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THE BUSINESS FALLOUT FROM THE RAPID OBSOLESCENCE AND PLANNED
OBSOLESCENCE OF HIGH-TECH PRODUCTS: DOWNSIZING OF NONCOMPETITION
AGREEMENTS

Ann C. Hodges and Porcher L. Taylor, III*

The recent rapid pace of technological change has made human capital more important, yet it has rendered the employee's knowledge base obsolete more quickly. Employers use covenants not to compete, restricting employees from switching to work for competitors, in order to retain knowledgeable personnel. Currently, the lack of predictability in interpreting noncompete agreements allows employers to draft overly-lengthy noncompetes, encourages enforcement litigation, and curtails employees from changing jobs because of the fear of litigation. Employees should not be prevented from working for competitors for longer than is necessary to protect the employer's legitimate interest. Use of obsolescence as a guide in drafting noncompete agreements should provide the protection employers need without overburdening the employee's option to change jobs. Judges should utilize court-appointed obsolescence experts in order to determine the useful life of employee knowledge and should limit noncompete agreements accordingly. This judicial scrutiny should encourage employers to tie restrictions directly to obsolescence of employee knowledge, improving both predictability and fairness of noncompete agreements.

I. INTRODUCTION

The technological revolution has had vast consequences for American employment. As the economic base has changed from manufacturing to information, knowledgeable employees

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have become increasingly valuable to employers. The rapid pace of technological change has made human capital even more essential, while at the same time rendering the employees' knowledge base obsolete more quickly. As employees have become both more crucial and more expendable, employee mobility has increased, particularly in the information industry. While job growth in the information sector has continued at a slower pace than in the 1990s, employers in some technology sectors are laying off substantial numbers of employees. To retain valued employees in this age of change, employers frequently resort to covenants not to compete, restricting workers from departing to work for competitors, whether their terminations are voluntary or involuntary.

Many commentators have recognized the problem of lack of predictability in interpreting noncompete agreements.¹ When enforceability of such agreements is uncertain, drafting agreements is difficult, enforcement litigation is encouraged, and employees may be restrained from changing jobs for fear of expensive litigation. Overreaching employers are not discouraged from drafting lengthy noncompetes in hopes that the "in terrorem" effect will keep employees from leaving with their valuable knowledge.² Where reasonableness is the touchstone for enforcement, some uncertainty is guaranteed. As courts have interpreted noncompetes over time, however, generalized understandings of the limits of reasonableness have emerged in particular industries and occupations.

In this changing economy, employers drafting noncompetes do not appear to be taking sufficient account of the more rapid obsolescence of employee knowledge. Employees cannot be prevented from working for competitors for longer than necessary to protect the employer's legitimate interest. In this article, we propose that trial court judges, aided by court-appointed expert witnesses on information and technology obsolescence, reduce the time duration clauses in noncompetition agreements in high-technology industries where appropriate. Indeed, rapid obsolescence and planned obsolescence are unavoidable drafting issues for employers, and interpretation issues for trial courts, in the 21st century. While the Internet-savvy federal trial court judge in the highly publicized *EarthWeb* case did indicate that a one-year noncompetition agreement in the Internet industry was "several generations, if not an eternity," the judge rendered that opinion without the aid of a technology obsolescence expert.³ The opinion does not reveal the specific basis for the judge's conclusion about the pace of change in the Internet industry other than reliance on an earlier New York case in which the court similarly reduced the length of post-employment restriction on competition based on the rapidly changing nature of the industry. While the judge's statement might resonate anecdotally for anyone who owns a

¹ See, e.g., Rachel S. Arnow-Richman, *Bargaining for Loyalty in the Information Age: A Reconsideration of the Role of Substantive Fairness in Enforcing Employee Noncompetes*, 80 Or. L. Rev. 1163, 1180-82 (2001); Pierre Bergeron, *Navigating the "Deep and Unsettled Sea" of Covenant Not to Compete Litigation in Ohio: A Comprehensive Look*, 31 U. Tol. L. Rev. 373, 373-74 (2000); Nathan Newman, *Trade Secrets and Collective Bargaining: A Solution to Resolving Tensions in the Economics of Innovation*, 6 Emp. Rts. & Emp. Pol'y J. 1, 2, 41 (2002); Kenneth J. Vanko, "You're Fired! And Don't Forget Your Non-Compete . . .": *The Enforceability of Restrictive Covenants in Involuntary Discharge Cases*, 1 DePaul Bus. & Com. L.J. 1, 2 (2002) (discussing the lack of clear guidance regarding enforcement of restrictive covenants in discharge cases).

² See Bernard Stamler, *How Long is the Reach of Your Former Employer?*, N.Y. Times, February 11, 2001, § 3, at 9.

³ *EarthWeb, Inc. v. Schlack*, 71 F. Supp. 2d 299, 316 (S.D.N.Y. 1999).

personal computer, more precise analysis of the time value of employee knowledge will benefit both employers and employees.

When interpretation of the reasonableness of time restrictions on competition involved primarily sales employees, judges could use their own experience and evidence from the parties to determine the restriction necessary to preserve customer loyalty. In the information industry, however, such generalized knowledge will not aid significantly in determining the useful life of employee knowledge, thus rendering experts useful in deciding such cases. If courts do decide to call on obsolescence experts to help them evaluate noncompetition agreements, employers might be motivated to draft reasonable, quantifiable obsolescence clauses into such agreements and employees might be more likely to abide by such restrictions.

The article begins with a brief review of the changing nature of the employment relationship and follows with a discussion of the law of post-employment restrictions. The article then analyzes several cases applying the law in the technology sector, which courts have recognized as “a nascent industry which is evolving and re-inventing itself with breathtaking speed.”⁴ Next, the article discusses the phenomena of both rapid obsolescence and planned obsolescence, with a particular focus on technology, recommending that judges utilize obsolescence to calculate more precisely the appropriate duration of noncompetes. The article then reviews judicial competence to evaluate cases involving complex technology and concludes that the use of court-appointed experts could provide an invaluable aid in interpreting noncompete clauses and deciding trade secret cases. Finally, the article recommends that employers draft noncompete clauses coextensive with the useful life of employee knowledge. Use of obsolescence as a guide provides greater enforcement predictability, which offers guidance for employers as drafters and employees as signers of such agreements. Greater judicial scrutiny of such agreements should encourage employers to tie restrictions explicitly to obsolescence of employee knowledge, improving both predictability and fairness in such restrictions.

II. POST-EMPLOYMENT RESTRICTIONS IN THE TECHNOLOGY INDUSTRY

A. *Human Capital and Employee Mobility*

As the American economy has transitioned from a manufacturing-based economy to an information-based economy, human capital has become increasingly more important to the success of most business enterprises. The value of many companies is no longer concentrated in their tangible assets; rather it is in the intangible assets, the knowledge, experience and creativity of their employees. It is the employees, not the machinery, equipment or facilities, who provide the most significant competitive advantage for many businesses.⁵

In the high-technology industry in particular, technical knowledge and information, along

⁴ *Id.* at 306.

⁵ Katherine V.W. Stone, *Knowledge at Work: Disputes over the Ownership of Human Capital in the Changing Workplace*, 34 Conn. L. Rev. 721, 721 (2002). Certainly, the knowledge and creativity of employees add value in a manufacturing economy as well, but the relative percentage of the value is less.

with the ability to creatively use such knowledge, forms the basis of innovation, increasing the company's ability to compete in the marketplace. Thus, obtaining and retaining key employees has taken on heightened importance for high-tech companies.

But the change in the economy in recent years has been accompanied by a change in the nature of the employment relationship. In the mid-twentieth century economy, most employees expected to spend their entire career with one employer.⁶ Employers constructed internal labor markets and provided benefits designed to encourage lifetime employment.⁷ This translated to an implicit "psychological contract" of long-term employment reflective of the expectations of employers and employees.⁸ Drawing on the literature of human resources and organizational behavior, Professor Stone describes the "new psychological contract" as one with reduced expectations of long-term employment.⁹ Employees are expected to manage their own careers, changing jobs when necessary to develop their skills and potential; their commitment is to their careers, not to any employer.¹⁰

The result of these changes is greater mobility of employees.¹¹ This mobility is prompted not only by the lack of employer structures designed to promote longevity, but also by career advice to employees to build their knowledge, skills and experiences to make themselves more marketable in the ever-changing workplace.¹² In high-tech industries, mobility is even more prevalent.¹³ Despite the business failures among dot-coms and the stock market free-fall in technology stocks, the industry has continued to add jobs, although at a slower rate than during the boom years of the 1990s.¹⁴ Indeed, because of the shortage of skilled workers, the

⁶ See Marleen A. O'Connor, *Restructuring the Corporation's Nexus of Contracts: Recognizing a Fiduciary Duty to Protect Displaced Workers*, 69 N.C. L. Rev. 1189, 1203-07 (1991) (explaining long-term relationships between employees and employers).

⁷ Stone, *supra* note 5, at 725. As Stone notes, this description of the employment relationship is most relevant to men employed by large corporations. *Id.* at 725-26.

⁸ *Id.* at 728-29; O'Connor, *supra* note 6, at 1205-07.

⁹ Stone, *supra* note 5, at 729-32. Like the old psychological contract, the new psychological contract is not descriptive of all employment relationships. Catherine L. Fisk, *Reflections on the New Psychological Contract and the Ownership of Human Capital*, 34 Conn. L. Rev. 765, 768 (2002).

¹⁰ Stone, *supra* note 5, at 730-32.

¹¹ *Id.* at 727 (citing data on the decline in job tenure of employees).

¹² Peter Cappelli, *The New Deal at Work* 14, 28-29 (1999).

¹³ William Lynch Schaller, *Jumping Ship: Legal Issues Relating to Employee Mobility in High Technology Industries*, 17 Lab. Law. 25, 25 (2001).

¹⁴ *Two High-Tech Studies Show Slower IT Job Growth in 2003*, 172 Lab. Rel. Rep. (BNA) 6 (May 12, 2003) (reporting slow job growth but noting that jobs are still being added at the highest levels and few high-tech workers are experiencing pay cuts); Rebecca Vesely, *Letter from Silicon Valley: High Employment in High Technology Sector*, 276 The Nation 20 (May 26, 2003) (analyzing the effects of the recession on Silicon Valley); *Employment in High-Tech Industry Shows Smallest Hike in Six Years*, 170 Lab. Rel. Rep. (BNA) 141 (July 8, 2002) (reporting a one percent increase in the number of workers employed in high-tech companies in 2001).

government permits importation of workers under the H1-B visa program, which is accompanied by training grants designed to increase the number of skilled American workers in the technology field.¹⁵ This ongoing demand for workers will fuel employee mobility as companies compete to attract the best and brightest.

Another explanation for the high employee turnover in the industry is the culture of mobility that developed in Silicon Valley.¹⁶ Professor Gilson argues that this culture was shaped by the “legal infrastructure” and particularly the law barring enforcement of noncompetition covenants in California.¹⁷ Indeed, Professor Gilson contends that the difference in noncompetition law explains the relatively greater success of the industry in Silicon Valley as compared to the Route 128 corridor in Massachusetts.¹⁸ Knowledge is transferred between firms by employee movement, thereby generating continuing innovation that is not limited by “the life cycle of any single product.”¹⁹

While rapid employment mobility²⁰ may benefit the industry as a whole, as Gilson suggests, each individual employer has an incentive to retain employees who have the knowledge and skill the employer needs.²¹ Since the changing product markets, changing skill requirements, and the need for flexibility discourage explicit or implicit promises of long-term employment, employers must find other methods of encouraging employee loyalty.²² Promises of training and networking opportunities that enable career-building provide one incentive for employees.²³ Golden handcuffs,²⁴ employee participation, and teamwork also increase

¹⁵ *In Brief*, Daily Lab. Rep. (BNA) (Oct. 23, 2000).

