

THE MISAPPROPRIATION OF COMMERCIAL INFORMATION IN THE COMPUTER AGE

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The rapid proliferation of computers and their now wide-spread application in Canadian society poses difficult new questions for lawyers. The intangible information stored in computers routinely has critical value to businessmen and others, but is not easily brought within traditional legal doctrines and remedies. This article canvasses the legal protection which is presently available for the protection of such computer generated information and various possibilities for reform of the law. It argues that, in the context of information-based societies, adequate law reform will require much more than the application of simplistic proprietary remedies. Instead, it is argued, a proper appreciation of the many elements of the public interest which are legitimately at stake in fashioning new statutory solutions is required.

La prolifération rapide des ordinateurs et leur utilisation généralisée dans la société canadienne posent aux avocats des problèmes nouveaux et difficiles à résoudre. Les renseignements intangibles qui sont régulièrement emmagasinés dans la mémoire des ordinateurs ont une valeur incalculable pour les hommes d'affaires et autres, mais il est difficile de leur appliquer les principes de la loi et les réparations qu'elle prévoit. Dans cet article, l'auteur passe en revue la protection que donne actuellement la loi dans le domaine de l'information par ordinateurs et les réformes possibles du droit. Il avance que, dans les sociétés à base d'information, une réforme adéquate du droit exige beaucoup plus que l'application des mesures simplistes offertes par le droit des biens. Il est impératif, au contraire, selon lui, pour créer de nouvelles solutions législatives, d'apprécier à leur juste valeur les nombreux éléments d'intérêt public qui sont réellement en jeu.

Introduction

It is no accident that many of the great commercial lawyers on both sides of the Atlantic have been drawn both intellectually and spiritually to the arena of intellectual and industrial property law. Thus, for instance, a founder of English commercial law (Lord Mansfield) and a founder of English equity (Lord Thurlow) were both deeply involved in and fascinated by the controversies surrounding copyright in the works of leading eighteenth century literary figures, and the famous Statute of Anne.¹ In

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¹ See B. Kaplan, *An Unhurried View of Copyright* (1966); R. Grant Hammond, *The Origins of the Equitable Duty of Confidence* (1979), 8 *Anglo-American Law Rev.* 71.

the United States, judicial giants such as Cardozo, Brandeis, Frank, Friendly, Learned Hand and other great Second Circuit judges consistently delivered judgments marked both by compelling range and technical dexterity in this area of the law.²

These lawyers, and others like them, all possessed a fierce ideological commitment to what they perceived as the necessity of an open system of ideas and information to free, productive and growing societies. At the same time, they were astute enough to know that legal problems usually come in twos and to recognize that in any age there is always this hard question to be addressed: what is the best way to protect hard won, expensive technological know-how and other information of commercial value without sanctioning the anti-competitive protection of ideas or information? If an information producer cannot overcome the information externality problem,³ his return will be restricted to the competitive return. Innovative behaviour may then be inhibited. On the other hand, if artificial legal restrictions (usually in the form of relatively weak "property" rights) are placed on information to enable its "full" (or at least "fuller") benefits to be captured, unfortunate things may happen. For instance, monopolies of information or knowledge may be created or, even worse, there is the ever present danger that ideas themselves may be "appropriated".

Judges like Lord Thurlow struggled with this dilemma in the context of the introduction of the printing press and the dramatic change from protecting printers to protecting authors; the more recent of the above noted judges with the many difficult issues surrounding the dissemination of information in "new" print forms, radio and cable systems. These judges all brought to their task an acute perception of the enduring nature of the dilemma coupled with sufficient technical ability to make a serious attempt to hold the critical balance between production and dissemination of "good" information in the particular instance. Hence, these great lawyers would likely regard our present-day struggle to face the same dilemma in the context of the computer age with real empathy and some concern, because they at least would understand both the difficulty and the importance of the task.

The general subject area is a vast one. Sensible discussion traditionally assumes an ability to range across several difficult areas of law and

² Consider for instance, Justice Brandeis' dissent in *International News Service v. Associated Press* (1918), 248 U.S. 215, 39 Sup. Ct. Rep. 68; or Learned Hand J.'s consideration of short-lived designs in the fashion industry in *Cheney Bros. v. Doris Silk Corp.* (1929), 35 F. 2d 279 (C.A. 2nd Cir., 1929); or Frank J.'s consideration of whether the symbol "V-8" could be protected in *Standard Brands Inc. v. Smidler* (1945), 151 F. 2d 34 (C.A. 2nd Cir., 1945).

³ Information routinely has the characteristics of a public good. Therefore, persons who did not contribute to that good may obtain costless benefits. See generally Ejan MacKaay, *Economics of Information and Law* (1982).

some background in economics and public policy analysis. For instance, even minimal competence assumes a good working knowledge of the complex statutory monopolies, many aspects of contract law, economic torts, anti-combines and restrictive trade practices law, coupled with a sound appreciation of the difficult adjustment the present legal framework seeks to reach. It is extraordinarily difficult to "carve out" a piece of the whole in isolation from the "system" that the whole is supposed to support. Nevertheless, it may be useful to ask how stands this body of law in relation to the computer age, particularly as there is now a widespread popular perception that the law in this whole subject area is out of date.

Producers of valuable intangible information routinely claim that they are not receiving sufficient legal protection; that things like computer software, valuable customer lists, strategic business information and such like are all too easily subject to piracy from computers today, and that there should be stronger forms of legal protection.⁴ Information and know-how stored in a computer, it is argued, are routinely the most valuable "assets" of a business, and must be protected. Against that there are those who see darker—or at least more questionable—forces at work here, and who are troubled that what lies behind such claims, are attempts to protect "things" which should not be protected, or which do not really need artificial, inefficient, and anti-competitive legal protection to encourage their gestation. Even those who take a middle line and argue for "adequate" protection have great difficulty with where and how to draw the line.

I propose to tackle the subject by first outlining what I think ought to be the larger context of the debate. Second, I will then say something about the concept of "information" for legal purposes. Third, I want to ask the question, "How real is the problem of misappropriation of information from computers today"? Fourth, I will endeavor to sketch the various ways in which the law presently offers some protection for valuable information stored in a computer. Fifth, I will outline some current initiatives and possibilities with respect to reform of the existing law. Sixth, I will note at several points how developments in this subject area may have an impact upon or contribute to the development of commercial law in general.

I. Context: The Movement Into a Post-Industrial Economy

Economists and public policy analysts now routinely talk of "industrial" and "post-industrial" economies. The modes, rate and direction of tech-

⁴ This was the theme of almost all of the submissions received by the federal Department of Justice in its consultation with CIPS (Canadian Information Processing Society) preceeding the introduction of the Criminal Law Amendment Act 1982, and by the Sub-committee of the Standing Committee on Justice and Legal Affairs of the House of Commons in its hearings on Computer Crime. (See the Ninth Report of the Standing Committee, Supply and Services, Ottawa, June 1983).

nological change in the traditional industrial economy have been much studied,⁵ and there has been quite widespread agreement upon the determinants of technological change in such an economy.

The common sense *a priori* assumption that the rate of technological change in an industrial economy is closely related to the resources devoted by individuals, firms and governments has been substantially confirmed.⁶ Economic studies also confirmed the further common sense assumption that there is a high correlation between the amount a business enterprise spends on research and the expected profitability of the use of that research. Other factors commonly influencing technological change have been shown to be social demand; the particular market structure; the legal arrangements under which a particular industry operates; attitudes towards technological change by management, workers and public; and the way in which corporate, government and university-based research and development is organised and conducted.⁷ On the whole however, the bottom line on innovation was found to be dollars. A direct relationship between expenditure and technological advances was established. Moreover this model "produced"; it has, for instance, been demonstrated that "the advance of knowledge" contributed about forty per cent of the total increase in national income per person employed in the United States from the 1930's to the 1960's.⁸

Finally, certain other discrete characteristics of the industrial model should be noted. First, a number of studies confirmed that the necessary information for research and development tasks is acquired primarily from *within firms*, quite often by informal, oral means;⁹ second, the time lag from invention to innovation in "industrial" products is quite high (the average is ten to twenty years, but often as high as thirty years); third, the rate of diffusion of innovation is quite variable, but is higher when something other than durable goods is involved.¹⁰

⁵ Two widely read North American works have been the significant collection of papers under the title, *The Rate and Direction of Inventive Activity: Economic and Social Factors*, (Proceedings—Conference of the Universities, Princeton 1962); and E. Mansfield, *The Economics of Technological Change* (1968). See also C. Freeman, *The Economics of Industrial Innovation* (1974); W. Kingston, *The Political Economy of Innovation* (1984).

⁶ See, e.g., the various papers in *The Rate and Direction of Inventive Activity*, *ibid.*, footnote 5, reviewing several specific industries.

⁷ See Mansfield, *op. cit.*, footnote 5, p. 17 *et seq.*

⁸ E. Denison, *The Sources of Economic Growth in the United States* (1962).

⁹ See Mansfield, *op. cit.*, footnote 5, p. 126 *et seq.*

¹⁰ There has been much debate amongst economists on the rate of diffusion and whether it has got faster or slower in recent years. See, e.g., Mansfield, *ibid.*, p. 130, and also *Federal Incentives for Innovation: Hearings Before the Special Sub-Committee on Science, Technology and Commerce of the Senate Committee on Commerce* (93rd Cong. 1st Sess. 35 (1973)).

All of these things contributed, in the result, to a broad understanding of what was supposed to be happening in the United States and Canadian economies with respect to innovation. In short, the system, even if the details were subject to endless debate, made some kind of rational sense.

