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SOFTWARE AS DISCOURSE: THE POWER OF
INTELLECTUAL PROPERTY IN
DIGITAL ARCHITECTURE

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ABSTRACT

As software increasingly facilitates our living, we are drawn more and more to conceptualize software as discourse. While this may sound trite, it is a fundamental point to appreciate.

One of the most significant intellectual developments of the latter part of the twentieth century has been the poststructuralist writing of thinkers like Foucault, Derrida, and Baudrillard, who explain the multitude of power relationships we experience in our daily lives, the indeterminacy of law, the construction of meaning, and the role of language, or discourse, in the construction of meaning and identity. According to the post-structuralists, we live in an environment constructed from many elements—one of the dominant ones being language, or discourse, which contains inherent biases and tendencies. This philosophy has given rise to the development of identity politics—a space in which arguments are made for and against the construction of identity through language and other circum-

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stances. In the end, the poststructuralists have allowed us to appreciate and conceptualize our circumstantial being. We are witnessing the exponential growth of a new form of social structure known as the information society. The quintessential element of discourse, of language, of speech, in this information society is (soft)ware. Software is now a key part of our social structure—we sense it in our cars, in our supermarkets, in our televisions, in our computers. We sense it everywhere: it is a ubiquitous, undulating, architectural, air-like, water-like commodity that infiltrates our daily lives. More interesting is that software, through its various forms of (coded) structure can act to construct meaning and identity in much the same way as speech. Software in the information society is discourse. It is not simply a literary text (a copyright law categorization); it is fundamental to communicative architecture. The fierce debate over open code versus proprietary code software is intimately connected with this construction of identity through software.

If a software engineer has the tools—fully or partially—to construct discourse and identity in the digital world, then the principles of law that mediate power relations (especially those between individuals, often described as “private law”) need to mediate such a construction process. Otherwise, technological determinism will see me as simply another cyborg programmed to mediocrity and slavery. Laws that will play an important role in this process are those that will govern the construction of the new discourse known as software.

Already, battle lines have been drawn. Major choices that will impact upon the value of our lives are being hidden beneath the veil of private law rhetoric. The role and function of software will be mediated initially by a blend of intellectual property law, contract law, competition law, and privacy law, which I would term informational law or informational constitutionalism. It is the development of the principles of these areas of law in their relation to software that will determine much about the way we live in the future.

As we enter the digital millennium, it is ever more pressing for us to fathom the genetic structure/code (natural and manufactured) of life. Here, I have highlighted how software will act to construct us and how the law will facilitate such a process.

INTRODUCTION

With the coming of the information age, we are represented continually through digital architecture constructed through digi-

tal wares.¹ The contours of this new digital landscape are yet to be fully realized but we are sufficiently entrenched in the information age² to know that conceptualizing the digital environment is a new and challenging task.

The aim of this paper is to conceptualize software as discourse, thereby allowing us to better understand the power of intellectual property rights in digital architecture. This simple, if not trite, point—software is discourse—is not readily appreciated in legal (and much other) analysis of the digital environment. I suspect this emanates from sheer ignorance and our practice of blind faith³ in the ethical integrity of (digital) architecture; in our belief that the medium or the pathway is always acting in our best interests like some sort of virtual fiduciary.

My role is to challenge this complacency and to open up a framework of analysis that is sorely needed for social and cultural enhancement. If software is a form of discourse, a way of making things known or manifest, or letting them be seen, then the ability to create and hold proprietary rights in software (in discourse) is a fundamental determinant of social construction. The power to

¹ See Michael Madison, *Legal-Ware: Contract and Copyright in the Digital Age*, 67 *FORDHAM L. REV.* 1025, 1031 (1998).