¹⁶ Ronald J. Gilson, *The Legal Infrastructure of High Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete*, 74 N.Y.U. L. Rev. 575, 590 (1999) (citing AnnaLee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (1994)).

¹⁷ *Id.* at 596-97. Gilson notes that Professor Alan Hyde has attributed the culture of employee mobility in Silicon Valley to California’s weak protection of trade secrets, an alternative element of the legal infrastructure, although Gilson disagrees with this explanation. *Id.* at 610-13.

¹⁸ *Id.* at 578. *But see* Jason S. Wood, *A Comparison of the Enforceability of Covenants Not to Compete and Recent Economic Histories of Four High Technology Regions*, 5 Va. J.L. & Tech. 14 (2000) (suggesting, based on the economic growth of Silicon Valley, the Route 128 Corridor, the Research Triangle Park in North Carolina and Austin, Texas and analysis of law relating to noncompetition covenants in the four states, that the law is either not as important a factor as Gilson argues or is obscured by other factors).

¹⁹ Gilson, *supra* note 16, at 591 (citing Saxenian, *supra* note 16).

²⁰ *Id.* (citing Alan Hyde, *Real Human Capital: The Economics and Law of Shared Knowledge* (May 1998) (unpublished manuscript, on file with the New York University Law Review)).

²¹ *Id.* at 595.

²² Stone, *supra* note 5, at 733; Charles Heckscher, *Living with Flexibility, Rekindling the Movement: Labor’s Quest for Relevance in the Twenty-First Century* 59, 65 (Lowell Turner, et al. eds., 2001); Cappelli, *supra* note 12, at 43-48, 215-20.

²³ Stone, *supra* note 5, at 735-36.

²⁴ Golden handcuffs tie pay and benefits to retention, but do not always work effectively. Cappelli, *supra* note 12, at 185-87.

commitment.²⁵ In addition, employers are increasingly turning to legal restrictions to prevent employees from taking their knowledge and skills to a competitive employer.²⁶

B. *The Role of Post-Employment Restrictions*

1. The Law of Post-Employment Restrictions

The law of post-employment restrictions is a hybrid of contract and intellectual property law.²⁷ The disputes that arise when an employee leaves one employer for another²⁸ are about ownership and control of human capital. Much of the litigation relates to preliminary injunctive relief, as the former employer seeks to prevent the employee from working for the new employer, arguing that irreparable harm would result if the employee were permitted to violate noncompetition or nondisclosure agreements or to disclose trade secrets to the new employer. As a legal matter, the dispute might arise in one of several ways, under statutory or common law. As a statutory matter,²⁹ the employer might claim that the employee misappropriated a trade secret, which is secret information that grants the possessor a competitive advantage.³⁰ Most trade secret cases involve technological trade secrets,³¹ making the claim particularly relevant in the high-tech industry. Although the law varies somewhat by state, a trade secret claim generally requires the employer to show that the employee “acquired, used or disclosed the [trade secret] in breach of confidence or by other improper means.”³² Trade secret law seeks to enable businesses to protect their “investments in research and development” without unduly restraining employee mobility and competition.³³

Alternatively, common law claims exist to enforce agreements between the employee and

²⁵ *Id.* at 218-20. Cappelli notes that employee autonomy and the organizational structure of work also affect commitment. *Id.* at 218-19.

²⁶ Stone, *supra* note 5, at 738-39 (showing increasing litigation over post-employment restrictions in recent years); Arnow-Richman, *supra* note 1, at 1165.

²⁷ Fisk, *supra* note 9, at 771-72; Robert G. Bone, *A New Look at Trade Secret Law: Doctrine in Search of Justification*, 86 Cal. L. Rev. 241, 244 (1998); Newman, *supra* note 1, at 7-9; Steven Wilf, *Trade Secrets, Property and Social Relations*, 34 Conn. L. Rev. 787, 790 (2002).

²⁸ Or to begin his or her own entrepreneurial organization.

²⁹ Although trade secret law began as common law, it is now codified by most states, spurred by the Uniform Trade Secrets Act. Bone, *supra* note 27, at 247.

³⁰ *Id.* at 248; Restatement (Third) of Unfair Competition § 39 (1995).

³¹ Bone, *supra* note 27, at 248.

³² *Id.* at 247.

³³ Danielle Pasqualone, *Intellectual Property: Globespan v. O'Neill*, 17 Berkeley Tech. L.J. 251, 252 (2002).

the employer.³⁴ The agreements might take the form of a confidentiality agreement in which the employee agreed not to disclose particular information, generally trade secrets, or a covenant not to compete in which the employee agreed not to compete with the employer. Another potential common law claim is breach of the duty of loyalty implied in the employment relationship.

While a covenant not to disclose confidential information provides a contractual basis for enforcement of trade secret law, covenants not to compete impose broader restrictions on employees. Despite their contractual basis, courts have been historically reluctant to enforce such covenants for policy reasons. Noncompetition covenants restrain trade and prevent employees from using their skills to earn a living.³⁵ In addition, society is deprived of the services of the employee.³⁶ At the same time, courts have recognized that employers have an interest in preventing employees from using the employer's trade secrets, training, customers, and good will to assist the competition.³⁷ Inability to prevent such losses would discourage employers from investing in research, development and training. To accommodate these interests, the courts have developed a standard of reasonableness which governs the enforcement of covenants not to compete. A covenant will be enforced if the employer can establish a defensible interest that is within the knowledge of the employee and if the covenant is reasonable in duration, geographic limitation and scope of employment prohibited.³⁸ Like the law of trade secrets, the limited enforceability of noncompetition covenants is designed to strike a balance between the interests of the employers and the interests of employees.

Although some states deny enforcement of noncompetition agreements except when connected to the sale of a business or dissolution of a partnership,³⁹ most states will enforce reasonable restrictions on future employment. In assessing the reasonableness of restrictions, the courts look to see whether the restraint is limited to what is necessary to protect a legitimate business interest of the employer.⁴⁰ The courts also consider whether the covenant unduly

³⁴ Some states have statutes addressing the enforceability of post-employment restrictions. John Dwight Ingram, *Covenants Not to Compete*, 36 Akron L. Rev. 49, 65-66 (2002). These statutes vary, with some specifying that reasonable restraints are enforceable, some denying enforceability, and others allowing enforcement with particular limitations. *Id.* (citing, inter alia, Mich. Comp. Laws § 445.774a(1) (2001) (permitting enforcement of reasonable restrictions); Cal. Bus. & Prof. Code § 16600 (West 2001) (stating contracts restraining individuals from engaging in lawful professions and trades are void, with limited exceptions); La. Rev. Stat. Ann. § 23.921C (West 2001) (stating that employees can agree to covenants that restrict competition for up to two years from termination)).

³⁵ Arnow-Richman, *supra* note 1, at 1171. Where there is an imbalance of bargaining power between employers and employees, the court should be particularly cautious about enforcing such an agreement. *Id.* at 1173-74.

³⁶ *Id.* at 1171.

³⁷ *Id.* at 1176.

³⁸ Roger M. Milgrim, *Milgrim on Trade Secrets* § 4.02[1][d][v] (2003); Ingram, *supra* note 34, at 50, 65-76. As noted previously, however, some states bar enforcement of such covenants. *See supra* note 34.

³⁹ *See, e.g.*, N.D. Cent. Code § 9-08-06 (2003); Cal. Bus. & Prof. Code §§ 16600-16602 (West 2004); Mont. Code Ann. §§ 28-2-703, 704, 705 (2003).

⁴⁰ Ingram, *supra* note 34, at 67.

restricts the employee's ability to earn a living, and finally, whether the enforcement of the agreement's restrictions would be reasonable from a public policy perspective.⁴¹ These three factors are applied with respect to each of the aspects of restraint - the geographic scope, the length of time and the scope of the activity restriction. In determining reasonableness of the time restriction, courts will typically focus on the length of time needed to protect the employer's legitimate interests.⁴² Also, if the restriction makes it extremely difficult or impossible for the employee to work in the field for which he or she is qualified, it will typically be invalidated unless the employee is compensated for the time of unemployment.⁴³ The public interest in making a wide range of services and products available in the marketplace is the final factor and a lengthy deprivation will typically be found unreasonable.⁴⁴ The touchstone is reasonableness and because the facts vary by industry, occupation, and even employer, cases reflect a wide range of restrictions that have been upheld, while restrictions of the same or similar length have been struck down in other cases.⁴⁵

In some states, the courts will modify an unreasonable noncompete agreement to make it enforceable, while in others, any unreasonableness requires denial of enforcement.⁴⁶ Some courts utilize the "blue pencil rule" to determine whether a covenant is partially enforceable.⁴⁷ The rule permits reformation or deletion of an invalid covenant provision if the contract terms are "easily divisible."⁴⁸ If the unreasonable provision is not separable, then the entire agreement is unenforceable.⁴⁹ However, other courts will revise unreasonable agreements even where the

⁴¹ *Id.*

⁴² *Id.* at 69-70.

⁴³ *Id.* at 70-71. Even temporary compensation may be insufficient to validate a restriction if it is likely to affect the employee's continued ability to work in the field.

⁴⁴ *Id.* at 71.

⁴⁵ See, e.g., *Bailey v. King*, 398 S.W.2d 906, 908 (Ark. 1966) (upholding a one-year noncompetition covenant); *Agrimerica, Inc. v. Mathes*, 557 N.E.2d 357, 363-66 (Ill. App. Ct. 1990) (upholding a two-year noncompetition covenant); *Weber v. Tillman*, 913 P.2d 84, 96 (Kan. 1996) (finding a two-year noncompetition covenant reasonable); *RKI, Inc. v. Grimes*, 177 F. Supp. 2d 859, 878 (N.D. Ill. 2001) (upholding a three-year noncompetition covenant as reasonable); *Kramer v. Robec, Inc.*, 824 F. Supp. 508, 512-13 (E.D. Pa. 1992) (enforcing only two years of a three-year noncompete agreement); *McQuown v. Lakeland Window Cleaning Co.*, 136 So. 2d 370, 372 (Fla. Dist. Ct. App. 1962) (declining to enforce a five-year noncompetition agreement but enjoining competition for a year); Bergeron, *supra* note 1, at 378 (citing Ohio cases upholding restrictions of three and four years and others refusing to enforce two-year restrictions).

⁴⁶ See Melvin F. Jager, *Trade Secrets Law* § 13:8 (2003) and cases cited therein; Ingram, *supra* note 34, at 74-78.

⁴⁷ Jager, *supra* note 46, at 13-53. States following the blue pencil rule include North Carolina, Connecticut, Maryland, Massachusetts and Rhode Island. *Id.* At least twenty-nine states follow the blue pencil rule. R. Mark Dare, *Judges Should Have Power to "Blue-Pencil" Noncompetes*, 18 Va. Law. Wkly. 427, Sept. 29, 2003 at B-3.

⁴⁸ Jager, *supra* note 46, at 13-53 to 13-54.