But now the terms "post industrial state" and "information economy" have entered common parlance. Businessmen, politicians and academics routinely use these new terms as buzz words which are, apparently, supposed to trigger off a *Zeitgeist*-like explanation of the complexities of our age. Sadly, the terms, like most shorthand expressions, no longer convey the carefully qualified explanations of their originators.¹¹ Nevertheless they do suggest, even at the level of jargon, something of the essential nature of the problem. In very general terms, the argument is that the various post-war developments in integrated circuitry have led to computing power being increasingly distributed throughout society. This in turn is said to be changing the way wealth is created. What economists call "structural" change is said to be occurring in the macro-economy. First, there is an increasing proportion of computer-related goods and services produced (as opposed to the products of traditional smokestack or resource industries), then a second wave of secondary industry follows in the form of applied activities (for example, word-processing, robotics and the like), and (at a third level) production of information itself becomes a wealth producing enterprise. At a very high level of abstraction, the suggestion is therefore made by some commentators, that contemporary North American societies are proceeding from a "mechanical" model to a "biological" model which may in itself, ultimately, be a more efficient form of human society.¹²

This broad new thesis has, of course, now attracted a vast literature. Sociologists, psychologists, communications theorists, economists and public policy analysts of all hues and persuasions seek to verify this phenomenon, measure it, comment on it or apply it in various ways. What seems to have emerged from those analyses is a substantial consensus amongst these several disciplines that the centrality of information *is*

¹¹ See, e.g., D. Bell, *The Coming of Post-Industrial Society* (1973); and *The Winding Passage* (1980); F. Machlup, *The Production and Distribution of Knowledge in the United States* (1972); M. Porat, *Communications Policy in an Information Society*, in G. Robinson (ed.), *Communications for Tomorrow: Policy Perspectives for the 1980s* (1978), p. 3.

¹² Seminar given by Peter F. Drucker, University of California, Irvine, October 1980, cited in John C. Lautsch, *Computers Communications and the Wealth of Nations: Some Theoretical and Policy Considerations about an Information Economy* (1983), 4 Computer L.J. 101, at p. 105. See also H. Olson, *Copyright and the National Economy*, [1984] 7 E.I.P.R. 179 (discussing a recent Swedish study indicating that copyright production ranks ahead of farming, forestry and fishing *taken together* in that country's economy).

an (perhaps "the") essential characteristic of our age, and that that characteristic is likely to become more rather than less important through (at least) the remainder of this century.¹³

The question might then be asked: What are we as "practical" lawyers supposed to do about all of this? How are we supposed to grasp what our colleagues in other disciplines tell us is a genuine discontinuity in the affairs of mankind? How do our existing legal arrangements fit (or not fit) into the new model? I think I discern three likely responses. The first school of thought—which I would label "Tribean",¹⁴—would want to resist any notion of technological determinism, and would insist rather that within an appropriate re-shaping of institutions and laws it might actually be possible to shape the future. Such a school of thought might want to go so far as controlling the kinds of technology we allow to develop and the sort of information it produces. Thus the issue of artificial intelligence ought, in this view, to be determined on an *ex ante* basis. More traditional lawyers would hesitate; without necessarily embracing the technological determinism of a McLuhan they would want to suggest that law is in large part a conservative, reactive and reductionist discipline. Such a viewpoint holds that lawyers are poor theorists; that they are at their best in identifying actual field problems and offering pragmatic, provisional, working answers. Still others would place themselves midway between these viewpoints and argue that somehow lawyers have to solve present problems whilst cocking a weather eye to the future, so far as it can be realistically discerned.

Whatever views individual lawyers may hold on such issues of general approach, certain things seem clear enough now to be worth noting. What has been termed "informatics" is already one of the three or four most important sectors of the Canadian and United States economies.¹⁵ The computer age turns on its ability to ingest and use vast amounts of information. That information is both commercially valuable and gives rise to enormous power in the hands of the possessors of it. This electronic information is increasingly becoming concentrated in the hands of government on one hand and large corporations on the other hand.¹⁶ Relatively speaking, publicly accessible data bases are a distant third.

¹³ See, e.g., H.I. Schiller, *Who Knows: Information in the Age of the Fortune 500* (1981).

¹⁴ I am thinking of Lawrence Tribe's various writings on the subject of environmental pollution, and his insistence that with an effort of will and mind, *ex ante* control through legal means ought to be possible. See, e.g., *Channelling Technology Through Law* (1973).

¹⁵ See Porat, *supra*, footnote 11; and, for Canada, S. Serafini and M. Andrieu, *The Information Revolution and its Implications for Canada* (1980); *Planning Now for An Information Society* (Science Council of Canada, Minister of Supply and Services, 1982).

¹⁶ In the 1970's A.T.&T.'s gross revenues surpassed the G.N.P. of 118 of the 145 nations in the U.N. (World Bank Atlas, World Bank, (1977), pp. 27-30). The Canadian

Some of the implications for lawyering are relatively obvious. Lawyers will increasingly have to face the issue of information entitlements in a variety of contexts, but the battle is most likely to be fought over information of commercial value. Already there are more than fifty Canadian federal statutes containing provisions relating to access to or use of information in a surprising variety of situations.¹⁷ Canadian lawyers will have to struggle again with the difficult issues that confronted earlier lawyers faced with technology induced revolutions—that there are important human values to be protected and difficult economic and social interests to be adjusted—if the worst excesses of the Industrial Revolution are not to be repeated in another form. The distinction between public and private rights is likely to become further blurred: what is involved in this subject area is just as much a matter of trade regulation as it is a matter of protection of individual rights and values.

From a methodological and technical standpoint the thinking of traditional common lawyers may well be challenged. For at least three hundred years the golden thread of principle in Anglo-American jurisprudence in this area has been to achieve a “right-balance” by conferring a tightly limited set of protections which are appropriate to the economic needs of the particular jurisdiction and the prevailing sense of justice. Broad doctrines of law such as “unfair competition” or the like have not been welcomed. The computer has, however, created a distinct dilemma. As many commentators have now noted, the legal lines that appeared distinct in other environments become blurred to the point of disappearing when the law is applied to information processing machines such as computers.¹⁸ The result has been, in some quarters, pressure for movement towards newer, more broad based concepts of an overarching character in an effort to “escape” the technology. The new machines, it is suggested, are making it impossible to think in traditional lawyerly concepts or language, and current initiatives to deal with these problems are inappropriate. Whether this is so or not is clearly a critical issue not just in this subject area but for the development of commercial law in general.

This leads perhaps to a final point which should be made in getting this subject in context. In the universities and research institutions there ought surely to be asked some searching questions about the kinds of techniques future lawyers are being exposed to in order to deal with these issues; whether present curricula adequately enable such questions to be

federal government is thought to have about 2.5 million magnetic tapes (holding the equivalent of 50 million cubic feet of paper records).

¹⁷ See Appendix A, Background Paper on Improper Interference with Computers and the Misappropriation of Commercial Information (Unpublished Research Paper, The Institute of Law Research and Reform, 1983).

¹⁸ See, e.g., D. M. Davidson (ed.), *Protecting Computer Software: A Comprehensive Analysis*, [1983] Arizona State L.J. 611.

confronted and whether legal academics are writing about the right kinds of things. As only one illustration, even those professors who have espoused the law and economics movement are still concerning themselves in far too many cases with analysis of contract and tort law against a back drop of neoclassical economics.¹⁹ Is it not time that we moved much further in the direction of the application of macro-economic theory to law? As only one instance, is it not obvious that freedom of information statutes may have an economic, as well as a political rationale and function?

II. The Concept of "Information" for Legal Purposes

The term "information" has, somewhat blindly, entered the legal lexicon in recent years. There are now many statutes which use the term without definition, as if it were self-evident, or seem to assume there is some accepted legal concept involved.²⁰ It is thus worth asking the question: is there any central concept being addressed here, or are we dealing with an amorphous or elastic term which means different things in different contexts?

It may be useful first to look at how other disciplines have answered this question. Communications theorists now commonly draw a distinction between "data" on the one hand and "knowledge" or "information" on the other hand. Data is thought of as "cognitive stimuli" that do not change us. Information, on this view, is what changes us.²¹ Engineers and scientists view information as a pattern.²² They claim that as a consequence of the second law of thermodynamics (which holds that the universe is headed unerringly towards chaos) information can *never* be copied exactly. For instance, a recording played back through a speaker *always* loses something to distortion. But even the scientists have to admit that digital information may somehow be an exception to their general theory. (The 0's and 1's in a computer programme *can* be precisely replicated.)

¹⁹ Some law students think so too. See S.D. Shadowen and K. Voytek, *Economic and Critical Analyses of the Law of Covenants Not to Compete* (1984), 72 *Georgetown L.J.* 1425 (referring to: "Modern law school professors, fresh from weekend crash courses, . . . [extolling] . . . the virtues of the price theory and the Coase theorem").

²⁰ For instance, the Official Secrets Act, R.S.C. 1970, c. 0-3, s. 5(1)(c) creates, *inter alia*, an offence where "information that . . . [might be useful] to a foreign power . . . is [procured and handed over to a foreign power]" and the Atomic Energy Control Act, R.S.C. 1970, c. A-19, s. 9(e) refers (without definition) to the power of keeping information secret.

²¹ See Stafford Baer, *Managing Modern Complexity*, in *The Management of Information and Knowledge* (a compilation of papers prepared for the Eleventh Meeting of the Panel on Science and Technology, Committee on Science and Astronautics, U.S. House of Representatives, U.S. Government Printing Office. (1968), pp. 41-62).

²² See James Sprowl, *Proprietary Rights in Programmed Computers: Looking Beyond the Hardware/Software Distinction for More Meaningful Ways of Characterizing Proprietary Interests in Digital Logic Systems*, [1983] *Arizona State L.J.* 785, at p. 787.