² See generally *Esso Australia Resources Ltd. v. The Comm'r of Taxation* [1999] 67 *HCA* at para. 101 (Dec. 21, 1999) (Kirby, J.) (acknowledging the information revolution), (visited Apr. 13, 2000) <<http://www.austlii.edu.au/>>; F. BLOCK, *POST-INDUSTRIAL POSSIBILITIES: A CRITIQUE OF ECONOMIC DISCOURSE* (1990); MANUEL CASTELLS, *THE INFORMATION AGE: ECONOMY, SOCIETY AND CULTURE* chs. 1-3 (1996); NIGEL DODD, *SOCIAL THEORY AND MODERNITY* (1999); N. GARNHAM, *COMMUNICATION TECHNOLOGY AND POLICY*, *MASS COMMUNICATIONS REVIEW YEARBOOK* 285 (M. Gurevitch & M.R. Levy eds., Sage Books 1985) (considering the pervasive nature of information society and its never-ending expansion into the more private and less commercial spheres of life); ANTHONY GIDDENS, *THE CONSEQUENCES OF MODERNITY* (1990); DAVID HARVEY, *THE CONDITION OF POSTMODERNITY* (1990); GREG HEARN ET AL., *THE COMMUNICATION SUPERHIGHWAY: SOCIAL AND ECONOMIC CHANGE IN THE DIGITAL AGE* ch. 2 (1998) (discussing the notions of “technological determinism” versus “social constructivism”); AGNES HELLER, *A THEORY OF MODERNITY* (1999); TIM JORDAN, *CYBERPOWER: THE CULTURE AND POLITICS OF CYBERSPACE AND THE INTERNET* (1999); JOHN B. THOMPSON, *THE MEDIA AND MODERNITY* (1995); LESTER C. THURLOW, *BUILDING WEALTH: NEW RULES FOR INDIVIDUALS, COMPANIES AND NATIONS IN A KNOWLEDGE-BASED ECONOMY* (1999); JOHN TOMLINSON, *GLOBALIZATION AND CULTURE* (1999); SHERRY TURKLE, *THE SECOND SELF: COMPUTERS AND THE HUMAN SPIRIT* (1984); JUDY WAJCMAN, *FEMINISM CONFRONTS TECHNOLOGY* (1991); FRANK WEBSTER, *THEORIES OF INFORMATION SOCIETY* (1995); Brian F. Fitzgerald, *Commodifying and Transacting Informational Products Through Contractual Licenses: The Challenge for Informational Constitutionalism*, in *INTELLECTUAL PROPERTY AND THE COMMON LAW WORLD* ch. 3 (C.E.F. Rickett & G.W. Austin eds., 2000); Esther Dyson et al., *A Magna Carta for the Knowledge Age*, 11 *NEW PERSP. Q.* 26 (1994); Lester C. Thurlow, *Needed: A New System of Intellectual Property Rights*, 75 *HARV. BUS. REV.* 5, 95 (1997).

On business models for information society, see JILL H. ELLSWORTH & MATTHEW V. ELLSWORTH, *THE INTERNET BUSINESS BOOK* (1995); DANIEL S. JANAL, *ONLINE MARKETING HANDBOOK* (1998); RAVI KALAKOTA ET AL., *E-BUSINESS: ROADMAP FOR SUCCESS* (1999); PATRICIA B. SEYBOLD, *CUSTOMERS.COM* (1998); ELAINE LAWRENCE ET AL., *INTERNET COMMERCE: DIGITAL MODELS FOR BUSINESS* (1998).

³ See GIDDENS, *supra* note 2, at 33-34; BARBARA A. MISZTAL, *TRUST IN MODERN SOCIETIES: THE SEARCH FOR THE BASES OF SOCIAL ORDER* (1996).

construct and control channels of communication through law is a most serious question in the digital era.

In order to assert my argument with clarity and authority, this article will perform the following steps: define software; explain the notion of discourse; posit software as discourse; explore how software acts to construct identity; examine how the law regulates intellectual property rights in software and impacts on discursive formation; introduce the notion of power; and posit the new constitutionalism. To clarify things from the outset, I am not arguing that all information should be free. Rather, my basic point is that when we commodify (or propertize)⁴ information through property rights recognized by law, we must hold in the balance and appreciate the value of free and open discourse. The quest for value in the digital economy challenges us to understand the boundaries that law will draw around the digital estate.⁵ On one side stands the school of thought that believes information as the basic building block of knowledge should (and wants to) be free.⁶ On the other side stands the idea that in a market economy, value added to raw information has been, and inevitably will be, commodified and sold in the market. The end point lies somewhere between the extreme reaches of each argument.⁷ My argument is that commodification of information has and will continue to occur—digital informational products will be propertized in our market

⁴ See generally Felix Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV. 809, 814-17 (1935); Michael A. Heller & James E. Krier, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998); Ejan Mackaay, *The Economics of Emergent Property Rights on the Internet*, in THE FUTURE OF COPYRIGHT IN A DIGITAL ENVIRONMENT 13 (P. Bernt Hugenholtz ed., 1996); Pamela Samuelson & Kurt Opsahl, *Licensing Information in the Global Information Market: Freedom of Contract Meets Public Policy*, EUR. INTEL. PROP. REV. 387 (1999).