⁴⁹ *Id.* at 13-54.

unreasonable provisions are not severable, rejecting strict application of the blue pencil rule.⁵⁰

Like the law of noncompetition agreements, a duty of loyalty arises from common law and requires the employee to refrain from competing with the employer during employment.⁵¹ The duty of loyalty applies only during employment but where an employee leaves to establish a competing business that was planned while the employee remained employed, duty of loyalty claims may accompany suits to enforce noncompetition or confidentiality agreements or to restrain the use of trade secrets. While the duty of loyalty does not preclude an employee from preparing to move into a competing business while still employed, the employee cannot lawfully use the employer's resources or confidential information to establish a competing business or take other actions inconsistent with faithful employment.⁵²

2. Application of the Law in the High-Tech Industry

The most publicized application of post-employment restriction law in the high-tech industry is the case of *EarthWeb, Inc. v. Schlack*.⁵³ Mark Schlack was a vice president of EarthWeb, a company which provided online products and services for information technology (IT) professionals, including content which it obtained primarily through licensing agreements and acquisitions from third parties.⁵⁴ After less than a year of employment, Schlack, who was in charge of the company's web site content, resigned to accept a position with ITworld.com, a subsidiary of the largest producer of print-based information for information technology professionals. A new company, ITworld.com planned to provide a website for IT professionals containing information authored primarily by an internal staff. EarthWeb sought an injunction to prevent Schlack from employment with ITworld.com, alleging misappropriation of trade secrets and violation of covenants not to compete and not to disclose confidential information. EarthWeb feared disclosure of "(1) strategic content planning; (2) licensing agreements and acquisitions; (3) advertising; and (4) technical knowledge."⁵⁵

The district court denied the injunction on several grounds. First, the court found no misappropriation of trade secrets and refused to apply the doctrine of inevitable disclosure of trade secrets. The doctrine holds that even in the absence of any misappropriation, where an employee accepts a position with a competitor so like the prior position that disclosure of valuable trade secrets would be essential to serve in the new position, injunctive relief is

⁵⁰ *Id.* at 13-55 to 13-57.

⁵¹ *See, e.g., Mercer Mgmt. Consulting, Inc. v. Wilde*, 920 F. Supp. 219, 233 (D.D.C. 1996).

⁵² *Mercer Mgmt.*, 920 F. Supp. at 233; *DoubleClick, Inc. v. Henderson*, No. 116914/97, 1997 N.Y. Misc. Lexis 577, at *17 (N.Y. Sup. Ct. Nov. 5, 1997).

⁵³ 71 F. Supp. 2d 299 (S.D.N.Y. 1999), *aff'd*, No. 99-9302, 2000 U.S. App. Lexis 11446 (2d Cir. May 18, 2000) (unpublished).

⁵⁴ All facts are taken from the decision of the district court. *Id.*

⁵⁵ *Id.* at 303.

warranted.⁵⁶ The court found that the actual noncompete agreement was narrow, limiting competition only in three categories of employment related to the online provision of third party resources.⁵⁷ The court refused to use the doctrine of inevitable disclosure to expand the scope of the parties' agreement, noting that retroactive alteration of a noncompete agreement would upset the balance that courts have sought to achieve in interpreting such agreements.⁵⁸ Essentially, the court refused to give EarthWeb more than it bargained for, particularly where the agreement gave Schlack little in return as an at-will employee with no provision for severance pay, and the agreement could be modified unilaterally by the employer subject only to "notice and acknowledgment by the [e]mployee."⁵⁹

After rejecting the inevitable disclosure argument, the court went on to consider the enforceability of the noncompetition covenant. The court concluded that there was no evidence that Schlack's employment with ITworld.com would violate the narrow restrictive covenant, as the company did not intend to use third party products or provide any directory or reference library for such products as its primary business.⁶⁰ Further, and more important for purposes of the construction of future covenants in the high-tech industry, the court stated that the one-year duration of the covenant was unreasonably long.⁶¹ In support of this conclusion, the court cited "the dynamic nature of th[e] industry, [the covenant's] lack of geographical borders, and Schlack's former cutting edge position with EarthWeb where his success depended on keeping abreast of daily changes in content on the Internet."⁶² In addition, the court relied on the prior decision of the Supreme Court of New York County in *DoubleClick Inc. v. Henderson*, which had enjoined defendants in the Internet advertising industry for only six months because the speed of change in the industry would cause the defendants' knowledge to lose value in far less than a year.⁶³

Finally, addressing the trade secret claim, the court found that Schlack had little or no

⁵⁶ *Id.* at 310. The lead case repeatedly cited by courts considering the inevitable disclosure doctrine is *PepsiCo v. Redmond*, 54 F.3d 1262 (7th Cir. 1995).

⁵⁷ *EarthWeb*, 71 F. Supp. 2d at 311.

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ *Id.* at 312.

⁶¹ *Id.* at 313. Prior to *EarthWeb*, it was not unusual for employers to utilize noncompetition covenants of three to five years. Jack E. Karns & Roger P. McIntyre, *Are Intellectual Property Rights Protected in Employment Contract Covenants Not to Compete Given the Rapid Rate of New Product Development?*, 26 Okla. City U. L. Rev. 631, 648 n.113 (2001).

⁶² *EarthWeb*, 71 F. Supp. 2d at 313.

⁶³ No. 116914/97, 1997 WL 731413, at *8 (Sup. Ct. N.Y. Nov. 7, 1997). Plaintiff in *DoubleClick* sought a one year injunction based on actual and threatened misappropriation of trade secrets, unfair competition, and breach of employees' duty of loyalty. *Id.* at *1. In *EarthWeb*, however, the court declined to rewrite the covenant to make it enforceable because of the other flaws in the agreement. 71 F. Supp. 2d at 313.

knowledge of any trade secrets.⁶⁴ To the extent that he had such knowledge, the court found no imminent or inevitable risk of disclosure that would warrant preliminary injunctive relief.⁶⁵ Having found insufficient risk of trade secret disclosure, the court reached a similar conclusion with respect to risk of violation of the nondisclosure agreement.⁶⁶ At the conclusion of its opinion, the court opined that even if the provisions of the noncompetition covenant were reasonable, a balancing of the hardships would require denying injunctive relief because “[w]hen measured against the IT industry in the Internet environment, a one-year hiatus from the workforce is several generations, if not an eternity.”⁶⁷ Thus, the adverse effect on Schlack from enforcing the covenant would outweigh any harm to EarthWeb from denial of enforcement. Accordingly, preliminary relief was denied.⁶⁸

As various commentators have noted, *EarthWeb* suggests great care in drafting a covenant not to compete to insure its enforceability.⁶⁹ In particular, the rapid change in the industry will affect the description of the scope of activities considered competitive and the duration of the covenant that is considered reasonable.⁷⁰ On the other hand, the Internet may give employers a wider geographic scope for enforcement, for unlike the traditional cases involving sales territory, an employer with a presence on the Internet may have interests in restricting competition worldwide.⁷¹ Given the courts’ reluctance to take away an employee’s livelihood, however, the court may balance broader geographic scope with narrower scope for activity restrictions, duration or both.

⁶⁴ *EarthWeb*, 71 F. Supp. 2d at 314-16.

⁶⁵ *Id.* at 316.

⁶⁶ *Id.* at 316-17.

⁶⁷ *Id.* at 316.

⁶⁸ On appeal, the Second Circuit found no error with respect to the decision on the noncompetition agreement but remanded for more explanation of the court’s denial of relief on the trade secret and nondisclosure agreement claims. *EarthWeb, Inc. v. Schlack*, No.99-9302, 2000 U.S. App. LEXIS 1254, at *4-6 (2d Cir. Jan. 31, 2000) (unpublished). On remand, the district court reaffirmed its finding that there was no imminent risk of disclosure that would establish irreparable injury and the Court of Appeals affirmed. *EarthWeb, Inc. v. Schlack*, No. 99-9302, 2000 U.S. App. LEXIS 11446, at *3-7 (2d Cir. May 18, 2000) (unpublished).

⁶⁹ See, e.g., Karns & McIntyre, *supra* note 61, at 647; Dan Messeloff, Note, *Giving the Green Light to Silicon Alley Employees: No-Compete Agreements Between Internet Companies and Employees Under New York Law*, 11 Fordham Intell. Prop. Media & Ent. L.J. 711, 741 (2001); Douglas M. Towns, *Employment “Non-Compete Agreements” in the Internet Revolution*, GigaLaw.com, at <http://www.gigalaw.com/articles/2000-all/towns-2000-08-all.html> (August 2000).

⁷⁰ See, e.g., *Colonize.com Inc. v. Perlow*, No. 03-CV-466, 2003 U.S. Dist. LEXIS 20021, at *17 (N.D.N.Y. Oct. 23, 2003) (suggesting without deciding the issue that a “one year restriction could be excessive given the dynamic nature of today’s online marketing industry”).

⁷¹ *National Bus. Servs. v. Wright*, 2 F. Supp. 2d 701, 708 (E.D. Pa. 1998) (upholding national geographic restriction on competition because “[t]ransactions involving the Internet, unlike traditional ‘sales territory’ cases, are not limited by state boundaries”); Stone, *supra* note 5, at 741 (citing *Ackerman v. Kimball Int’l, Inc.*, 652 N.E.2d 507, 510 (Ind. 1995)).

While *EarthWeb* is the most notorious case involving the reasonable scope of a covenant not to compete in the high-tech industry, it is by no means the only such case. Much earlier, a Pennsylvania court reduced a nationwide restrictive covenant for a project manager designing computer networks from three years to two years, based on the “quick pace of obsolescence and technological innovation.”⁷² In a Kansas case, Sprint Corporation was unable to obtain injunctive relief because the noncompetition covenant’s scope was ambiguous, in part as a result of “the explosion of technology” in the Internet industry.⁷³ The burden of proof was on the plaintiff company and under Kansas law, covenants not to compete are strictly construed against the employer.⁷⁴ Because of the explosive development of Internet technology, the relationship between the Internet and long distance services was different at the time of the court hearing than at the time the agreement was entered into three years earlier, and would continue to evolve with technology.⁷⁵ The resulting ambiguity of the agreement, which prohibited plaintiff from working in a business “related to” long distance services, prevented the employer from showing that DeAngelo must be barred from working for a company developing Internet services.⁷⁶ And, of course, in the *DoubleClick* decision relied on in *EarthWeb*, the Supreme Court of New York County barred employees from opening a competing business for only six months because of the rapid changes in the Internet advertising industry, even though the court found that the plaintiff employer was likely to succeed on claims of misappropriation of trade secrets, breach of the duty of loyalty and unfair competition.⁷⁷

Not all courts have rejected enforcement or modified noncompetition covenants in the technology-related industries, however. In *National Business Services v. Wright*, the U.S. District Court for the Eastern District of Pennsylvania enforced a nationwide, one year competition bar against an employee involved in Internet sales in the advertising specialty industry.⁷⁸ While recognizing that one year was a long time in the industry, the court issued an injunction based on the covenant because the employee’s new job would involve direct

⁷² *Kramer v. Robec, Inc.*, 824 F. Supp. 508, 512 (E.D. Pa. 1992).

⁷³ *Sprint Corp. v. DeAngelo*, 12 F. Supp. 2d 1188, 1194 (D. Kan. 1998).

⁷⁴ *Id.* at 1192-93.

⁷⁵ *Id.* at 1193.

⁷⁶ *Id.* at 1193-94.

⁷⁷ *DoubleClick, Inc. v. Henderson*, No. 116914/97, 1997 N.Y. Misc. Lexis 577 at *17, *19-20, *22 (N.Y. Sup. Ct. Nov. 5, 1997). In another case in the high technology industry, arising in a different context, the U.S. District Court for the Southern District of New York found a noncompetition clause unenforceable where the geographic scope and duration were unlimited, and the scope of restricted activity was extraordinarily broad and subject to the judgment of the company CEO. *Lucente v. Int’l Bus. Machines Corp.*, 117 F. Supp. 2d 336, 348 (S.D.N.Y. 2000), *rev’d by* 310 F.3d 243 (2d Cir. 2002). The alleged breach of the noncompetition covenant triggered loss of restricted stock and stock options by an employee who had involuntarily retired from the company. *Id.* at 344, 350. The Second Circuit reversed and remanded, however, not reaching the issue of the enforceability of the covenant because it found that summary judgment was improperly granted on the issue of whether Lucente quit or was involuntarily terminated. *Lucente*, 310 F.3d at 243.