Economists have also had great difficulty with the notion of information and its relationship to even extended definitions of property. As I have noted elsewhere, economists routinely refer to some or all of these difficulties in treating information as property:²³

First, sole ownership is vastly complicated in the case of information. The act of theft is often impossible to detect and difficult to prove. A piece of information can be "owned" by two people at the same time without any denial of the conventional benefits of ownership. Second, some kinds of information can be infinitely multiplied at low cost. Third, information generally does not depreciate with use and some kinds of information of a theoretical character actually inflate in value with usage. Fourth, unused information is, in general, of no use but the moment information is used it reveals both its existence and content and may actually enter what is conventionally referred to as the "public domain". Fifth, the creation of information is routinely a joint activity and apportionment of "creativity" is then rendered extraordinarily difficult. Sixth, the creation of technology and information is tending to move on shorter frequencies: commercial advantage is today inextricably intertwined with innovation. Longer-frequency functional vehicles such as the statutory monopolies, are becoming increasingly inapt for this pronounced shift in commercial timeframes. Seventh, the volume of available information has reached overwhelming proportions. Classical economics assumes the possession of complete information about the availability of different goods, estimation of costs and maximization of utility preferences. But more information is not complete information. The disabilities of the individual in relation to the sum of knowledge become progressively more severe as the sum increases. Eight, in economic terms, public goods are separated from private goods by a principle of exclusion. Although that principle can still apply to information it is routinely invoked only at a considerable cost.

Lawyers have, in conceptual terms, basically responded to information issues in one of two ways. Either they have said that the particular kind of relationship between parties is such that one of the parties was required to act in a particular way (which, whether by accident or design, circumvents the definitional problem) or they have tried to reify information; to turn it into a commodity or a thing. This latter mental approach is sometimes justified in economic-like terms by asserting that this "thing" is something of value, or by saying that it is in fact treated as an asset of businessmen and hence should be recognized as such,²⁴ or even, as it was once put, that the "virtue" of the thing is lost once someone else has had access to it.²⁵

None of these approaches is entirely satisfactory when applied to information in a computer. Contemporary lawyers have, for instance,

²³ R. Grant Hammond, *Quantum Physics, Econometric Models and Property Rights to Information* (1981), 27 McGill L.J. 47, at p. 54. See also MacKaay, *op. cit.*, footnote 3, p. 3 who suggests: "Information in most of if not all of its connotations seems to rest upon the notion of *selection power*." (Italics in original).

²⁴ See, e.g., D.F. Libling, *The Concept of Property: Property in Intangibles* (1978), 94 Law Q. Rev. 103; S. Ricketson, *Confidential Information—A New Proprietary Interest* (1) (1977-78), 11 Melbourne Univ. Law Rev. 223.

²⁵ Comment: *Oxford v. Moss*, [1979] Crim. L. Rev. 119, at p. 121.

been greatly troubled as to how they should categorize computer software for legal purposes. The "chameleon character" of this "object" has caused endless problems in drafting legislation and deciding cases, principally because it does not really fit traditional lawyers' conceptions of either tangible or intangible objects. As one group of experienced legal practitioners in this field have recently observed:²⁶

[Software undergoes] a transition from a tangible to an intangible or back to a tangible object depending on how it is used or how it is being looked at. While it must be tangible to be used by a computer, the particular tangible object on which it resides continually changes. It may first be on a printout. It may be transferred into computer memory. It may then be transferred onto external storage, such as a floppy disc. It may then be moved from a development-computer to a customer's computer and placed back inside the internal memory of the new computer. From there it may be stored on an external fixed disc memory system. It may also be "down-loaded" from one computer to another by data transmission, electrically, optically or electromagnetically. In all these situations, it never remains static. It is not moved in one piece, but bit by bit, moving in and out of various parts of the computer. It is stored and restored on memory systems, and is usually stored and restored in different parts of the memory systems, not necessarily in the same place every time. Although it always must have a tangible residence, it need not be the same residence.

On the other hand, it is difficult to conclude from this that software is intangible. A computer cannot read minds. Software is much more specific than other intangibles. It shares its puzzling nature with other magnetic information, with optically stored information, and with mechanically stored information on punch cards, paper tape, phonograph records, and RCA's capacitance video disk system.

Is there then, some better approach to the term "information", which would make more functional sense? Some time ago I suggested that "[i]n the . . . movement to a post-industrial world, the distance that both lawyers and economists have to travel in their thinking may be analogous to the shift from Newtonian physics to quantum physics".²⁷ What triggered that thought was a recollection of the intellectual dilemma theoretical physicists had to face earlier this century in learning to adjust to their own equivalent of realist jurisprudence, namely a consideration of what is observed, rather than trying to force "the facts" into *a priori* categories at a formal level of analysis. Interestingly enough, much the same thought appears more recently to have struck some United States commentators, who have expressed the matter thus:²⁸

Law is a conservative doctrine, and has barely moved into the Newtonian age of scientific understanding. Perhaps now is the time for it to move into the era of Quantum Mechanics. The ontological problems of software are similar to the prob-

²⁶ Davidson, *op. cit.*, footnote 18, p. 776. And see Rogers J. in *Toby Constructions Products Pty. Ltd. v. Computer Bar Sales Ltd.* (1983), 50 A.L.R. 684 (N.S.W.S.C.) (questioning whether computer software *per se* is a "sale of goods" within the legislation of the same name).

²⁷ Hammond, *op. cit.*, footnote 23, p. 70.

²⁸ Davidson, *loc. cit.*, footnote 18, pp. 776-777.

lems faced early in this century by physicists studying the behaviour of light and of electrons, protons and other particles. At times these items exhibited the characteristic of hard objects: at times, they exhibited the characteristics of waves spread over an area of space-time. This is puzzling only if one remains in a classical world. In a quantum world, these items are what they are. They are neither particles nor waves . . .

Arguably, software should be treated the same way. It is neither tangible nor intangible, but something else. Since the "something else" is extremely specific in nature, it seems suitable for being considered a "good" under the Uniform Commercial Code. Since it is hard to quantify its value, perhaps it should be considered intangible for tax purposes. And so on.

The learning, I think, is this. Information is neither a static nor even a relative term for legal purposes. Information is what it is. That is, there are many different kinds of information and people want it for many different purposes. Who gets it (or should get it) and how and why must necessarily be a matter of hard analysis in each "situation" and not a matter of mere formalism based on pre-conceived concepts drawn from tort or contract or property or criminal law. That hard analysis should however be conducted against the general perception that for a variety of sociological, psychological, economic and other reasons, an open system is preferable to a closed one. Thus, if information is to be restricted, there must be good and sufficient justification in the particular case.

If such a viewpoint is accepted, it has some implications for the modes of development of legal remedies in this subject area. Because computer information is not readily fitted into existing jurisprudential categories, the subject area may have to fall to legislation. This may not be a bad thing, since the issues involved are of the kind that raise critical questions of public policy. If this thesis is anything like correct, the bottom line is that we could expect to see even more information entitlement statutes of various kinds over the next quarter of a century rather than more judicial or market regulation. On the other hand, if the forces presently operating in favor of less government regulation prevail, it seems possible that the analog of anti-trust or anti-combine statutes will have to be developed to counteract abuse of power in relation to information.

III. *Incidence*

How widespread is misappropriation of information from computers? If we put to one side well publicized specific incidents, such as *R. v. McLaughlin*²⁹ in Alberta and *R. v. Stewart*³⁰ in Ontario, or the Hitachi-IBM incident³¹ in California, and look instead to more systematic empirical studies, certain difficulties become apparent. There is no single study

²⁹ [1980] 2 S.C.R. 331, (1980), 18 C.R. (3d) 339.

³⁰ (1983), 149 D.L.R. (3d) 583, 5 C.C.C. (3d) 481, 35 C.R. (3d) 105 (Ont. C.A.).

³¹ See, *How IBM Stung Hitachi*, *Fortune*, March 7, 1983, p. 50.

which is accepted as definitive in the United States or Canada. The Stanford Research Institute has sponsored a series of studies in the area of computer abuse, but the results of those studies have engendered considerable controversy.³² The reason is that the use of the word "abuse" in those studies catches a very wide spectrum of activities ranging from merely unauthorized access to a computer all the way to the use of a computer to commit a crime.

Nevertheless the most recent study by a Task Force of the American Bar Association does give some idea of the extent of the problem.³³ The responses to that survey represented a broad range of private industry and a substantial number of federal, state and local government agencies. The survey identified widespread computer abuse in the form of the use of computers to steal tangible or intangible assets; destruction or alteration of data; the use of computers to embezzle funds; destruction or alteration of software; and the use of computers to defraud consumers, investors or users. The respondents suggested the problem was "of equal or greater importance" than many other kinds of white collar crime, including anti-trust violations, counterfeiting, consumer fraud, bank fraud and embezzlement, securities fraud and tax fraud. Over twenty-five per cent of the survey respondents reported "non-verifiable losses due to computer crime during the last twelve months". The total annual losses actually reported by respondents fell somewhere between \$145 million and \$730 million. The most frequently mentioned incidents were those involving:

- (1) Unauthorized use of business computers for personal activities;
- (2) Theft of computer software;
- (3) Theft of tangible or intangible assets by means of a computer;
- (4) Theft of computer hardware;
- (5) Destruction or alteration of software and/or data.

