percent
Applications Allowed (1996-1998)	506,545	95%

Adjusted Corrected Allowance Percentages**Calculation 2 - Allowance Percentage (2 Yr Lag) Adjusted for Continuation Applications in Which Parent is Patented**

	1993	1994	1995	1996	1997	1998	Total
UPR Applications Allowed	104,351	107,221	106,566	121,694	135,240	143,045	718,117
Total UPR Applications Filed	174,553	186,123	221,304	191,116	220,773	240,090	1,233,959
Continuing UPR Applications	50,896	56,586	81,918	49,459	56,533	58,146	353,538
Adjusted Continuing Applications	47,640	52,966	76,677	46,295	52,916	54,426	330,921
Adjusted Original Applications	126,913	133,157	144,627	144,821	167,857	185,664	903,038

Allowance Percentage (2 Yr Lag) Adjusted for Continuation Applications in which Parent is Patented

Adjusted Original Applications (1993-1996)	549,518	Percent
Applications Allowed (1996-1998)	506,545	92%

Calculation 3 - Allowance Percentage (2 Yr Lag) Adjusted for All Continuing Applications in Which Parent is Patented

	1993	1994	1995	1996	1997	1998	Total
UPR Applications Allowed	104,351	107,221	106,566	121,694	135,240	143,045	718,117
Total UPR Applications Filed	174,553	186,123	221,304	191,116	220,773	240,090	1,233,959
Continuing UPR Applications	50,896	56,586	81,918	49,459	56,533	58,146	353,538
Adjusted Continuing Applications	35,130	39,058	56,543	34,138	39,021	40,134	244,025
Adjusted Original Applications	139,423	147,065	164,761	156,978	181,752	199,956	989,934

Allowance Percentage (2 Yr Lag) Adjusted for All Continuing Applications in which Parent is Patented

Adjusted Original Applications (1993-1996)	608,227	Percent
Applications Allowed (1996-1998)	506,545	83%

Appendix V: Corrected and Adjusted Grant Rates**Patents Granted on Continuing Applications**

	Continuations		CIPs		Divisionals		Total Continuing Apps	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Parent is Patented	19	13%	27	35%	46	58%	92	31%
Parent is Abandoned	111	79%	34	44%	5	6%	150	51%
Parent Disposition is Undetermined	11	8%	16	21%	28	35%	55	19%
Total	141	100%	77	100%	79	100%	297	100%
Parent Patented as % of Total Continuing Apps =	6.4%							

Calculation 1 - Corrected Grant Rates For The USPTO

	1993	1994	1995	1996	1997	1998	Total
UPR Applications Allowed	104,351	107,221	106,566	121,694	135,240	143,045	718,117
Total UPR Applications Abandoned	60,763	64,932	66,460	58,358	61,367	60,102	371,982
Total Continuing Applications	50,896	56,586	81,918	49,459	56,533	58,146	353,538
Net UPR Applications Abandoned	9,867	8,346	(15,458)	8,899	4,834	1,956	18,444
Net UPR Disposals	114,218	115,567	91,108	130,593	140,074	145,001	736,561
Grant Rate	91%	93%	117%	93%	97%	99%	97%

Adjusted Corrected Grant Rates for the USPTO**Calculation 2 - Adjusted for Patents Granted On a Continuation Applications and its Parent**

	1993	1994	1995	1996	1997	1998	Total
UPR Applications Allowed	104,351	107,221	106,566	121,694	135,240	143,045	718,117
Total UPR Applications Abandoned	60,763	64,932	66,460	58,358	61,367	60,102	371,982
Total Continuing Applications	50,896	56,586	81,918	49,459	56,533	58,146	353,538
Adjusted Continuing Applications	47,640	52,966	76,677	46,295	52,916	54,426	330,921
Adjusted Applications Abandoned	13,123	11,966	(10,217)	12,063	8,451	5,676	41,061
Adjusted Net UPR Disposals	117,474	119,187	96,349	133,757	143,691	148,721	759,178
Adjusted Grant Rate	89%	90%	111%	91%	94%	96%	95%

Calculation 3 - Adjusted for Patents Granted on a Continuing Application and its Parent

	1993	1994	1995	1996	1997	1998	Total
UPR Applications Allowed	104,351	107,221	106,566	121,694	135,240	143,045	718,117
Total UPR Applications Abandoned	60,763	64,932	66,460	58,358	61,367	60,102	371,982
Total Continuing Applications	50,896	56,586	81,918	49,459	56,533	58,146	353,538
Adjusted Continuing Applications	35,130	39,058	56,543	34,138	39,021	40,134	244,025
Adjusted Applications Abandoned	25,633	25,874	9,917	24,220	22,346	19,968	127,957
Adjusted Net UPR Disposals	129,984	133,095	116,483	145,914	157,586	163,013	846,074
Adjusted Grant Rate	80%	81%	91%	83%	86%	88%	85%