⁷⁸ *National Bus. Servs. v. Wright*, 2 F. Supp. 2d 701 (E.D. Pa. 1998).

competition with her former employer, which had established her access to confidential information about technical and marketing plans and her extensive contacts with customers, as well as her industry reputation as an expert on Internet products.⁷⁹ While the case involved Internet sales and thus a rapidly changing industry, it is in many ways more like the traditional noncompetition cases involving sales and concerns about loss of customers, rather than technical knowledge.

With the rapidly changing nature of many industries and the growing use of technology in all areas of the economy, the tendency of judges to scrutinize carefully the length of noncompetition agreements and shorten them where appropriate based on changing technology and markets may move beyond the high-tech industry.⁸⁰ In states where courts cannot rewrite agreements that exceed the bounds of reasonableness, lengthy noncompetes may be simply unenforceable.⁸¹

III. OBSOLESCENCE SUBSTANTIALLY SHORTENS THE USEFUL LIFE OF EMPLOYEE KNOWLEDGE

A. *Obsolescence is a Consequence of Rapidly Evolving Technology*

EarthWeb and similar cases may presage an era where judges declare certain employee knowledge obsolete in determining whether to enforce noncompete and confidentiality agreements in the high-tech industry. The issue arises primarily in cases where employers seek to enjoin employees from working for competitors, either based on an agreement not to compete or not to disclose confidential information or an argument that the employment will require inevitable disclosure of trade secrets. Judges may recognize the shortened shelf life of trade secrets and other employee knowledge due to rapid obsolescence of technology and downsize the time span of noncompetes to correspond to the substantial devaluation of the information. Obsolescence renders an employer's legitimate business need for protection from competition by former employees less compelling.⁸² Foreseeably, noncompete agreements could be reduced so

⁷⁹ *Id.* at 708-09.

⁸⁰ As noted previously, rapidly changing technology may also affect the interpretation of noncompetition agreements in other ways. The scope of permissible restrictions may change as technology affects the relevance of employees' knowledge. *See supra* text at note 70. Also, wider geographical restrictions may be reasonable as more businesses use the Internet to expand their sales and services nationally and even internationally. *See supra* text accompanying note 71. These changes are also important outside the high-tech arena. Furthermore, as the area of potential competition has grown, former employees are increasingly able to compete from other states. Mark R. Cheskin & Brian L. Lerner, *New Concerns for Traditional Noncompetes*, Nat'l L.J., November 3, 2003, at 17. Because noncompetition law is state law, questions about enforcement of agreements arise, including which state's law applies and whether a state can enforce an agreement outside its borders. *Id.* *See, e.g., Application Group, Inc. v. Hunter Group, Inc.*, 72 Cal. Rptr. 2d 73 (Cal. Ct. App. 1998) (holding that the trial court correctly applied California law and declined to enforce noncompete agreement of employee in Maryland, despite contrary choice of law provision in agreement, because of California's greater interest in application of its law barring enforcement of such agreements).

⁸¹ *See supra* note 46 and accompanying text.

⁸² As early as 1992, an American court reduced a nationwide covenant not to compete from three years to two years "because of the quick pace of obsolescence and technological innovation." *Kramer v. Robec, Inc.*, 824 F.

significantly that they may become virtually extinct in some high-tech sub-industries. In others, noncompetes may be limited in time based on the industry product cycles. The silicon chip industry would be a likely venue for the limitation of high-tech noncompetes because of the theorem known as Moore's Law.

1. Moore's Law and Noncompetes

In 1965, Gordon Moore, the co-founder of Intel, theorized in an article in *Electronics Magazine* that the computing power and complexity of a silicon chip would double every year.⁸³ This exponential rate remained constant until 1975. In 1975, the year he became CEO of Intel, Moore revised his prediction to doubling every two years.⁸⁴ This "law" remains valid today, with the widely accepted understanding that computing power doubles on average "every eighteen months at the same price point."⁸⁵ Moore's industry axiom has "ruled unabated"⁸⁶ for at least 37 years (1965-2002), and industry predictions indicate that it may continue to do so until at least 2017 "before microchips shrink to their physical limit."⁸⁷

No one can truly appreciate or comprehend the dizzying speed of technological change codified in Moore's Law, and its impact on consumer electronic consumption, without pondering four prior pioneering technological cycles in America: the telephone, the television, the personal computer and the household linkage to the Internet. "It took forty years for 30% of Americans to own a telephone, seventeen years for 30% of Americans to own a television, thirteen years for 30% of Americans to own a personal computer, and only seven years for 30% of Americans to come online on the Internet."⁸⁸

Although no judge appears to have considered Moore's law in this context, given its

Supp. 508, 512 (E.D. Pa. 1992).

⁸³ See generally Matt Richtel, *Five Questions for Gordon E. Moore: Technology Intensifies the Law of Change*, N.Y. Times, May 27, 2001, § 3 (Money & Business), at 4; Dori J. Yang, *The Lawgiver: Gordon Moore Is Still Chipping Away*, U.S. News & World Rep., July 10, 2000, at 38 (attributing to Gordon Moore the development of a law describing the exponential growth of silicon chip processing power). In the years following Moore's prediction, not only did computing capacity double but prices of chips decreased. John Markoff, *Intel Reports A Research Leap To a Faster Chip*, N.Y. Times, Feb. 12, 2004, at C1.

⁸⁴ Yang, *supra* note 83; David Friedman, *Does Technology Require New Law?*, 25 Harv. J.L. & Pub. Pol'y 71, 81 n.29 (2001).

⁸⁵ Dhruv Khanna & Bruce M. Aitken, *The Public's Need for More Affordable Bandwidth: The Case for Immediate Regulatory Action*, 75 Or. L. Rev. 347, 348 (1996). Computers with the same computing power will drop in price. *Id.* at n.7. The doubling of computing power every eighteen months is the average over the years. Yang, *supra* note 83.

⁸⁶ John Markoff, *Is Planned Obsolescence Obsolete?*, N.Y. Times, Feb. 17, 2002, § 4 (Week in Review), at 6.

⁸⁷ *Id.*

⁸⁸ Thomas A. Piraino, Jr., *A Proposed Antitrust Approach to High Technology Competition*, 44 Wm. & Mary L. Rev. 65, 75 (2002) (citing Daniel J. Meckstroth, Manufacturers' Alliance/MAPI, *How New B2B E-Business Strategies Are Changing Manufacturing*, Jan. 2001, at 2).

ubiquitous validation in the semi-conductor realm,⁸⁹ judges may find it useful to give judicial notice to Moore's law in noncompete cases. Presumably, the catalyst for this recognition will be aggressive and savvy employees' counsel who will invoke Moore's Law as a rallying cry for courts to perform pen and ink surgery on the temporal component of noncompetes. It is axiomatic that the length of a time restriction contained in a noncompete agreement must be no longer than is necessary to protect the interests of an employer.⁹⁰ Since Moore's Law virtually quantifies the rate of obsolescence in the microchip industry, an employer-induced noncompete of three years, for example, would be ripe for judicial downsizing because three years would be tantamount to an employer's affront to Moore's Law. A techno-savvy and prudent judge might find that a noncompete that did not comport with the semi-conductor industry's own venerable "law" on the rapid obsolescence rate of silicon technology was unnecessary to protect the employer's legitimate interest. Moore's Law, at its very heart, is a "law" of product obsolescence.⁹¹

Judges should use Moore's Law as a barometer of a noncompete's temporal reasonableness. If this concept gained precedential value, perhaps operating as a presumption subject to rebuttal in particular cases where the employee's specific knowledge made a longer or shorter agreement more reasonable, then semi-conductor companies would have a bright line of reasonableness when drafting the time dimension of an employee noncompete agreement. The time durability of a trade secret or other employee knowledge would no longer be a discretionary determination by employers, subject only to the departing employee's expensive litigation. Given the widespread acceptance of Moore's Law in the industry, it is likely that a judge could take judicial notice of the duration of the semi-conductor product cycle, either on his or her own initiative or at the urging of counsel.⁹² Creation of a bright line test of temporal reasonableness based on Moore's Law would probably reduce the likelihood that litigation over the agreement would even ensue, creating litigation cost-savings for employers. A major adversarial component in employer-employee relations in drafting noncompete agreements would be taken out of the potential litigation equation. This would be a 360 degree win for everyone at the "new psychological contract" table.

The impact of Moore's Law is not limited to the semiconductor industry.⁹³ The increase

⁸⁹ Markoff, *supra* note 86.

⁹⁰ *Liataud v. Liataud*, 221 F.3d 981, 988 (7th Cir. 2000); *Kramer v. Robec, Inc.*, 824 F. Supp. 508, 512 (E.D. Pa. 1992).

⁹¹ John Markoff, *Is There Life after Silicon Valley's Fast Lane? Pace of Innovation May Need Reining In*, N.Y. Times, Apr. 9, 2003, at C1.

⁹² See *McCormick on Evidence* § 330 (John W. Strong et al. eds., 5th ed. 1999) (noting that principles that are accepted as valid in the relevant scientific community as evidenced by reliable sources are subject to judicial notice, and suggesting that counsel should bring such sources to the judge's attention as judges will vary in their willingness to seek out such sources). Product life cycles in other industries which have not become accepted as axioms by the scientific community would require evidence as to their duration but could still function as guides for the court in determining the durability of noncompetition agreements and trade secrets for purposes of disclosure litigation. See *id.*

⁹³ Technological developments by Intel suggest that Moore's Law may become applicable in fiber optic arena also. See Markoff, *supra* note 83, at C1. Intel "hopes to transform the world of data networking by placing it on the manufacturing cost curve know as Moore's Law." *Id.*

in computing power affects many other industries dependent on processor speed and creates the same rapid obsolescence effect. “Moore’s Law and analogous concepts related to advances in processor speed, data compression, and networking can reasonably be expected to continue to reduce the cost and expand the capability of consumer technology for storing, replicating, and distributing content for the foreseeable future.”⁹⁴ Consumer technology such as personal video recorders and MP3 players will be affected by Moore’s Law.⁹⁵ Both the communications industry and the software industry rely on Moore’s Law as new product development follows the Moore’s Law curve, building on faster computing power and reductions in price.⁹⁶ Indeed, Professor Jeffrey Mackie-Mason from the University of Michigan, who specializes in the economics of information technology,⁹⁷ suggests that companies whose business involves information technology must follow Moore’s Law:

If you're in a business where your core value is information technology, if you're in some sense an information technology business, and the argument is essentially that everything is going to become to some extent an information technology business, but if that's really what your value is coming from, where your product and your value to your customers is coming from, then you have to be on the Moore's Law curve. Because if you're not, one of your competitors will be. You have to be bringing out new products, improving your products or reducing your costs at that same exponential rate as Moore's Law or if not you'll be left behind.⁹⁸

Accordingly, Moore’s Law can provide a guide to the appropriate length of noncompetes in a wide variety of industries. The significance of the role of Moore’s Law in these industries suggests that, at a minimum, it should be the presumptive outside limit of the duration of a noncompete, with both parties having the opportunity to overcome the presumption by showing that a different rule should apply under the particular circumstances. Given the pace of change, in most cases the specific evidence would likely reduce the appropriate length of the noncompete as businesses try to exceed Moore’s Law with developing products. Use of Moore’s Law by courts will encourage businesses to utilize Moore’s Law as a drafting guide and provide more predictability for both employers and employees in determining the enforceability of noncompetes. In an area of law where uncertainty prevails, this bright line test, even when operating as a presumption subject to rebuttal, will aid the courts and the parties

⁹⁴ Peter S. Menell, *Envisioning Copyright Law’s Digital Future*, 46 N.Y.L. Sch. L. Rev. 63, 177 (2002).