Some proportion of the above described activities would also attract civil consequences under the existing law and here again, although there is no study accepted as being definitive, some idea of the importance now attached to computerized business information can be gained from a perusal of the civil case law indexes. For instance, even a cursory survey of the index to the Canadian Patent Reporter (which covers a much wider

³² D. Parker, S. Nycum and S. Oura, *Computer Abuse* (S.R.I. Rep. 1973); D. Parker, *Computer Abuse Assessment* (S.R.I. Rep. 1975); D. Parker, *Computer Abuse: Perpetrators and Vulnerabilities of Computer Systems* (S.R.I. Rep. 1975); but cf. General Accounting Office, *Computer Related Crimes in Federal Programs* (1976); J. Taber, *A Survey of Computer Crime Studies* (1980), 2 *Computer L.J.* 275. See also Robinson, *Law Outdistanced by Technology*, *The Financial Post*, 30 May 1981, p. 24, Col. 3; Ontario Provincial Police, *Computer Crime and Security Survey* (1981), pp. 80-81.

³³ Report on Computer Crime (1984).

field than just patent cases) shows some increase in the number of what might be termed "business information" cases being reported.

Practically every study which has been conducted in this subject area has reached a similar sort of conclusion: anecdotal evidence, the incidence of cases in the law reports, and such empirical studies as exist all confirm the common sense conclusion that misappropriation of information of one kind and another from computers does exist and that the incidence of it appears to be increasing, though the precise figures cannot be definitely established.

IV. *The Existing Law*

A. *Criminal Law*

Although this article is primarily concerned with the civil law, some short comments under this head may be useful for two reasons. First, something of a business lobby for "stronger" criminal law has recently emerged and secondly, the conceptual problems involved in an application of the criminal law in this area are not unlike those involved in the civil law, and may offer some insights.

Traditionally, the criminal law has offered only peripheral protection to intangible objects and information. If computer hardware is taken, or somebody has to break into a room to get to the computer, or takes and uses other equipment connected with operations of the computer, then a variety of traditional criminal offences may be committed. Where the information (or at least the form in which it is presented) is protected by copyright then criminal offences may also be committed under the Copyright Act.³⁴ As a general proposition however, it was widely accepted that the law does not criminally proscribe the taking of even confidential information. True, there were some relatively unusual statutory exemptions (chiefly directed to national security) but the idea that the criminal law could and should be brought into play in the area of commercial or even social information had not been seriously mooted.

The recent decision of the Ontario Court of Appeal in *R. v. Stewart*,³⁵ against this background, can only be viewed as a quite radical change in the jurisprudence. In *Stewart*, a private investigator counselled the copying of information from a computer printout containing the names and addresses of potential members of a bargaining unit against the expressed wishes of the possessors of that information, with the objective of supplying that information to third parties. Krever J. held that even confidential information is not "property" for the purposes of the general theft provis-

³⁴ R.S.C. 1970, c. C-30.

³⁵ *Supra*, footnote 30; see also *R. v. Kirkwood* (1983), 42 O.R. (2d) 65 (Ont. C.A.).

ions of the Criminal Code;³⁶ the Ontario Court of Appeal (by a majority) held that it is. The decision has been appealed.

Since I am addressing the possibilities for development of the law, it is worth making some comments here on *Stewart*. The case did not occur in isolation. Crown prosecutors in Ontario have reported increasing difficulty in dealing with incidents like that in *Stewart*.³⁷ They report a general feeling (in Crown offices) that such conduct is reprehensible and ought to be stopped. Normally, the Crown would prefer to stay clear of such incidents and leave parties to their civil remedies. In many cases however, it is far from clear whether there is a civil remedy, and under pressure from commercial interests the Crown has resorted to laying charges in some cases. The difficulty the Crown then faces is that it is difficult to "shoe-horn" these sort of incidents into the Criminal Code. The *Stewart* formula has accordingly become (at least in the eyes of the Crown) a useful "sweeper" device for nabbing electronic interlopers. In fairness to those Crown counsel who have thought the matter through in more detail, this tactic is seen as only a useful "holding device" until the civil law "gets its act" together. These counsel are only too well aware that cases in this area are often complex, involve a level of technical understanding which is not presently readily available to the Crown, and raise all sorts of procedural problems for the criminal law (such as keeping the information secret during the course of a public trial). Moreover, the attitude of commercial concerns to such prosecutions is at best ambivalent. While some companies have distinct, overt, prosecution policies, most companies are reluctant to have any word get out that their own internal security has been breached, because this signals the value of the information in the marketplace, and in contrast to civil proceedings, control of the whole proceedings are lost to the Crown. Business enterprises may find themselves with their slip showing and do not welcome the prospect.³⁸

In general terms, this has also been the American experience. For some years now a number of states have had criminal provisions in state statutes dealing with computer crime and theft of trade secrets but surprisingly few prosecutions have resulted. There have been far more prosecutions (usually under general code type provisions) where a computer has been used as the *instrument* of crime (usually to effect a fraud).³⁹

³⁶ R.S.C. 1970, c. C-34.

³⁷ I am grateful to Lloyd Budzinsky, Q.C. of the Ontario Bar (who prosecuted *Stewart* at the trial level) for information on the difficulties faced by the Crown.

³⁸ For a recent prosecution in the oil industry see *Ex-worker acquitted of stealing software*, *Globe and Mail*, November 30, 1984, p. 12 (Theft of Computer Software).

³⁹ See generally E. Kitch, *The Law and Economics of Rights in Valuable Information* (1980), 9 *J. Legal Studies* 683, particularly at pp. 711 *et seq.* (Suggesting that information is difficult to steal and has a high depreciation rate; and that markets for stolen information are difficult to organize).

These practical considerations aside, there is the question of principle. Does the *Stewart* formula, or something like it, make sense in our criminal law? The issues here are complex and have been under consideration by the federal Department of Justice for some little time now. In general, the philosophy of criminal law reform in Canada is now to use the criminal law only as an instrument of last resort.⁴⁰ *Stewart* has been strongly criticized by all the commentators who have analysed it.⁴¹ The criticisms include the fact that *Stewart* is such an abrupt departure from the existing jurisprudence; that it deals inadequately with the conceptual issues involved in treating information as "property"; that it fails adequately to address the possible consequences of the holding; that it ignores an adjustment of the kinds of interests that have to be taken into account in resolving information entitlements; that the civil law is better suited to this task; that it misunderstood copyright law; and finally, that *Stewart* actually proceeded in a contrary direction to the known intentions of the (then) incumbent federal administration. As a result of the deliberations of the Sub-Committee on Computer Crime and the work carried out by the Federal Department of Justice in preparation of the Criminal Law Amendment Act, 1983,⁴² that administration had explicitly rejected a *Stewart*-type approach. The administration introduced into the House of Commons in that proposal, amendments to the Criminal Code which would have created two new offences (namely unauthorized interference with a computer, and unauthorized destruction of data within a computer), but it was felt that pending further development of civil remedies the criminal law should not, in the meantime, be developed further.

Presumably, if *Stewart* is upheld in the Supreme Court, the federal administration will have to determine whether *Stewart* should be left to stand as a "sweeper" device in the Criminal Code (in which case reliance will have to be placed on the good judgment and restraint of prosecuting counsel) or whether to overturn the decision by legislative amendments.

B. Civil Law

(1) Statutory Monopolies

Patent law does not, and is unlikely ever to, protect information *per se*. A patent is a form of limited monopoly granted by the state to the

⁴⁰ This philosophy was expressed by the Law Reform Commission of Canada in *The Criminal Law in Canadian Society* (1982), and *Limits of Criminal Law* (L.R.C., W.P. No. 10) and was overtly adopted by the last Liberal federal administration.

⁴¹ See R. Grant Hammond, *Theft of Information* (1984), 100 *Law Q. Rev.* 252; D. Magnusson, *Note* (1983), 35 *C.R.* (3d) 129; W. Hayhurst, *Note* (1983), 5 *E.I.P.R.* 261; C. Webber, *Computer Crime or Jay-walking on the Electronic Highway* (1983), 26 *Crim. Law Q.* 217; P. Amos, *Note* (1984), 1 *Intellectual Property Journal* 77; R. Grant Hammond, *Electronic Crime in Canadian Courts* (1986), 6 *Oxford J. Legal Studies* 145.

⁴² Subsequently enacted in amended form as the Criminal Law Amendment Act 1984, S.C. 1985, c. 19.

inventor of "any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement [in any of those things]".⁴³ Three rationales are commonly suggested for patent protection: first, it offers an incentive to put in the work required to *produce* an invention; second, it offers an incentive to find a way to *utilise* the invention; third, it offers an incentive to *disclose* the invention, which in turn is supposed to facilitate earlier dissemination of the relevant information and give rise to more inventions. Patent statutes are usually contrasted with the practices of the medieval guilds, which were thought to have retarded technological and economic growth.

It is a cardinal principle of patent law, at least as presently conceived, that ideas and scientific principles as such are not patentable.⁴⁴ This principle is clearly supportable in abstract terms: an Einstein should not be able to get a state supported monopoly on the theory of relativity. This principle however has given rise to some difficulties in the case of computer software. Computer programmes are based upon algorithms—abstract mathematical formulas—and it is in large part this factor which has stood in the way of patent law gaining a foothold in this area. Other factors include the high cost, delay and bureaucratic entanglements involved in procuring a patent for what is (in the case of a computer programme) often a short life product.

Copyright law on the other hand has enjoyed a resurgence of importance in this subject area. The paradigmatic manner of protecting computer information today is by a mixture of trade secret, contract and copyright protection, with these various modalities being employed at different parts of the process. Copyright extends to every "original literary, dramatic, musical and artistic work".⁴⁵ However only the form of expression of the work is protected. The ideas, concepts or subject matter are not. However good or valuable an idea is, it becomes public property once it is publically disclosed. "Originality" for the purposes of the Copyright Act does not refer to the expression of original thought, but to the manner in which it is expressed. Under Canadian law, copyright protection is not contingent upon registration of the work (as in some systems) but attaches automatically upon creation of the work. The protected work must assume some fixed or permanent form. Under the law as it stands if a "work" attracts copyright, the owner of the copyright is entitled to the sole right of reproduction for a period based on the life of the author plus fifty years. Whereas a patent (if one could be obtained) is an absolute monopoly, copyright is not. Copyright does not prohibit independent creation of the same work.