⁵ See Rochelle Cooper Dreyfuss, *We Are Symbols and Inhabit Symbols, So Should We Be Paying Rent? Deconstructing the Lanham Act and Rights of Publicity*, 20 COLUM.-VLA J.L. & ARTS 123 (1996); Brian F. Fitzgerald, *Commodifying and Transacting Informational Products through Contractual Licences: The Challenge for Informational Constitutionalism*, in INTELLECTUAL PROPERTY AND THE COMMON LAW WORLD ch. 3 (C.E.F. Rickett & G.W. Austin eds., 2000); Brian F. Fitzgerald, *Conceptualising the Digital Environment*, in GOING DIGITAL 2000: LEGAL ISSUES FOR E-COMMERCE, SOFTWARE AND THE INTERNET 1 (Anne Fitzgerald et al. eds., 2000); Brian F. Fitzgerald & L. Gamertsfelder, *Protecting Informational Products through Unjust Enrichment Law*, in THE FUTURE OF COPYRIGHT IN THE DIGITAL ENVIRONMENT 244 (P. Bernt Hugenholtz ed., 1998) *European Intellectual Property Review*; Brian F. Fitzgerald & E. Sheehan, *Trademark Dilution and the Commodification of Information: Understanding the "Cultural Command"*, 3 MAC. L. REV. 61 (1999); CARL SHAPIRO & HAL VARIAN, *INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY* (1999).

⁶ See John Peiry, *Selling Wine Without Bottles: The Economy of Mind on the Global Net*, in THE FUTURE OF COPYRIGHT IN THE DIGITAL ENVIRONMENT 244 (P. Bernt Hugenholtz ed., 1998).

⁷ See Fitzgerald, *Conceptualising*, *supra* note 5, at 1; Brian F. Fitzgerald & M. Head, *Introduction to Law and Digital Frontiers*, 3 MAC. L. REV. 1 (1999); Mackaay, *supra* note 4, at 13.

economy⁸—but we must infuse this process with respect and appreciation for free and open discourse.

I. THE TRADITIONAL DEFINITION OF SOFTWARE

The first element needed to underpin my explanation of software as discourse is a working definition of software.

Software may be described as a computer program, which facilitates the operation of a computer system.⁹ The relationship between a computer and a program has been described as follows:

A program is executed by the central processing unit (CPU) of the computer, which is the [center] of control for arithmetical and logic operations within the microprocessor. The CPU consists of an arrangement of electronic circuits which are activated by impulses of electric current. A logic gate within the CPU is either turned on or off depending on the presence or absence of such pulses.

The presence or absence of pulses of current is represented by binary digits ('bits'). The CPU [recognizes] '1' as indicative of the presence of a pulse, and '0' as indicative of its absence.

⁸ See CAPITAL FOR OUR TIME: THE ECONOMIC, LEGAL, AND MANAGEMENT CHALLENGES OF INTELLECTUAL CAPITAL (Nicholas Imparato ed., 1999); THOMAS A. STEWART, *INTELLECTUAL CAPITAL: THE NEW WEALTH OF ORGANIZATIONS* (1999); DON TAPSCOTT, *THE DIGITAL ECONOMY: PROMISE AND PERIL IN THE AGE OF NETWORKED INTELLIGENCE* (1995).

⁹ See 17 U.S.C. § 101 (1999) ("A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."); Australian Copyright Act 1968, Section 10 (Cth).

"[C]omputer program" means an expression, in any language, code or notation, of a set of instructions (whether with or without related information) intended, either directly or after either or both of the following:

- (a) conversion to another language, code or notation;
- (b) reproduction in a different material form,

to cause a device having digital information processing capabilities to perform a particular function.