⁹⁵ *Id.* at 177-78.

⁹⁶ Jim Davidson, Comment Before Law, Policy, and the Convergence of Telecommunication and Computing Technologies Conference, *in* 2001 Mich. Telecomm. & Tech. L. Rev. 1, 118 (2001); Jeffrey Mackie-Mason, Comment Before Law, Policy, and the Convergence of Telecommunications and Computing Technologies Conference, *in* 2001 Mich. Telecomm. & Tech. L. Rev. 1, 118, 127 (2001).

⁹⁷ Jeffrey S. Lehman, Comment Before Law, Policy, and the Convergence of Telecommunications and Computing Technologies Conference, *in* 2001 Mich. Telecomm. & Tech. L. Rev. 1, 113 (2001)

⁹⁸ Mackie-Mason, *supra* note 96, at 126.

2. The Effect of Nanotechnology

Notwithstanding the promise that Moore's Law might hold for reducing litigation in the arena of noncompetition agreements, the rapid progress of nanotechnology might require some fine-tuning of Moore's Law as the size of silicon chips approaches the molecular level.⁹⁹ Indeed, machines and devices the size of molecules may be ushering in the next Industrial Revolution.¹⁰⁰

"Nanotech takes its name from the nanometer, a unit of measurement just one billionth of a meter long."¹⁰¹ The applied science of nanotechnology, "building things from the bottom up -- one atom or molecule at a time,"¹⁰² is having a significant impact well beyond the semiconductor industry. It is updating production methods in the health care, computer, chemical and aerospace industries, by spawning superior new products.¹⁰³ Not only is the silicon computer chip in danger of extinction in this Lilliputian world of nanotechnology, but factories themselves may be thrown onto the outdated technology heap. Some experts foresee factories built "at the molecular level able to churn out virtually any product desired from materials ubiquitous in the atmosphere, like dirt and water."¹⁰⁴

Presidential science advisers envisage a nanotech world of "[m]aterials with ten times the strength of steel and only a small fraction of the weight," and all of the information at the Library of Congress contained in "a device the size of a sugar cube."¹⁰⁵ That vision is not so far-fetched, given the National Science Foundation's generous funding of the Nanotechnology Initiative and the predicted growth of the nanotechnology market.¹⁰⁶ Similarly, huge investments by business and academia in nanotechnology research reflect that this innovation road may not be paved with yellow bricks. "UCLA and Hewlett-Packard have laid the ground work for the world's first

⁹⁹ See *Apply Here, Small Wonders: A Survey of Nanotechnology*, *The Economist*, January 1, 2005 at 6, 8. Indeed, some suggest that chip manufacturers are "already in the realm of nanotechnology." *Id.*

¹⁰⁰ Phillip J. Longman, *The Next Big Thing Is Small: Machines the Size of Molecules Are Creating the Next Industrial Revolution*, *U. S. News & World Rep.*, July 3, 2000, at 30; David P. Hamilton, *The Nanotechnician: How small can computer chips get? According to Charles Lieber, a few atoms are all you need*, *Wall St. J.*, May 13, 2002, at R17.

¹⁰¹ Longman, *supra* note 100, at 31.

¹⁰² Glenn Harlan Reynolds, *Nanotechnology and Regulatory Policy: Three Futures*, 17 *Harv. J.L. & Tech.* 179, 181 (2003).

¹⁰³ Longman, *supra* note 100, at 30.

¹⁰⁴ Timothy Aepfel, *Think Small: Imagine changing a chair into a table at the flick of a switch; Welcome to nanotechnology*, *Wall St. J.*, Dec. 31, 1999, at R40.

¹⁰⁵ Longman, *supra* note 100, at 31 (quoting President Clinton at a speech at Caltech in January 2000).

¹⁰⁶ Bruce Schechter, *They've Seen the Future and Intend to Live It*, *N.Y. Times*, July 16, 2002, at F4 (noting that the National Science Foundation's National Nanotechnology Initiative spent more than \$600 million in 2001 on studying the basic science of nano-matter); see also Eric Roston, *Very Small Business*, *Time*, Sept. 23, 2002 at A13 (Global Business Supplement) (noting that "[t]he National Science Foundation foresees a \$1 trillion market by 2015 for nano products").

molecular computer”.¹⁰⁷ Such a miniaturized computer would be enormously faster, “exponentially more powerful” and “dirt cheap” in cost compared to today’s computers.¹⁰⁸ Nano-engineers might be able “to make computers as easily as photographic film.”¹⁰⁹

Nanotechnology, or molecular electronics, may alter the entire semi-conductor industry, possibly within the next decade.¹¹⁰ The realization of nanotechnology, which is proceeding at a rapid pace,¹¹¹ could have a significant impact on the construction of noncompete agreements. Nanotechnology might require a revised temporal “law” of product obsolescence because a whole generation of trade secrets might be shelved in several industries.¹¹²

B. *Planned Obsolescence Devalues Trade Secrets and Employee Knowledge*

Something much more immediate on the radar screen than nanotechnology, planned obsolescence, affects the time duration of post-employment restrictions. Commentators and even courts have recognized the significance of planned obsolescence in American society.¹¹³

¹⁰⁷ Longman, *supra* note 100, at 33.

¹⁰⁸ Markoff, *supra* note 91, at C1.

¹⁰⁹ *Id.*, quoting UCLA chemistry professor James R. Heath.

¹¹⁰ John Markoff, *Computer Scientists Are Poised for Revolution on a Tiny Scale*, N.Y. Times, Nov. 1, 1999, at C1.

¹¹¹ For discussions of the effect of nanotechnology on the law, see Reynolds, *supra* note 102, at 180 (overview of nanotechnology and regulatory responses); Frederick A. Fiedler & Glenn H. Reynolds, *Legal Problems of Nanotechnology: An Overview*, 3 S. Cal. Interdisc. L.J. 593, 619 (1994) (predicting that intellectual property in software and designs will become far more valuable, enhancing legal protections against counterfeiting); The Honorable Arthur J. Gajarsa, *The Fifth Annual Honorable Helen Wilson Nies Memorial Lecture in Intellectual Property Law: Quo Vadis?*, 6 Marq. Intell. Prop. L. Rev. 1, 8-9 (2002) (discussing the impact of nanotechnology on the law of intellectual property).

¹¹² Unlike cases involving Moore’s Law, judges could not use judicial notice to establish the temporal dimension of noncompetes if nanotechnology alters Moore’s Law. Instead, evidence of impending product obsolescence would be required, at least until a new axiom similar to Moore’s Law developed. See *McCormick on Evidence* § 330 (John W. Strong et al. eds., 5th ed. 1999) (suggesting that judicial notice has limited utility in the current technological era where scientific truths change quickly).

¹¹³ See, e.g., *Am. Hosp. Supply Corp. v. Fleetwood Dental*, 212 U.S.P.Q. (BNA) 664, 665 (C.D. Cal. 1980) (recognizing the societal prevalence of planned obsolescence in a patent and trademark infringement case); Vincent R. Johnson, *Liberating Progress and the Free Market from the Specter of Tort Liability*, 83 Nw. U. L. Rev. 1026, 1035-36 n.65 (1989) (book review) (quoting R. Rodes, *Law and Liberation* 66 (1986): “[N]ot only do we make things that wear out sooner than they would have to if we used our technology to make them last longer; we design them in such a way that they are extremely hard (and expensive) to repair, and we change designs so often that after a few years they cannot be repaired at all.”); Tamara R. Piety, “*Merchants of Discontent*”: *An Exploration of the Psychology of Advertising, Addiction and the Implications for Commercial Speech*, 25 Seattle U. L. Rev. 377, 419 (2001), available at <http://www.law.seattleu.edu/lawrev/vol25/252/252.html> (noting the prevalence of planned obsolescence and questioning whether it is fueled by producers or consumers); Louis E. Wolcher, *Symposium: Technology, Values, and the Justice System: The End of Technology: A Polemic*, 79 Wash. L. Rev. 331, 344 (2004) (associating planned obsolescence with technological totalitarianism).

The term “planned obsolescence” is neither a contradiction in terms nor an oxymoron in the consumer electronics industry. Like hamsters, tens of millions of American consumers have blithely but cheerfully fallen into the “software treadmill”¹¹⁴ trap, repeatedly buying new computers from companies like Gateway and an “endless series of software upgrades”¹¹⁵ from Microsoft.¹¹⁶ This industry-contrived replacement cycle is in some cases “outpacing” Moore’s Law.¹¹⁷ One technology commentator has gone so far as to describe this personal computer obsolescence as “not only planned,” but “extolled by marketers as the principal virtue of machines designed to save labor and entertain.”¹¹⁸

The time has come for judges to take notice of this marketing strategy in probing the temporal reasonableness of noncompete agreements in the consumer electronics industry, and perhaps others.¹¹⁹ While it would be a major setback to the industry for a court to rule that noncompetes should parallel planned obsolescence projections in duration, such judicial savvy and innovation might help make industry marketing more transparent to consumers and democratize the playing field between employer and employee in the drafting of noncompetes. Not only is planned obsolescence of products a dubious business practice,¹²⁰ but judicial recognition of planned obsolescence could ultimately jeopardize noncompetes in that industry. This is a heavy hammer that a court has yet to wield.

An astute judge might further recognize that Moore’s Law might have been an unintentional stimulus for the post-1965 planned obsolescence race. As companies have “rushed to keep ahead” of Moore’s Law, his prediction has become a “self-fulfilling prophecy.”¹²¹

¹¹⁴ Markoff, *supra* note 86, §4 at 6.

¹¹⁵ *Id.*

¹¹⁶ See Steve Bickerstaff, *Shackles on the Giant: How the Federal Government Created Microsoft, Personal Computers, and the Internet*, 78 Tex. L. Rev. 1, 30 n.177 (1999) (discussing planned obsolescence in the personal computer industry).

¹¹⁷ Markoff, *supra* note 86, §4 at 6.

¹¹⁸ *Id.* For a perspective on how producers drive to provide more advanced technology to beat out their competitors, see Bickerstaff, *supra* note 116, at 30 (stating “[t]he continuous pressure on personal computer users to upgrade or replace their systems or applications, and the need for help in mastering and maintaining the increasingly complex, powerful, and multifunctional personal computers, has created a sense of frustration in many users.”); Wolcher, *supra* note 113, at 343-44 (arguing that “planned obsolescence . . . keeps . . . [the technological subject] working overtime to replace things that are already outmoded almost the day they leave the store” and suggesting it is a “technological kind of totalitarianism [which] coordinates social behavior through the manipulation of needs and aspirations by vested interests”).

¹¹⁹ Porcher Taylor first called for courts to consider planned obsolescence in determining the reasonableness of noncompete agreements in Porcher L. Taylor, III, *The Bite Could Be Out of Noncompete Clauses*, Inside Bus.: The Richmond Bus. J., March 11-17, 2002, at 16.