⁴³ Patent Act, R.S.C. 1970, P-4, s. 2 (definition of "invention").

⁴⁴ This principle has statutory force in Canada; see Patent Act, s. 28(3).

⁴⁵ Copyright Act, *supra*, footnote 34, s. 4(1).

When discussing copyright in relation to computers it is important to appreciate that there may be two broad classes of "information" involved. There is the information which makes the machine itself "run" and the information which the machine ultimately produces as a result of the material put into it, processed, and then regurgitated in one form or another.

There has been intense debate for the last decade or so as to whether a computer programme as such is or should be copyrightable. In Canada the fundamental difficulty was whether, as a matter of law, a computer programme comes within the words "original literary . . . [or] artistic work . . .". The Copyright Act defines a literary work to include "maps, charts, plans, tables, and compilations".⁴⁶ Various arguments were put up for the proposition that a programme as such was not protectable, the most obvious being that a computer programme is not a "literary work". The courts have not had great difficulty in rejecting that argument. The programme has been held to be an expression of thought, in an original, albeit alpha numeric form.⁴⁷ Moreover, there is good authority for the proposition that the word "literary" does not mean the same thing as "literature". Things like a meaningless list of words in a telegraph code have long been protected by copyright.⁴⁸

A more serious argument against copyright protection of computer programmes was that in its object code form the computer programme is merely part of the machine and cannot be classified as a "literary work". It was (in part) the belief that this kind of programme was not within the Copyright Act that led to the development of the so-called "clone" industry and the proliferation of Apple and IBM compatible microcomputers. In the result, courts in Australia, the United States and Canada have struck down this argument and have not found the suggestion that the programme be classified as part of the machine itself convincing.⁴⁹ They have seen the programme more on the analogy of a cassette tape in a cassette recorder and the fact that the programme itself does not communicate to human beings has not been fatal. As an Australian judge noted, "[c]opyright is essentially concerned with the expression of ideas in composition or language rather than with the function or purpose of those

⁴⁶ *Ibid.*, s. 2.

⁴⁷ See *IBM v. Ordinateurs Spirales Inc.* (1984), 2 C.I.P.R. 56, 12 D.L.R. (4th) 351 (F.C.T.D.), in which the relevant Commonwealth authorities are canvassed. See also *Apple Computer, Inc. v. Computermart Inc.* (1983), 75 C.P.R. (2d) 26 (Ont. H.C.); *Spacefile Ltd. v. Smart Computing Systems Ltd.* (1983), 75 C.P.R. (2d) 281 (Ont. H.C.).

⁴⁸ *Anderson (D.P.) and Co. Ltd. v. The Lieber Co.*, [1917] 2 K.B. 469 (K.B.D.).

⁴⁹ The authorities are reviewed in the *IBM* decision, *supra*, footnote 47. For the U.S. position see E. McKenzie, *Computer Programs and Copyright Law: the Object Code Controversy* (1983), 11 San Fernando Valley Law Rev. 1.

ideas".⁵⁰ Thus even newer technologies (for example, "firmware" where the programme is "burned" into a chip) will still likely retain copyright protection.

The fact that the courts have taken this step is critically important within the computer industry; parasitic companies producing "work alike" machines can now expect to be relentlessly pursued. Apple and IBM have in fact now gone on to the offensive with a number of lawsuits.⁵¹ Nevertheless, interesting questions remain for students of antitrust and economic regulation of business. The work alikes or clones are significantly cheaper than the "original" product. The pace of development of the industry has been such that it is almost impossible to get a handle on whether the original developers are, in economic terms, getting too much or too little in the way of a return on their original investment.

As to the vast array of printed material surrounding the operation of the computer in the form of manuals and the like, this of course is protected by copyright.

Notwithstanding this general result, all is not resolved in this area. The doubt about whether computer programmes in machine readable form came within the Copyright Act was, for almost a decade, a matter of real doubt and serious concern within the industry. However, even assuming that final appellate courts do not reverse the most recent holdings, the full range of rights and remedies which apply under the present statute are not necessarily appropriate for this form of technology. I will return to this topic in a later section.

(2) *Contract*

In theory at least contract offers an attractive vehicle for information transactions. As between A and B the parties can define with whatever degree of precision commends itself to them the precise terms on which B may acquire and use A's "information". The only concern in legal terms is then the extent to which the law will enforce that bargain. Various kinds of user restrictions have been upheld so long as they do not offend the traditional law associated with restrictive covenants or other specific statutes (such as those aimed at price-fixing). Within the computer industry, contract is extensively employed as a control device both with respect to outgoing products and with respect to personnel. Thus, a product may

⁵⁰ *Apple Computer Inc. v. Computer Edge Pty. Ltd.*, [1984] 53 A.L.R. 225, at p. 260 per Lockart J. (Fed. Ct. Aust., Full Court); see also J. Lahore, *The Apple Computer Case and New Legislation in Australia* (1984), 6 E.I.P.R. 196.

⁵¹ About a week after the IBM decision, Apple Canada announced that it intended to pursue 38 companies and individuals with respect to alleged copyright violations of Apple's Autostart ROM and Applesoft programmes. (See *Globe and Mail*, Toronto, July 4, 1983, B1).

be sold in a sealed jacket under an explicit term that its use purports to be restricted, or, in the case of personnel, much of the time of corporate counsel is taken up with drafting and trying to enforce clauses designed to protect a firm's intellectual capital and restrict the ability of the employee to utilize what that employee perceives as his own human capital.

These disputes not infrequently end up in the courts where they are disposed of in accordance with the classical litany: the restriction must be reasonable both in the public interest and in the particular case. There are however two issues which merit serious attention by contract scholars. First, it is far from clear whether these restrictions are a good thing or a bad thing. Real life experience in some high technology jurisdictions confirms that if these clauses are done away with altogether, the sky does not fall.⁵² The second difficulty is no less controversial and relates to a basic premise of existing contract law: that somehow lawyers can draw a sensible distinction between generalized knowledge and specialized knowledge. The common law has traditionally insisted such a distinction be made. Thus, it is said that an employee can take away with him (as a kind of human capital) those things which are somehow part of the stock and trade of those like him. On the other hand there is something called "specialized knowledge" which has been generated for his employer and forms part of the "firm capital". The problem is that in an age of specialization most of the personnel employed in the computer industry are becoming more and more specialized and the distinction (which was always difficult to apply in any given case) has been rendered almost meaningless, at least in this industry.⁵³ The result is a question: how long can contract law continue to maintain this fiction?

(3) *Equity*

There are three areas of equity jurisprudence which may potentially have some application to the protection of computerized information. First, there is the traditional equitable doctrine of breach of confidence. The law is that quite independent of contract, if two parties stand in a confidential relationship and information is imparted in confidence and, in breach of that expectation of confidence, one party discloses or uses such confidential information, that disclosure or use may be actionable. Thus for instance, confidential discussions between two parties for the purpose of producing a new computer programme *may* be protected, even if no match is eventually consummated by the participants. The principles upon which relief will be granted in this area of the law are now relatively well settled. The principle difficulty is that the information must be

⁵² See, e.g., California Business and Professional Code, para. 16600; Michigan Comp. Laws Ann., paras. 445.761 and 445.766. But *quaere*: Does the scope of fiduciary liability expand to fill the vacuum?

⁵³ I am grateful to George Fisk, of Gowling and Henderson, Ottawa, who first suggested this issue to me.

"confidential". Once it has reached the "public domain" it can no longer be protected under this head (although there is authority for the proposition that the discloser may in some circumstances be prevented from gaining a commercial head start).⁵⁴

The second broad area of equity jurisprudence which may be applicable is that relating to fiduciaries. Persons who occupy positions of particular trust owe, in law, higher allegiance to the persons they "represent" than those which arise under an employee's general duty of loyalty. The traditional law is that the incidents which the law attaches to the fiduciary relationship are severe: fiduciaries are not entitled to put themselves in a position where their duty and personal interests may conflict, and this includes of course the duty not to traffic in information gained in a fiduciary capacity. The classical authorities hold the fiduciary to an absolute standard and even where the fiduciary has knowingly rejected the use of the benefit the information represents, the fiduciary may still be held liable to account to the beneficiary, though Canadian courts have shown some ambivalence on this issue.⁵⁵

There are some problems in applying fiduciary law to computer information. First, it is obvious enough now that the categories of fiduciaries are, like those of negligence, never closed. However, once relatively obvious situations such as that of trustees and company directors are put to one side, there remains a good deal of room for argument as to how far "lesser" officials and employees may be subject to fiduciary duties. Many persons who have access to computerized information would not normally be considered to occupy a fiduciary position.⁵⁶ Second, when the breach of a fiduciary duty relates to "information" it raises very difficult remedial problems. It is precisely in the area of remedies that the issue of whether information is "property" has come to a head, as witness the differences of opinion between the various members of the House of Lords in *Boardman v. Phipps*.⁵⁷ Thus, fiduciary law may give

⁵⁴ For a review of the Canadian and Commonwealth authorities, see D. Vaver, *Civil Liability for Taking or Using Trade Secrets in Canada* (1981), 5 C.B.L.J. 253. See also Allison Coleman, *Faccenda Chicken Ltd. v. Fowler: A New Classification of Confidential Information?* (1984), 6 E.I.P.R. 173.

⁵⁵ There is a prolific professional literature on this subject. See, *inter alia*, G. Jones, *Unjust Enrichment and the Fiduciary's Duty of Loyalty* (1968), 84 Law Q. Rev. 472; S. Beck, *The Saga of Peso Silver Mines: Corporate Opportunity Reconsidered* (1971), 49 Can. Bar Rev. 80; J. Shepherd, *Towards a Unified Concept of Fiduciary Relationships* (1981), 97 Law Q. Rev. 51.