¹²⁰ For a hypothetical case study on the business ethics dilemma of using research and development funds to deliberately introduce product obsolescence of a new product to ensure potentially lucrative replacement sales, see James A. Heely & Roy L. Nersesian, *The Case of Planned Obsolescence*, Mgmt Acct., Feb. 1994, at 67; James A. Heely & Roy L. Nersesian, *More Responses to Ethics Case*, Mgmt Acct., June 1994, at 60.

¹²¹ Yang, *supra* note 83, at 38.

Judicial recognition of that fact could make time calculations in noncompetes more of a science. The concept of planned obsolescence of products could help quantify the time duration of certain noncompete agreements. Since a court has yet to fashion a time duration formula for a high-tech noncompete agreement, the *EarthWeb* line of cases reflects judicial supposition regarding the appropriate temporal parameters for noncompete agreements. Testimony by experts on Moore's Law and pretrial discovery of planned obsolescence strategies would shed great light on what a time duration formula should look like.

Trial court judges should define the time parameters of noncompete agreements with planned obsolescence in mind, despite what industrial economists say.¹²² Industrial economists have argued that product decline and rapid innovation are preferable to enduring products and slower innovation.¹²³ While this argument may make economic sense, it should have no significance in determining the reasonableness of noncompetition agreements. In fact, expert testimony to this effect would set up a litigation ambush for employers: to justify enforcement of a noncompetition agreement the employer would risk exposure to antitrust liability. Critics point to planned obsolescence as an indictment of capitalism, arguing that many products are designed to have "uneconomically short lives," with the "intention of forcing consumers to repurchase too frequently."¹²⁴ The theoretical corollary to this argument would imperil most employers: "wastefully short durability is the cost imposed by the durable goods monopolist to overcome the time consistency problem."¹²⁵ This statement is the prevailing view in industrial economics scholarship.¹²⁶

Economic models indicate that monopoly producers have an incentive to lower the price of some products over time in order to "price discriminate": first to charge a higher price to those that value a product the most and then to sell to other buyers at a lower price later. If the planned pattern of price reductions is expected, however, buyers who would otherwise pay a high price will delay their purchases, knowing that the price will be lower in the future. To avoid this, sellers want to convince buyers that they will not lower prices in the future. But there is a problem of time inconsistency, because after they have sold their goods at a high price with a promise not to lower prices in the future, they have an incentive to lower the price to attract the remaining buyers who have lower reservation prices. The monopolist must contrive a way to credibly commit that it will not lower prices in the future. One way to do so is to lease the product. If prices are lowered in the future, then the monopolist is hurt, since it owns the good

¹²² Arthur Fishman et al., *Planned Obsolescence as an Engine of Technological Progress*, 41 J. Indus. Econ. 361, 361 (1993) (noting arguments by industrial economists that planned obsolescence of products may be essential to technological development).

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ *Id.*, citing the prevailing view of several industrial economics scholars since 1981.

¹²⁶ *Id.* For a fascinating theoretical study of why some industries such as automobile manufacturers, textbook publishers, and personal computers have too strong an incentive to utilize planned obsolescence, see Michael Waldman, *A New Perspective on Planned Obsolescence*, 108 Q.J. Econ. 273, 273 (1993). For further discussion of durable goods monopolies and the incentives for such monopolists, see Barak Y. Orbach, *The Durapolist Puzzle: Monopoly Power in Durable-Goods Markets*, 21 Yale J. on Reg. 67 (2004).

that is flooding the market. Another method is planned obsolescence. If buyers must purchase new versions of a product every few years, the seller can more effectively commit to maintaining the high price, since inter-temporal price discrimination becomes less feasible if all buyers must return to the market often. Revising textbooks every two or three years is one variation of this strategy.¹²⁷ Because this strategy raises antitrust concerns, it will not likely be the focus of employer efforts to derail the use of planned obsolescence to calculate the temporal reasonableness of a noncompete agreement. What makes economic and market sense does not necessarily pass judicial muster.

If planned obsolescence is truly alive, well and profitable, then employers will be hard-pressed to convince courts that they should be allowed to capitalize on that profitability at the expense of their employees by drafting noncompete agreements devoid of a planned obsolescence clause. Planned obsolescence and trade secret longevity are diametrically opposed. Employees who change jobs, voluntarily or involuntarily, should not be made victims of a business practice that eviscerates the value of products and employee knowledge. Courts cannot and should not validate the questionable market strategy of an entire industry that deliberately manipulates the value of proprietary information through planned obsolescence. The judicially-imposed corporate “tax” on planned obsolescence should be the downsizing of noncompetes.

Planned obsolescence is a predatory abuse of contract jurisprudence by the consumer electronics industry. Artificially manufacturing demand for products through planned obsolescence¹²⁸ is anathema to social and contract fairness. Seemingly, Microsoft (with its excessive upgrades in its software)¹²⁹ and Gateway (with its excessive cosmetic improvements in computer hardware), both purveyors of the planned obsolescence of their products,¹³⁰ would be likely targets of the judicial limitation of noncompetes. This would provide one penalty for employers who deliberately create short product cycles. Not only would synchronization of planned obsolescence and noncompetes provide greater predictability and fairness for employees and employers, but it would also discourage businesses from manipulating consumers with planned obsolescence techniques.¹³¹

An additional public policy reason supports limiting noncompetes based on planned

¹²⁷ We are indebted to Associate Professor of Economics Erik Craft of the University of Richmond Robins School of Business for this elucidation of the concept of time inconsistency.

¹²⁸ See Deborah W. Post, *Dismantling Democracy: Common Sense and the Contract Jurisprudence of Frank Easterbrook*, 16 *Touro L. Rev.* 1205, 1215 (2000).

¹²⁹ For an intriguing theoretical economics analysis of a monopolist’s incentives to provide upgraded versions of its software, see Glenn Ellison & Drew Fudenberg, *The Neo-Luddite’s Lament: Excessive Upgrades in the Software Industry*, 31 *Rand J. Econ.* 253, 253 (2000).

¹³⁰ See Post, *supra* note 128, at 1215 & n.27 (noting Gateway’s marketing strategy of planned obsolescence); cf. Orbach, *supra* note 126, at 95 (discussing planned obsolescence in the software industry).

¹³¹ If some companies are going to play the planned obsolescence game, then their employees who are unreasonably restricted by noncompetes should be allowed to migrate to other employers that would benefit consumers by releasing products withheld from the market in the interest of planned obsolescence. This will provide a Silicon Valley effect, creating knowledge spillover that could minimize the deleterious impact of planned obsolescence on consumers. See Gilson, *supra* note 16, at 584-86 (discussing the positive effects of knowledge spillover in Silicon Valley enabled by California’s refusal to enforce noncompete agreements).

obsolescence. Planned obsolescence is a business strategy which is associated with the durable goods monopolist.¹³² While the strategy may be the subject of antitrust complaints, such cases are difficult to prove.¹³³ Planned obsolescence in practice may be hard to distinguish from product changes with legitimate origins.¹³⁴ Consumer demand may drive businesses to change products in limited ways and such changes are not intended to exclude competition unlawfully.¹³⁵ Limiting the use of noncompetes based on planned obsolescence may benefit the public by allowing employees to escape to potential competitors, thereby increasing competition and limiting the market power of the durapolist. Thus, both consideration of the employer's need for the noncompete and consideration of public policy support restricting noncompetes where the employer utilizes planned obsolescence.

In determining the enforceability of noncompetition agreements, courts should use the planned obsolescence of products to determine the presumptive reasonableness of the time dimension of the agreement.¹³⁶ Courts should decline to enforce noncompetes that extend beyond the obsolescence of the product on which the employee worked, unless the employer shows that the employee has knowledge about a future iteration of the product that justifies a longer restriction. In no event should a court enforce a noncompete that exceeds the length of the product cycle. The product cycle should be the outside limit of any reasonable restriction. Further, planned obsolescence affects the utility of trade secrets. An employee should not be restricted from working for a competing employer based on the likelihood of inevitable disclosure of trade secrets where planned obsolescence on the part of the employer devalues the trade secret subject to disclosure.¹³⁷

The maximum reasonable limitation of the product cycle would provide some certainty to both employers and employees with respect to the enforceability of covenants, thereby diminishing litigation. Even with these limitations, however, there may be disagreement between employers and employees with respect to the length of the product cycle or employees' acquisition of valuable information about the new product iteration, requiring judges to evaluate the conflicting evidence when covenants are litigated. This raises the question of judicial competence to evaluate complex technological evidence, which is addressed in Section IV.

¹³² Orbach, *supra* note 126, at 90-95.

¹³³ *See id.* at 90-100.

¹³⁴ *See id.* at 97-98.

¹³⁵ *See id.* at 98.

¹³⁶ While the time value of confidential information possessed by the employee has certainly been a factor in high-tech cases decided to date, creation of a presumption would standardize the use of obsolescence making judicial interpretation more predictable for the parties. This greater certainty regarding judicial enforcement would aid drafters of such agreements and enable employees to assess with greater reliability the likelihood of enforcement of a restriction.

¹³⁷ *See PepsiCo v. Redmond*, 54 F.3d 1262 (7th Cir. 1995).

IV. THE TECHNICAL COMPETENCE OF JUDGES TO EVALUATE THE REASONABLENESS OF
NONCOMPETES USING MOORE'S LAW AND PLANNED OBSOLESCENCE AS TIME DURATION
CONSTRUCTS

A. *Traditional Law School Education Does Not Prepare Future Judges to Adjudicate Complex
Technology Cases*

While applying an axiom like Moore's Law might not require a sophisticated understanding of technology, determining the rate of obsolescence of technology products, particularly where the issue is disputed, might present a challenge to judges without technological expertise. Aspiring judges are not offered science and engineering courses in law school. The mere mention of Moore's Law would cause head scratching by many law school students, lawyers and judges in the nation. Short of a paradigm shift in law school curricula, this educational deficit will likely continue.

At the inception of the new millennium, American law schools still primarily follow the legal teaching path of Langdell.¹³⁸ Every lawyer and judge in America has been schooled in this traditional manner. "We learn law by studying what has gone before."¹³⁹ Change in the law occurs incrementally. However, with the vast technological change currently occurring, every legal doctrine is potentially in the cross-hairs of fundamental change. No legal doctrine is sacred in this transformational era. Courts are straining at the oars of *stare decisis*.

The Internet, Napster, the human genome project and nanotechnology could redefine intellectual property and even the Constitution. Newer, unimagined technologies on the horizon could make this assault even more lethal to today's precedent. This "law-forcing," "where technological change is so dramatic as to cause doctrinal reform,"¹⁴⁰ has been a catalyst for American law schools to offer cyberlaw and technology courses. Indeed, over 150 such courses were being taught at law schools in 2000.¹⁴¹

Most complex high-tech cases involve intellectual property, a traditionally small practice and constantly fluid practice area that most law schools do not require as part of their core curriculum.¹⁴² Many lawyers never studied intellectual property in law school and most have not focused their practice in the field. While the study and practice of cyber law is growing, the majority of federal judges were over "forty at the time the Internet first hit the public market."¹⁴³

¹³⁸ Alan Heinrich et al., *At the Crossroads of Law and Technology*, 33 Loy. L.A. L. Rev. 1035, 1035 (2000).

¹³⁹ *Id.*

¹⁴⁰ *Id.* at 1036.

¹⁴¹ *Id.* at 1048. Loyola of Los Angeles School of Law was among the first to develop a Law and Technology Program to better prepare both law and technology students to face the legal and social implications of technological change. The program previewed a potential interdisciplinary course that would bring together science-engineering students and law students "to train them to resolve novel legal issues arising from advanced technology." *Id.* at 1050.

¹⁴² Debra Baker, *Learning High-Tech at the Bench*, 86 A.B.A. J. 52, 53 (2000).

¹⁴³ *Id.* at 54.

The senior jurists on the United States Supreme Court, who range in age from 55 to 83, “came of age at a time when doing legal research meant reaching for a book, not a mouse.”¹⁴⁴

“Among the justices, no one has given more thought to the relationship between law and science than Justice Breyer.”¹⁴⁵ In this “age of science,” Breyer posits that the nation “must build legal foundations that are sound in science, as well as in law.”¹⁴⁶ Moreover, he has suggested that justices on the high court need to know both science and the law in order to make sound decisions.¹⁴⁷ In the context of noncompetes, from law students to the high court, Moore’s Law, which devalues the utility of product information, should become part of the legal landscape.¹⁴⁸

When parties opt to select their own expert witnesses under Federal Rule of Evidence 706(d),¹⁴⁹ judges may need Teflon robes to avoid the potential for technology “hazing.”¹⁵⁰ In trade secret cases,¹⁵¹ a judge “bogged down” by technology might be reluctant to believe that the facts at issue are general knowledge in the industry.¹⁵² By overwhelming the judge with the complexity of the technology, the employer seeking protection from competition may be able to persuade a judge that “all of the technology is proprietary.”¹⁵³

In law school, students learn the wisdom of reasoning and arguing by analogy. They are trained to “search intently for the closest available factual precedent.”¹⁵⁴ While our legal system is predicated on argument by analogy, this style of analysis reaches the “limitations of analogical

¹⁴⁴ Linda Greenhouse, *Microsoft Will Test Justices’ Prowess*, N.Y. Times, June 4, 2000, § 3 (Money and Business), at 1.

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* (quoting Justice Breyer from his 1998 speech to the American Association for the Advancement of Science, which he lauded for a study on expanded roles for court-appointed experts).

¹⁴⁷ *Id.* (paraphrasing Justice Breyer’s statement in a 2000 speech at a Cambridge biomedical research symposium).

¹⁴⁸ John Riedl, *Law, Policy, and the Convergence of Telecommunications and Computing Technologies Conference*, 2001 Mich. Telecomm. & Tech. L. Rev. 1, 39 (2001) (stating that Moore’s Law is one of the two most important laws that any law student will learn in legal education).

¹⁴⁹ Fed. R. Evid. 706(d).

¹⁵⁰ Baker, *supra* note 142, at 55.

¹⁵¹ In referring to trade secret cases here, we include cases involving noncompetition covenants where the issue is whether the employer has a protectable interest or whether the duration of the time restriction is reasonable based on the changing technology.

¹⁵² *Id.*

¹⁵³ *Id.* (quoting Nicole Engisch, the assistant chair of the intellectual property and information technology section of Minneapolis’ Leonard, Street).

¹⁵⁴ Joseph W. Rand, *What Would Learned Hand Do?: Adapting to Technological Change and Protecting the Attorney-Client Privilege on the Internet*, 66 Brook. L. Rev. 361, 373 (2000).

usefulness” when it clashes with the “uniqueness” of a technological change.¹⁵⁵ For example, nanotechnology might well be a unique technology that is quite difficult to analogize. “Analogical reasoning plays a profoundly important role whenever a court must decide the proper legal rules to apply to a new technology.”¹⁵⁶ The odds are high that a court will create “bad law” because courts “usually stumble” before they find the “correct” analogy for new technologies.¹⁵⁷ Examples of analogical misdirection abound. Consider that “[s]oftware stored in read only memory was not understood to be the same as software stored on disk.”¹⁵⁸

The Supreme Court fell into this analogical maze in *Denver Area Educational Telecommunications Consortium v. FCC*.¹⁵⁹ In that case, the Court declined to use the traditional First Amendment analysis when confronted with a constitutional challenge to the law regulating the communications medium of cable television and instead conducted a “fact-intensive” review.¹⁶⁰ The court declined to categorize cable television using traditional First Amendment jurisprudence because of the rapid rate “of change within the cable industry and the communications field generally.”¹⁶¹ Thus, advancing technology requires not only additional education, but a rethinking of traditional analysis by judges.

B. *The Judiciary Begins to Overcome the Steep High-Tech Learning Curve: Reno v. ACLU and Microsoft*

Before hearing their first Internet case in 1997, the Supreme Court justices were instructed by their library staff on how to use the Internet and the basic technical matters at issue in *Reno v. ACLU*.¹⁶² Thus “empowered,” the court in *Reno* unanimously overturned the federal law regulating Internet indecency and established the importance of free speech principles in the new medium.¹⁶³ Most significantly, scholars and practitioners accept Justice Scalia’s suggestion

¹⁵⁵ *Id.*

¹⁵⁶ Jonathan Wallace & Michael Green, *Bridging the Analogy Gap: The Internet, the Printing Press, and Freedom of Speech*, 20 Seattle U. L. Rev. 711, 720-21 (1997).

¹⁵⁷ *See id.*

¹⁵⁸ *Id.*

¹⁵⁹ 518 U.S. 727 (1996).

¹⁶⁰ Rand, *supra* note 154, at 373-74 (commenting on the Supreme Court’s ruling in *Denver Area Educ. Telecomms. Consortium v. FCC*, 518 U.S. 727 (1996) (addressing a first amendment challenge to the Cable Television Consumer Protection and Competition Act)).

¹⁶¹ Heinrich, *supra* note 138, at 1045 (citing Justice Souter’s concurrence in *Denver Area Educ. Telecomms. Consortium*).

¹⁶² Greenhouse, *supra* note 144, at 1 (referring to a speech by Justice Breyer in 2000 at a symposium on biomedical research in Cambridge, Massachusetts about *Reno v. FCC*, 521 U.S. 844 (1997)).

¹⁶³ *Id.*

during oral argument regarding the rapid pace of obsolescence in cyberspace:¹⁶⁴

This is an area where change is enormously rapid. Is it possible that this statute is unconstitutional today, or was unconstitutional 2 years ago when it was examined on the basis of a record done about 2 years ago, but will be constitutional next week? . . . Or next year or in two years?¹⁶⁵

Justice Scalia's "sentiments were not new,"¹⁶⁶ however, because the district court in *Reno* "put the point sharply."¹⁶⁷ "Because of the rapidity of developments in this field, some of the technological facts we have found may become partially obsolete by the time of publication of these Findings."¹⁶⁸

Rapid technological change perplexes courts at all levels,¹⁶⁹ especially with the Internet, where a year alone can encompass enormous change.¹⁷⁰ In *United States v. Microsoft Corp.*,¹⁷¹ federal district court Judge Thomas P. Jackson was swimming upstream in a tide of technological changes and confusions. In reviewing his grant of a preliminary injunction, his findings of fact were criticized by the U.S. Court of Appeals for the District of Columbia "for confusing the concepts of operating systems and platforms for hosting software applications."¹⁷² Yet once the historic trial began, the Judge was credited with a quick study of the technical jargon utilized by the parties.¹⁷³ Judge Jackson was also praised for efficient and effective administration of the seventy-eight-day trial.¹⁷⁴ One commentator suggests that he "may very well be the model for technophobic judges thrust, often unwillingly, into the digital age."¹⁷⁵

¹⁶⁴ Stuart M. Benjamin, *Stepping into the Same River Twice: Rapidly Changing Facts and the Appellate Process*, 78 Tex. L. Rev. 269, 270 (1999).

¹⁶⁵ Transcript of Oral Argument, available at 1997 WL 136253, at *49, *Reno v. ACLU*, 521 U.S. 844 (1997) (No. 96-511) (lamenting the abrupt change in relevant facts underlying the Internet between the district court findings and the appellate process to the Supreme Court).

¹⁶⁶ Benjamin, *supra* note 164, at 294.

¹⁶⁷ *Id.* at 295.

¹⁶⁸ *ACLU v. Reno*, 929 F. Supp. 824, 838 n.12 (E.D. Pa. 1996).

¹⁶⁹ Edward Lee, *Rules and Standards for Cyberspace*, 77 Notre Dame L. Rev. 1275, 1280 (2002) (citing rapid technological change laments by the Second and Ninth Circuits).

¹⁷⁰ *See id.* at 1279.

¹⁷¹ 84 F. Supp. 2d 9 (D.D.C. 1999).

¹⁷² Baker, *supra* note 142, at 52.

¹⁷³ *Id.*

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

C. *The Role of Court-Appointed Technology Experts in Calculating Obsolescence Timelines*

In the *Microsoft* case, Judge Jackson had a living aid in the form of a special master who was a visiting professor at Harvard Law School and well regarded in the then emerging field of cyberlaw.¹⁷⁶ The special master's job was not to issue an advisory opinion, but rather to sort out the complex facts for the educational benefit of the judge.¹⁷⁷ Indeed, generalist judges are poorly equipped to decide complicated technological questions¹⁷⁸ without substantial self-education and external educational support.¹⁷⁹ The Supreme Court, in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, commanded that under Federal Rule of Evidence 702,¹⁸⁰ "[t]he trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable."¹⁸¹ The federal courts may utilize experts, including expert witnesses, technical advisors, and special masters, to assist them in evaluating the evidence.¹⁸² Chief Justice Rehnquist emphasized that this responsibility is one of a "gatekeeping" role in the evaluation and

¹⁷⁶ Andrew J. Glass, *Professor in Microsoft Case to Make Mark on Cyberlaw*, Atlanta J. & Const., Jan. 8, 1998, at F5.

¹⁷⁷ *Id.*, citing Mike Godwin, a cyberlaw expert at the Media Studies Center in New York.

¹⁷⁸ LeRoy L. Kondo, *Untangling the Tangled Web: Federal Court Reform Through Specialization for Internet Law and Other High Technology Cases*, 2002 UCLA J.L. & Tech. 1, 3 (2002), available at http://www.lawtechjournal.com/articles/2002/01_020309_kondo.pdf.

¹⁷⁹ As far as judicial education initiatives, the National Judicial College should be lauded for its course on scientific evidence and expert testimony. *NJC Courses: Scientific Evidence and Expert Testimony*, at http://www.judges.org/courses/course_dates/2004/Course.2003-09-08.5402 (last visited May 27, 2004). "The National Judicial College's chief objective is to improve justice through national programs of education and training directed toward judicial proficiency, competency, skills and productivity." *The National Judicial College: History of Achievement*, at <http://www.judges.org/about>. Affiliated with the American Bar Association, "[t]he National Judicial College is the country's leading judicial education and training institution." *Id.*

¹⁸⁰ Fed. R. Evid. 702 states:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

¹⁸¹ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589 (1993) (establishing a new role for federal judges as gatekeepers of good science and reversing summary judgment in a birth defects case because the judge had failed in that duty by erroneously holding that "general acceptance" of principle underlying scientific evidence was a necessary precondition to admissibility under Federal Rules of Evidence). The *Daubert* court established a new test for the reliability of scientific evidence, one which is flexible but based on the scientific validity of the principles underlying the evidence proffered. *Id.* at 594-95, 597.