⁵⁶ For a case where quite senior employees were held not to be "key employees" see *Kent Drugs Ltd. v. Kronson* (1983), 78 C.P.R. (2d) 260 (Man. C.A.).

⁵⁷ [1967] 2 A.C. 46, [1966] 3 All E.R. 721 (H.L.). In Canada under the "fairness" doctrine developed in *Alberts v. Mountjoy* (1977), 79 D.L.R. (3d) 108 (Ont. H.C.) a confusing line of cases has emerged. See P. Atkinson and R. Spence, *Fiduciary Duties Owed by Departing Employees—The Emerging 'Unfairness' Principle* (1983-84), 8 C.B.L.J. 501.

rise to an effective remedy against some misappropriations of information but even then the results this head of liability will produce depend very much upon who can sue, and the application of a very difficult body of remedial law.

A third possibility, at least in Canadian equity jurisprudence, relates to the doctrine of unjust enrichment. In one of the more widely cited judgments in this subject area Goff J. suggested that this doctrine:⁵⁸

. . . presupposes three things: (1) receipt by the defendant of a benefit, (2) at the plaintiff's expense, (3) in such circumstances that it would be unjust to allow the defendant to retain the benefit.

The Bar does not seem to have attempted to utilize this doctrine in relation to cases of misappropriation of computer information. It is not hard to see why. Even assuming a benefit has been received by a defendant, there is no present Canadian authority for the proposition that taking or using computer information without authority is within principles two or three. Moreover the suggested "principles" do not tell us why, and when, the taking of such information "is at the plaintiff's expense", or why it is unjust that a defendant should be allowed to retain that benefit. The conclusion would seem to be that however unjust enrichment is conceived, its present parameters are too uncertain for it to be pressed with real confidence in this subject area. Moreover, despite academic interest, case law development of the law of unjust enrichment has been somewhat sporadic and slow.

(4) Tort

Anglo-Canadian tort law never adopted *prima facie* tort theory, which holds that *any* underlying harm which one person inflicts on another person is actionable in the absence of lawful justification. Instead, it recognized certain discrete "nominate torts" each of which is directed to the upholding of a quite particularized concern or interest. Hence Anglo-Canadian law has never developed any general tortious doctrine which might be applied to the improper misappropriation of information.⁵⁹

One tort which some commentators thought held promise related to the nominate tort of passing off. It is actionable to use a name or a "get-up" in a way which is calculated to cause confusion with the goods of a particular trader. The classical authorities suggest the tort protects a proprietary right in the reputation or good will of a product of which the

⁵⁸ *B.P. Exploration Co. v. Hunt (No. 2)*, [1979] 1 W.L.R. 783, at p. 839 (Q.B.D.).

⁵⁹ Neither has any other Commonwealth jurisdiction. In New Zealand an argument that the misappropriation of information could be unlawful means for the purposes of the innominate tort of unlawful interference in economic relations was recently rejected by the Court of Appeal. See Brendan Brown, *Van Camp Chocolates Ltd. v. Aulsebrooks Ltd.*: Breach of Confidence, the Rights of Licensees of Know-how and the Innominate Tort (1984), 6 E.I.P.R. 170.

name, mark or get-up is the badge or vehicle.⁶⁰ Classically the objective is said to be to protect the public from being confused as to whose product is whose. However there is an alternative argument. Passing off could be considered as a sub-species of a more generalized category of tortious behaviour called "unfair competition". This latter argument has commended itself to several Commonwealth judges in recent years,⁶¹ and hence it was possible that the tort was undergoing evolutionary change. That possibility seems now to be unlikely. Both in England and Canada the tort has recently been considered by the final appellate courts of those jurisdictions and the classical position seems to have been re-affirmed.⁶²

Even assuming an appellate court could now be persuaded to tackle this broad issue, there are two difficulties with the general concept. First, unfair competition as a legal concept rests upon uncertain premises. One is that substandard business morality can somehow be identified and attacked. Another premise is economic. If one person is entitled to take advantage of the work or labour of another without paying appropriate compensation for it, then "good" economic behaviour (industry and creativity) will be discouraged. The second difficulty is that even in those jurisdictions which have a generalized tortious concept of unfair competition it is doubtful if the concept has had much of an impact. For instance in the United States this doctrine, for a variety of reasons, is now relegated very much to the status of a legal argument of last resort.⁶³

In Canada an attempt was made in a circuitous manner to introduce a cause of action for unfair competition through the Federal Trade Marks Act.⁶⁴ Section 7(e) contains a provision proscribing "[the doing of] any other act or [the adoption of] any other business practice contrary to honest industrial or commercial usage in Canada". This statutory tort lay dormant for many years and was not relied upon in practice. There was always doubt about the constitutional validity of the provision and in *McDonald v. Vapor Canada Ltd.*,⁶⁵ it was finally held unconstitutional by the Supreme Court of Canada. Although there is a school of thought which holds that provided this provision was recast in the form of a

⁶⁰ See, e.g., *Reddaway v. Banham*, [1896] A.C. 199 (H.L.); *A.G. Spalding & Bros. v. A.W. Gamage Ltd.* (1915), 32 R.P.C. 273, at p. 284 (H.L.) (per Lord Parker L.C.J.).

⁶¹ See, e.g., *Colgate-Palmolive Ltd. v. Patron*, [1978] R.P.C. 635 (P.C.).

⁶² *Erven Warnink v. J. Townend & Sons*, [1980] R.P.C. 31, [1979] 2 All E.R. 927 (H.L.); *Seiko Time Canada Ltd. v. Consumers Distributing Co. Ltd.*, [1984] 1 S.C.R. 583, (1984), 54 N.R. 161.

⁶³ Although *International News Service v. Associated Press*, 248 U.S. 215, 39 Sup. Ct. Rep. 68 (1918), is still regarded as a fundamental teaching case, even in Canada, the practical impact of the decision was all but destroyed by the *Erie* doctrine (*Erie Railroad Co. v. Tompkins*, 304 U.S. 64 (1938)). Occasionally *INS* still surfaces in state courts, but the case now enjoys but a shadow of its former glory.

⁶⁴ R.S.C. 1970, T-10.

⁶⁵ [1977] 2 S.C.R. 134, (1976), 66 D.L.R. (3d) 1.

regulatory statute, the federal government might be able to re-enact it (relying on the trade and commerce clause of the Constitution Act, 1867)⁶⁶ the federal government has not given any indication that it intends now or in the future to resurrect that provision in some form or other.

C. Overall Effect of the Present Law

The overall effect of the present law is something like an umbrella. The ribs of the umbrella represent various areas of the law under which some measure of protection for computer information is available. The umbrella is, however, far from a total protection from the elements and has some quite distinct rents in it. Whether computer information can be protected at law depends upon a consideration of these many areas of the law and an intelligent selection of that area which will afford the best legal protection in the particular case. There is no specialist body of law which has a distinct functional application to computer information and is easily located and applied.

V. Directions for Change

The problems associated with systematic law reform are well enough known: the difficulty in ascertaining the social and economic "facts"; the arduous process of agreeing on what the current law is; what "problems" and dysfunctions those analyses reveal; of isolating alternatives; of attempting to reach a consensus thereon; and, if legislation is selected as the appropriate mode of legal development, of securing the passage of legislation with something remotely like its original integrity still intact. In the area of innovation, these problems are further magnified since we mostly cannot anticipate the form of innovation, let alone its social and economic impact. All that we can do is to take the medium view—to treat the subject-matter as it is, rather than as we would like it to be, and to evolve laws which are, in the real sense of the word, "useful".

Before turning to specific directions the law might take, certain observations may be in order. Perhaps the central question is best put in Yeats' terms: "Can the centre hold"?⁶⁷ Is everything disintegrating to such an extent, are the old patterns so overturned, that nothing less than a complete root and branch reform will suffice in this area? This seems to me to be a relatively open question at this time.

The essential dilemma is still what it was, even in Lord Mansfield's time. We (society) want and can profitably use a computer programme

⁶⁶ S. 91.2

⁶⁷ The Second Coming.

("Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart, the centre cannot hold;
Mere anarchy is loosed upon the World . . .").

like Visicalc. But we do not want the originators to get a total monopoly of computer spread-sheet programmes. What we want is for the talented originators of such a programme to get some "reward" whether (at the low end of the scale) in the form of a head start, or (at the high end) in hard cash. But we also want to open the door to better spread-sheets and further developments in "integrated" software like Lotus 1-2-3 or Symphony.

We could attempt to achieve this objective in one of three ways: first, by a continuation of the peripheral, rather messy sort of protection afforded by the present mix of common law and statute law. We cannot really say that the existing body of law has been entirely ineffective. As noted, all the statistics indicate the growth, rather than the diminution, of an information economy although (ironically) this phenomenon may be explicable in terms of the total irrelevance of the law in this subject area! The danger in approaching the matter through existing doctrines of general application is that those doctrines can become distorted beyond their proper ambit. Thus, for instance, we get the strained, if not ridiculous, notion that industrial espionage, *even* in the absence of an *ex ante* relationship, becomes a breach of confidence,⁶⁸ or the fiduciary net is cast so wide that it becomes a travesty of a legal concept and its application totally unpredicable. Even the lowliest clerk at IBM becomes potentially a "fiduciary".⁶⁹

Second, we could hope that new broadly based judicial concepts, such as "unfair competition", "unjust enrichment" or "information as property", will emerge, and that those concepts will somehow become sensible control vehicles fueled by case-by-case development. I am not sanguine about such an approach. Such a process is both desperately slow, and hit or miss, in that it presumes clients willing to litigate on uncertain theories, barristers who understand the total problem and judges who are prepared to grapple with the development of the law *as well as* the solution to particular cases.