¹⁸² Kondo, *supra* note 178, at 7. See also *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 149 (1997) (Breyer, J. concurring) (noting that judges can appoint special masters and specially trained law clerks in cases involving complex scientific issues).

admission of scientific evidence.¹⁸³

Regarding the call for courts to consider product obsolescence in cases involving enforcement of noncompete agreements, federal judges can be faithful to the letter and spirit of *Daubert* by appointing experts in product and trade secret obsolescence. While the cycle of planned obsolescence may be evident from discovery of company documents, disputes about the future utility of employee product knowledge may require technical expertise to unravel. One advantage of using a court-appointed expert is “to resolve conflicts in the ‘battle of the experts.’”¹⁸⁴ Since court-appointed experts are subject to deposition and to cross-examination upon being called to testify in court,¹⁸⁵ their use would help democratize this approach to calculating the timeline of product and trade secret obsolescence. The employment of court-appointed expert witnesses under Federal Rule 706 is not a judicial fad.¹⁸⁶ A Federal Judicial Center survey revealed that 20% of responding judges had used a court-appointed expert witness under Rule 706¹⁸⁷ and 87% of the 431 judges thought such experts were likely to be helpful in certain cases.¹⁸⁸ Equally compelling, a Harris poll survey discovered that a substantial percentage of federal and state court judges supported the use of independent experts in cases involving technical or scientific issues.¹⁸⁹ Indeed, Federal Rule of Evidence 706 provides courts with substantial discretion in appointing expert witnesses.¹⁹⁰ As an alternative to the use of court-appointed experts, the court might request videotaped tutorials from the lawyers or an independent expert or experts agreed to by both parties.¹⁹¹ Such steps could ensure that judges avoid becoming “amateur scientists,” a caveat espoused by Chief Justice Rehnquist in

¹⁸³ *Daubert*, 509 U.S. at 600-01 (Rehnquist, J. concurring in part and dissenting in part). Justice Rehnquist cautioned, however, that judges need not become amateur scientists in order to perform that role. *Id.* at 601.

¹⁸⁴ Kondo, *supra* note 178, at 79.

¹⁸⁵ Fed. R. Evid. 706(a).

¹⁸⁶ For an excellent example of the use of a court-appointed expert in a case involving computer technology, see *Computer Associates Int'l v. Altai, Inc.*, 982 F.2d 693, 712-14 (2d Cir. 1992) (upholding district court's use of appointed expert in copyright case involving computer codes despite general rule limiting the use of experts in copyright cases because court recognized the need for experts in such complex technical cases).

¹⁸⁷ Kondo, *supra* note 178, at 79-80 (citing Joe S. Cecil & Thomas E. Willging, *Accepting Daubert's Invitation: Defining a Role for Court-Appointed Experts in Assessing Scientific Validity*, 43 Emory L.J. 995, 1004 (1994)).

¹⁸⁸ *Id.* (citing Joe S. Cecil & Thomas E. Willging, Federal Judicial Center, *Court Appointed Experts: Defining the Role of Experts Appointed Under Federal Rule of Evidence 706*, at 11 (1993)).

¹⁸⁹ *Id.* at 80 (citing Symposium, *Judges' Opinions on Procedural Issues: A Survey of State and Federal Trial Judges Who Spend at Least Half Their Time on General Civil Cases*, 69 B.U. L. Rev. 731, 741, tbl. 3.6 (1989) (finding that 76% of 200 federal judges polled and 70% of 200 state judges polled advocated the utilization of independent experts)).

¹⁹⁰ *Id.* at 78; Fed. R. Evid. 706.

¹⁹¹ Baker, *supra* note 142, at 54-56.

Daubert.¹⁹²

This would especially be a noteworthy caveat in the context of a nanotechnology case. Currently, the patent examiners at the U.S. Patent and Trademark Office (PTO) are having trouble understanding the “unique aspects of nanotechnology inventions.”¹⁹³ Consequently, in 2002 PTO examiners asked a group of nanoscientists to provide tutorials on various nanotechnology subjects, to assist them in understanding nanotechnology and the patents they were evaluating.¹⁹⁴ Thus, nanotechnology may present the ultimate challenge for judicial competency in the high-tech realm. Since one commentator opines that nanotechnology may be more “fad” than reality,¹⁹⁵ judges may need to have court-appointed experts discern the truth or fiction of nanotechnology trade secrets and their obsolescence dates. Unquestionably, technological fictions cannot be recognized as trade secrets.

While actions relating to post-employment restrictions involving diverse parties may be brought in federal court,¹⁹⁶ many such claims will be litigated in state courts. Many states have provisions similar to Rule 706 which allow court appointed experts.¹⁹⁷ In states without an express provision in the rules, it is likely that judges have common law authority to appoint independent experts.¹⁹⁸ Moreover, more than twenty states have adopted the *Daubert* test for admission of scientific evidence, while a significant minority of the states still utilize the *Frye* test which was rejected by the Supreme Court in *Daubert* under the Federal Rules.¹⁹⁹ Thus, the state courts, like the federal courts, can utilize technology experts to assist in determining the appropriate length of noncompetes.

V. BUSINESSES NEED TO DRAFT PRODUCT AND TRADE SECRET OBSOLESCENCE CLAUSES IN NONCOMPETE AND CONFIDENTIALITY AGREEMENTS

Obsolescence significantly limits the lawful reach of post-employment restrictions on competition and disclosure. If judges begin to utilize obsolescence to evaluate noncompetition

¹⁹² *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 600-01 (1993) (Rehnquist, C.J., concurring in part and dissenting in part).

¹⁹³ Kelly Kordzik, *Small New World*, Nat'l. L.J., Dec. 16, 2002, at C1, C13.

¹⁹⁴ *Id.* at C13.

¹⁹⁵ See Lee Gomes, *Beware of Valley's New Fad: Nanotechnology*, Wall St. J., May 6, 2002, at B1.

¹⁹⁶ See, e.g., *PepsiCo, Inc. v. Redmond*, 54 F.3d 1262 (7th Cir. 1995); *EarthWeb, Inc. v. Schlack*, 71 F. Supp. 2d 299 (S.D.N.Y. 1999).

¹⁹⁷ Andrew MacGregor Smith, Note, *Using Impartial Experts In Valuations: A Forum-Specific Approach*, 35 Wm. & Mary L. Rev. 1241, 1268 (1994).

¹⁹⁸ *Id.*

¹⁹⁹ Edward J. Imwinkelried, *Evidentiary Foundations* § 9.03 (5th ed. 2002). The *Frye* test requires the party offering scientific evidence to demonstrate that it is supported by generally accepted principles in the relevant field of science.

and nondisclosure agreements for enforceability,²⁰⁰ it will encourage businesses to incorporate the concept when drafting such agreements. The effect on employers may vary by state, however. In states that allow the court to modify unreasonable restrictions, employers may continue to draft covenants without accounting for obsolescence, knowing that they may be altered by the courts. Judicial guidance may still be of benefit to employees in such states (and employers who want to hire them despite the covenant), enabling them to predict the likely duration of enforceable restriction. In states where the covenant must be enforced as written or not at all, employers may include in their agreements a provision limiting the restriction based on planned obsolescence, while reserving the right to enforce the restriction for the full time period specified if employee knowledge so warrants.

Wise employers will incorporate the concept of obsolescence in drafting noncompetition and confidentiality agreements without judicial coercion.²⁰¹ Employers should equate the length of post-employment restrictions with the life cycle of the valuable information to which the employee is exposed as a result of employment. Certainly this might necessitate revising agreements as employees change jobs within the company. The cost of revision should be offset, however, by the more predictable enforceability of the agreements. As the enforcement of agreements becomes more predictable, litigation is likely to be reduced.

Obsolescence could be incorporated in the agreement in one of two ways. The first alternative is to determine the period of time that the employee's knowledge would remain useful to a competitor and limit the restriction's duration accordingly.²⁰² Thus, if the product on which the employee worked had a one-year life cycle, a one-year restriction would be appropriate. But suppose the employee left after six months of work. Although the product would be obsolete in six months, the presumption that a one-year noncompete is appropriate would still apply. Given the lead time necessary to develop a product, we would presume that the employee had begun to obtain information about the next product in the cycle sufficient to justify the one-year restriction. The employee would retain the option of either negotiating with the employer to agree to enforce the restriction only for six months, if indeed the employee's useful knowledge was limited to the existing product, or to compete and risk litigation.²⁰³ If the employer sought

²⁰⁰ Limiting noncompetition agreements will not leave employers without protection for proprietary information as trade secrets are protected from misappropriation so long as they remain actual and viable and some data, like computer source codes, are protected by copyright laws. *See Computer Assocs. Int'l v. Altai, Inc.*, 982 F.2d 693, 710, 712, 716 (2d Cir. 1992) (finding copyright protection for certain aspects of computer source codes, and holding that the plaintiff's claim for misappropriation of trade secrets is not preempted by copyright law).

²⁰¹ Our recommendation presupposes continuation of the present practice of employer drafting of noncompetes which are then included in an agreement with employees either at the inception of employment or later. An alternative proposal, that agreements relating to trade secrets and competition be negotiated through collective bargaining, may well result in both greater fairness and greater predictability in addition to encouraging innovation. *See Newman, supra* note 1.

²⁰² The desire to prevent employees from leaving may not be motivated solely by protecting proprietary information from competitors. Employers may also want to retain employees long enough to protect their investment in training the employee. Stone, *supra* note 5, at 751-54. To the extent that the investment in training is not protected by a covenant limited to the duration of the value of employee-specific employee knowledge or part of the employee's contract with the employer, employers can use training repayment agreements to recover costs. *Id.* at 754-56.

²⁰³ In jurisdictions where the courts do not modify overly broad noncompetes, the employee's counsel could

to enjoin the employee from competing, the employee could seek to rebut the presumption of reasonableness with evidence that the useful knowledge extended for six months only and thus, only a six-month restriction would be appropriate.

The second alternative would be to include a clause that ties the restriction expressly to the obsolescence of the technology used or known by the employee, either with or without an express duration clause. While the lack of an express duration clause might limit predictability to some extent, employees sufficiently knowledgeable about an employer's product to justify such a restriction are likely to have adequate knowledge of the product's life cycle to understand the probable length of the restriction.

Employers reluctant to include obsolescence clauses in their agreements should consider providing severance pay equal to pre-termination income to employees for the term of their post-employment restriction. This would greatly reduce litigation since employees would not suffer economic deprivation during the period of the noncompete.²⁰⁴ Notably, the court in *EarthWeb* supported its decision by noting the “onerous terms” of the agreement, which consisted of at will employment and a restrictive covenant but did not provide for severance pay for the employee.²⁰⁵

VI. CONCLUSION

Obsolescence has become increasingly important as the United States has moved to the high-tech economy. Rapidly changing technology affects the utility of employee knowledge and must be taken into account by both employers and judges in determining the appropriate restrictions on employment with competitors. Predictability and fairness will be increased by using obsolescence, both planned and predicted, as a guide to reasonable time duration for post-employment restrictions. Further, where the time value of knowledge is in dispute, judges should use technology experts as aids in determining the appropriate balance of employment restrictions that will provide necessary protection to employers to encourage innovation, yet not unnecessarily prevent employees from earning a living based on their expertise. Such an approach will reduce litigation and encourage employers to draft reasonable restrictions, benefiting both employers and employees in today's high-tech workplace.

file an action seeking a judgment that the noncompete was unenforceable, preempting any employer enforcement action. See N. James Turner, *Successfully Defending Employees in Noncompete and Trade Secret Litigation*, 78 Fla. Bar J. 43, 46 (April 2004) (suggesting that employees preempt employer litigation with declaratory judgment actions).

²⁰⁴ For a proposal to use severance to enhance the enforceability of restrictive covenants, see Greg T. Lemrich, Note, *Garden Leave: A Possible Solution to the Uncertain Enforceability of Restrictive Employment Covenants*, 102 Colum. L. Rev. 2291 (2002) (advocating the English practice of garden leave, a contract provision which allows the employer to place the employee on paid leave during which the employee is barred from competing with the employer).

²⁰⁵ *EarthWeb, Inc., v. Schlack*, 71 F. Supp. 2d 299, 311 (S.D.N.Y. 1999).