Third, we could—I think should—face up to the need for *sui generis* solutions. The whole problem of computer information reminds me somewhat of the contract-sales problem at the turn of the century. It was not that there was something wrong with the concept of contract; rather we needed more particularity for special kinds of contracts. Thus we could evolve more specific "stand alone" solutions for the protection of computer software, or trade secrets, and leave the traditional equity doctrines to a "back-up" role. Such doctrines could then be pressed into service to

⁶⁸ This, in effect, is the proposition of the Law Commission, Breach of Confidence, Law Com. No. 110 (1981), Cmnd. 8388.

⁶⁹ Some recent Canadian cases go pretty far in this direction. See P. Atkinson and R. Spence, *loc. cit.*, footnote 57.

take care of unusual cases arising quite outside the pale of the "new" statutory entitlement schemes.

This latter approach to law reform seems to me to have much to commend it. In the first place, in my judgment, there is a need for some caution and a measured approach. The factual situation is not nearly as bleak as the computer industry would have us believe. The industry has not disintegrated in face of industrial espionage or piracy though I do not deny there have been real problems, particularly in relation to computer software.⁷⁰ Second, as I have noted elsewhere (in relation to the IBM anti-trust case), legal intervention whilst the dust of the developmental battle still hangs in the air⁷¹ can be unwise. Technology has a habit of solving many of its own problems. For instance, the "fair use" dispute over photocopying may be drastically affected by the development of copy paper which fades to nothingness after a fixed period of time. If such paper comes into common use it will force price differentiation and consumers will have to pay more for permanence (if that is what they want). Likewise the computer industry is making serious efforts to improve the "lockability" of programmes.

Against this general perspective I want now to sketch what some of these *sui generis* solutions might look like under the heads of integrated schemes, copyright, trade secrets, contract and criminal law.

A. Integrated Schemes—A Uniform Technology Code?

Perhaps the most radical and arresting suggestion to date is that those grappling with this subject area may have been addressing the wrong target. Instead of trying to draw distinctions between, for example, hardware and software and trying to formulate new definitions to protect "new" intellectual property interests against a reference point of existing and foreseeable technology, should we not instead have been aiming higher—at the "transaction" by means of a Uniform Technology Code?⁷² The concept would be not unlike the Uniform Commercial Code in the United States and would aim to "establish an equitable legal framework facilitating both innovation and protection and could lend legal certainty to the fair and reasonable expectations of parties to a software transaction".⁷³ Clearly such a code would have to establish *some* kind of "title" (or other freedom from infringement). The protective scheme would be copyright-like in that it would protect "not merely the code [or language] of soft-

⁷⁰ The real problem appears to relate to the lack of an adequate distribution and marketing system in Canada, rather than "piracy" as such. See the article, *Aid said crucial for [Ontario's] high-tech firms*, *Toronto Star*, Toronto, October 3, 1984, E.1.

⁷¹ The IBM Monopoly Case, [1979] N.Z.L.J. 316, at p. 318.

⁷² See Davidson, *loc. cit.*, footnote 18, at p. 777 *et seq.*

⁷³ *Ibid.*, at p. 782.

ware, but [also] the underlying logic and design of the program".⁷⁴ The underlying programming concepts would not be protected but other persons would be prevented from attempting to discover what they were. The Code would also establish parameters for transfer, copying, sub-licencing, and the like. It would have to cover the delicate questions of fitness for use, and perhaps even for result, disclaimers, and the ability of parties to "contract out" of the Code. Proponents of such an approach envisage this Code taking its place in the temple of commercial law alongside the Uniform Commercial Code and legislation covering Electronic Funds Transfer.

The important thing to note about such a concept is that it would be essentially transaction based (that is, contract oriented) rather than protectionist biased in favor of property law, although some semblance of what an economist would describe as a "property" right would be involved. Proponents of this approach view it as a less divisive and more functional vehicle; "less divisive" because any talk of information as property is regarded as the grossest kind of heresy by some lawyers, "more functional" because it addresses more directly the entitlements involved. The difficulty of course is time. No such Code yet exists, and the evolution and drafting of it could be expected to be every bit as problematical as was the Uniform Commercial Code itself. Also, a difficult decision would have to be made as to whether such a Code should aim at addressing the problem of misappropriations of information arising outside of the "programming" sector.⁷⁵

B. Copyright

In Canada, revision of the existing federal act has been underway for over a decade now. Before its defeat in the 1984 general election the Liberal government appeared to have accepted the advice proffered by the Department of Consumer and Corporate Affairs that there is, in Canada, a case for a "weak" form of intellectual property right in computer programmes.⁷⁶

The working studies which proceeded this decision are instructive. Economists were asked—quite properly—to assess whether there would be a net social benefit to Canada if copyright protection were explicitly extended to computer programmes. The resultant report openly admitted to an:⁷⁷

⁷⁴ *Ibid.*, at p. 777.

⁷⁵ It would, of course, be possible, and might even be desirable to include provisions relating to trade secrecy in the same Code.

⁷⁶ See, *From Gutenberg to Telidon: A White Paper on Copyright* (Ottawa, Supply and Services, 1984). For a review of the paper see D. Morgan, *Comment* (1984), 6 E.I.P.R. 235.

⁷⁷ J. Palmer and R. Resendes, *Copyright and the Computer* (Copyright Revision Studies, Consumer and Corporate Affairs, Ottawa), p. 140.

. . . uncomfortable dilemma. The hypothesis that the net benefits are negative cannot be rejected. Nor can the hypothesis that they are positive. The range of estimates is simply too wide and, unfortunately, spans both positive and negative numbers.

It was thought that the administrative cost (to the federal government) of making a computer programme copyrightable would be in the order of \$10,000 per year. The question then is: is this sort of investment a good risk for Canada? The study attempted to avoid the tempting answer by asserting that, "the *potential* gain for this investment is great relative to the cost".⁷⁸ Apparently the (few) "high flyers" are to subsidize the cost of a good many failures!

Be that as it may, the federal White Paper on copyright reform⁷⁹ announced an intention to make computer programmes in both human-readable and machine-readable form eligible for copyright protection for five years from the date of creation of an unpublished machine-readable programme, or five years from the end of the year of publication for published machine-readable programmes. Human-readable programmes would continue to receive "traditional" copyright protection. With respect to machine-readable programmes it would be an infringing act to do or authorize any act to which the owner of a programme copyright has an exclusive right; or to sell, lease, licence, trade, import or offer to do or authorize any of those acts with respect to any machine-readable programme that the alleged infringer knows or has reasonable grounds to suspect is an infringing copy.

Even if there had been no change in the federal administration, the Department had conceded that the earliest likely enactment of these provisions would have been 1986. The present position must be in doubt. It seems inevitable that an incoming Minister will wish to review these proposals, although in that connection it is relevant to note that some members of the new federal administration were amongst those who argued most strenuously for improved copyright for computer programmes in the House of Commons debate on computer crime.⁸⁰

C. *Trade Secrets*

Trade secret protection is widely practised in all aspects of commercial life in North America today. There are some studies which suggest that businessmen regard it as the "best" form of protection of valuable information.⁸¹

⁷⁸ *Ibid.*

⁷⁹ *Op. cit.*, footnote 75.

⁸⁰ See Hansard (Canada), Commons Debate, October 16, 1980, p. 3764. In a statement at the end of 1984, the Minister of Finance supported the need for updated copyright legislation: see *Globe and Mail*, Toronto, December 4, 1984, p. 6.

⁸¹ See, e.g., R. Miller, *Legal Aspects of Technology Utilization* (1974).

In the United States there has been since (at least) the time of the first Restatement on Torts in 1939, judicial development of a relatively coherent concept of a "trade secret". More recently the Uniformity Commissioners have evolved a Model Uniform Trade Secrets Act which has (now) been adopted in a number of American jurisdictions.⁸² There is now also, in the United States, a lively debate over whether trade secret law should be federalized and should take its place alongside patents and copyright as another tier in the range of federal statutory monopolies. Such an approach would have the advantages (in the United States) of circumventing the constitutional pre-emption problems which continue to haunt this area of the law in that country and of ensuring a uniform national scheme.

The Commonwealth jurisdictions lag far behind in this area, insofar as no Commonwealth jurisprudence has yet recognized a coherent concept of a "trade secret". Peripheral legal protection is available only through the contract or the equity doctrines outlined above in Section IV. Some of the difficulties in the application of those general doctrines of law have already been noted. The English Law Commission attempted in its report on Breach of Confidence⁸³ to construct what really amounts to a statutory framework as to when "secrets" (of all kinds) will be protected by the civil law. That exercise was incremental, extremely conservative, and essentially only carries into legislative form the existing law on breach of confidence with some modifications to overcome specific problems in the existing case law.

My own view is that, however it is done, this area of the law is long overdue for reconsideration in the Commonwealth jurisdictions. For instance, there is still no Canadian authority for the proposition that industrial espionage as such (in the absence of any pre-existing relationship between the parties) is actionable with respect to *any* subject matter (let alone computerised information).⁸⁴ There is confusion over the actual remedies which are available when this head of liability is made out, and the vexing question of the innocent third party acquirer of information still haunts the whole subject area, both in theory and in practice.

The Institute of Law Research and Reform at the University of Alberta has recently advanced a possible legislative scheme for adoption

⁸² For the Model Act see 14 U.L.A. 541, and R. Klitzke, *The Uniform Trade Secrets Act* (1980), 64 *Marquette L. Rev.* 277; and, for a non-uniform North Carolina variant, J. Root and G. Blynn, *Abandonment of Common Law Principles: the North Carolina Trade Secrets Protection Act* (1982), 18 *Wake Forest Law Rev.* 823. See also T. Robison, *The Confidence Game: An Approach to the Law About Trade Secrets* (1983), 25 *Arizona Law Rev.* 347.

⁸³ *Op. cit.*, footnote 68.

⁸⁴ There is one Australian authority which supports that proposition; see *Franklin v. Giddins*, [1978] Qd. R. 72.

by the Canadian common law provinces.⁸⁵ Under the Institute's proposals the provinces would create a new statutory tort of "misappropriation of a trade secret". A trade secret is defined in functional, economic terms:⁸⁶

'Trade secret' means business or technical information, including but not limited to a formula, pattern, compilation of information, programme, device, method, technique or process that:

(1) derives independent economic value, actual or potential, from not being generally known, or readily ascertainable through independent development or reverse engineering by persons who can obtain economic value from its disclosure or use, and

(2) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

The difficult conceptual issue which then arises is with respect to the concept of "misappropriation". Misappropriation could be conceived of as consisting in any unconsented to acquisition, disclosure or use—which would create a very strong economic tort⁸⁷—or, in a taking by "improper means". In the latter event the tort would be somewhat weaker in economic terms, is probably less open to constitutional challenge, and has a narrower reach than the first alternative. The draft legislation presents both alternatives in an effort to attract some comment on the utility or desirability of these two alternative approaches. "Improper means" is explicitly defined to include such things as using or interfering with any computer or data retrieval mechanism without authority (expressed or implied) and industrial espionage.

The draft legislation also provides a range of relatively eclectic remedies, and deals specifically with the position of third party acquirers of information. The law of contract is not interfered with, nor are any principles of equity or rules of the common law by virtue of which obligations of confidence arise in respect of the acquisition disclosure or use of information which does not amount to a trade secret within the meaning of the Act.

The proposal has not been unkindly received. It is presently under consideration by a federal/provincial task force. There appears to be some industry sentiment for its adoption by the provinces. Whether the proposal will advance further, and if so, through informal interjurisdictional cooperation or through the uniformity mechanism is still a relatively open question.

⁸⁵ Protection of Trade Secrets (Report for Discussion No. 1, February, 1984). The Report builds on, and modifies the U.S. Model Act.

⁸⁶ *Ibid.*, p. 111.

⁸⁷ This is the approach taken by a recent North Carolina statute; see Root and Blynn, *loc. cit.*, footnote 82. In fact it is possible that the interest created under that statute is even stronger than a patent right. Whether the North Carolina statute will survive constitutional challenge on this account remains to be seen.

D. Contract

Most of us, I suspect, have probably accepted with equanimity the traditional legal wisdom with respect to information secured against post-employment activities by restrictive covenants, even though we know that the application of that received wisdom to actual cases is no easy matter. Quite apart from the factual difficulty to which I adverted earlier, that it is somewhat difficult to distinguish a computer generalist from a computer specialist, there are the matters of substance now being raised by some lawyer-economists which suggest that we have not paid enough attention to the fundamental rationales for these rules. For instance, we find Kitch suggesting that:⁸⁸

Economists think about markets within an implicit legal framework of property (to provide incentives for the creation of value) and contract (to facilitate exchange of value) . . . [but] . . . That implicit framework does not fit the phenomenon of the production of information by, and the transmission of information between, competitive firms.

Other scholars are now asserting that even where there is to be some post-employment restraint on the use of information, "[u]sing contract rules to evaluate a covenant's validity permits courts to enforce occupational bans that give more protection from competition to a principal's interest than is legitimately justified".⁸⁹ The argument is, apparently, that the principal's protected interests should limit the extent of any post-associational restraint. The contractual covenant is (on this view) superfluous to what (in the United States) would be referred to as the general fiduciary duties.

There is thus a challenge to demonstrate why we should retain this feature of our contract law at all. A further question appears to be why, even if we do allow contractual covenants restricting the use of information, we measure the appropriate term of restraint in the way in which we conventionally do. In effect what some commentators appear to be arguing for is a move to a closer examination (in economic terms) of the principal's protectable interest.

I have presently no considered opinion on these issues, let alone a final one. Even if I had, life is not in this area breathing according to the rhythm of legal logic. As noted, covenants of the kind under consideration have been outlawed in some major jurisdictions (for example, California and Michigan) without serious (or any) discernible economic impact. Both the burgeoning literature and increasing diversity of experience in this area suggest Canadian jurisdictions could profitably review this subject area and, if necessary, legislatively remove this particular form of

⁸⁸ *Loc. cit.*, footnote 39, p. 723. (Emphasis added).

⁸⁹ P. Closius and H. Schaffer, *Involuntary Non Servitude: The Current Judicial Enforcement of Employee Covenants Not to Compete—A Proposal for Reform* (1984), 57 So. Cal. Law Rev. 531, at p. 548.

impediment to economic efficiency and productivity.⁹⁰ If this were to happen it has obvious implications for those involved in the "computer information" industry. Diffusion of technology and know-how takes place not just by formal exchange (for example, through licences) but also through mobility of labour. It is surely at least arguable that the rapid growth of the industry has been greatly enhanced by a very high degree of mobility of labour and that the law's continuing insistence on formulas derived from an economy having different characteristics from those which exist today is at best pointless, and at worst regressive.

E. *Criminal Law*

If the proposals in the Criminal Law Amendment Act 1983 relating to computer crime are enacted—and it would be surprising if they are not,⁹¹ since Conservative Members of Parliament pushed heavily for them in the first instance—there still remain several matters for legislative attention. These include the *Stewart* decision and whether it should be cut down by legislative amendment; and, whether the misappropriation of a "trade secret", if it can be satisfactorily defined, should be criminally proscribed. Finally, the relationship between criminal law sanctions in the Copyright Act and the Criminal Code needs to be reconsidered. All of these issues are in fact presently under consideration by the appropriate federal agencies, although no definitive decisions have been taken to date.

Conclusion

Law professors and law reformers are supposed to be enlightened sceptics. We are supposed to exhibit an unrelenting rigour with respect to the thinking of others as well as our own work. The healthy scepticism which is required in this subject-area should be directed at two factors: first, our perennially over-optimistic belief that we can correctly anticipate the impact of new technology; and second, that legal ordering can influence events for the better. In short, a proper appreciation of the history of law and technology involves an appreciation of the limitations both of human rationality and of law. Against those formidable obstacles it is all too tempting to become reactive and to restrict legal intervention to minor correctives and readjustments. However, human dignity if nothing else, surely requires a struggle if there is to be any nobility at all in the legal enterprise.

In the midst of a technological advance which on any view of the matter is one of the most significant in the history of mankind we face the same old choices: we can let the technology dominate and leave us

⁹⁰ The latest Canadian review does not touch on these questions; see British Columbia Law Reform Commission, Report No. 41, *Covenants in Restraint of Trade* (1984).

⁹¹ The 1984 Throne Speech announced an intention to proceed with these proposals.

lawyers struggling in its wake or we can struggle (even if it is to little or no purpose) to ensure that the technology serves goals that are thought appropriate in a particular society. In my respectful submission the fundamental and overwhelming task of lawyers in this arena is to see that undue information lock-up does not occur. That is the fundamental objective, and when we are asked to provide new remedies for the new kinds of interests coming into being it is the point of departure. The technical dilemma for commercial lawyers in the computer age is thus to provide legal instruments that preserve that objective consistently with the demonstrated needs of commerce. For those of us toiling in the trenches our task is to craft, in sound technical terms, the delicate balance that is necessary in the interests of society as a whole.

If the fundamental objective remains constant, it is far from clear that the existing technical means and vehicles will hold good. It is already apparent that general doctrines of law will not be an adequate solution. The major impact on commercial law of the arrival of the computer will therefore likely be the gradual evolution of statutory measures of the kind suggested above with general equity doctrines filling only an interstitial role. The application of the word "property" to entitlement under those new schemes would be as misleading as is its application in most other areas of the law. Indeed, it would be helpful if the word were banished altogether from this arena.⁹²

⁹² Since this paper was delivered several important developments have occurred in Canada. First, the Sub-Committee on the Revision of Copyright of the House of Commons has now released its report. (A Charter of Rights for Creators, Minister of Supply and Services Canada (1985)). See also the U.K. Green Paper, Intellectual Property Rights and Innovation (Cmnd. 9117 (1983)), and the Comment thereon by H. Brett in [1984] 6 E.I.P.R. 111. Both reports are relatively conservative. For a more radical view—that coherent statutory *information laws* are required—see M. Pendleton, Intellectual Property, Information-Based Society and a New International Economic Order—The Policy Options (1985), 7 E.I.P.R. 1. But *cf* D. Rosen, A Common Law for the Ages of Intellectual Property (1984), 38 U. Miami Law Rev. 769 (arguing that the rapid pace of technological advances requires that courts take an activist posture in intellectual property cases and develop new remedies instead of awaiting legislative changes). See also M. Katsch, Communications Revolutions and Legal Revolutions: The New Media and the Future of the Law (1984), 8 Nova L.J. 631; G. Klueck, The Coming Jurisprudence of the Information Age: Examinations of Three Past Socio-Economic Ages Suggest the Future (1984), 21 San Diego Law Rev. 1077.

As to criminal law, the co-called "computer-crime amendments" have now been enacted in Canada by the federal government in S.C. 1985, c. 19. For the United States see B. George, Contemporary Legislation Governing Computer Crimes (1985), 21 Criminal Law Bulletin 389 (arguing that "reliance on traditional criminal statutes covering property offences . . . will not suffice": p. 411).

The Institute of Law Research and Reform at the University of Alberta and a federal/provincial task force on trade secrets expect to release a final report on reform of the law of trade secrets in 1986.