Id. Amendments to the Australian Copyright Act 1968 (Cth) propose to replace the current definition of "computer program" in section 10(1) with the following: "computer program means a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." See Copyright Amendment (Digital Agenda) Bill 1999 (Cth) (Austl.); Copyright Law Review Committee ("CLRC"), *Computer Software Protection* ("Final Report") (Attorney General's Department, Canberra, Apr. 1995) (visited Apr. 13, 2000) <<http://www.aph.gov.au/house/committee/laca/digitalagenda/contents.html>>; Data Access Corp. v. Powerflex Servs. Pty Ltd., [1999] HCA 49 (Sept. 30 1999) (visited Apr. 14, 2000) <<http://www.hcourt.gov.au>>; Alcatel USA Inc. v. DGI Techs. Inc., 166 F.3d 772, 778 (5th Cir. 1999) ("[F]irmware . . . is software embedded in a memory chip on the card."); Pamela Samuelson et al., *A Manifesto Concerning Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2315-30 (1994) ("[P]rograms are, in fact, machines (entities that bring about useful results, i.e., behavior) that have been constructed in the medium of text (source code and object code)."; see also B. GAZE, *COPYRIGHT PROTECTION OF COMPUTER PROGRAMS* 2-12 (1989); Marci A. Hamilton & Ted Sabety, *Computer Science Concepts in Copyright Cases: The Path to a Coherent Law*, 10 HARV. J.L. & TECH. 239 (1997); Michele C. Kane, *When is a Computer Program Not a Computer Program? The Perplexing World Created by the Proposed UCC Art. 2B*, 13 BERKELEY TECH. L.J. 1013 (1998).

A computer program is a series of bits, each bit representing the presence or absence of a pulse. The program operates within the CPU as a series of pulses in a prearranged sequence in accordance with the order of bits devised by the computer programmer. Accordingly, the 'instructions' of a computer program represent a series of impulses which operate within the computer to make the machine perform certain predefined functions.

Each instruction is held in a memory location within the computer, which has an address, by which the location may be identified. The addresses of the memory locations in which program instructions are to be found are held in the program counter. The CPU locates the address of each instruction of the program, accesses it from the memory location, from where it is reproduced and executed in the instructions register. The program counter may contain a 'jump' instruction, which makes the CPU jump beyond the next instruction in sequential order in the software, to access and execute a subroutine.¹⁰

In the Australian case of *Computer Edge Pty Ltd. v Apple Computer Inc.*,¹¹ Chief Justice Gibbs explained the traditional notion of a computer program in these terms:

Computer science makes much use of jargon and metaphor, and to enable the matters in issue to be understood it seems desirable to attempt a brief explanation of the meaning of some of the expressions used in that science and to describe the manner in which a computer program is developed. A computer program is a set of instructions designed to cause a computer to perform a particular function or to produce a particular result. A program is usually developed in a number of stages. First, the sequence of operations which the computer will be required to perform is commonly written out in ordinary language, with the help, if necessary, of mathematical formulae and of a flow chart and diagram representing the procedure. . . . Next there is prepared what is called a source program. The instructions are now expressed in a computer language—either in a source code (which is not far removed from ordinary language, and is hence called a high level language) or in an assembly code (a low level language, which is further removed from ordinary language than a source code), or successively in both. Sometimes the expression source code seems to be used to include both high level and low level language. In the present case, the source

¹⁰ *Data Access Corp. v Powerflex Servs. Pty Ltd.*, (1999) 166 A.L.R. 228 (quoting CARR & ARNOLD, *COMPUTER SOFTWARE: LEGAL PROTECTION IN THE UNITED KINGDOM* 1-2 (2d ed. 1992)), available at <<http://www.austlii.edu.au>> (visited Apr. 13, 2000).

¹¹ *Computer Edge Pty Ltd. v Apple Computer Inc.* (1986) 161 C.L.R. 171.

programs were written in an assembly code, comprising four elements, viz.—

- (a) labels identifying particular parts of the program;
- (b) mnemonics each consisting of three letters of the alphabet and corresponding to a particular operation expressed in 6502 Assembly Code (the code used);
- (c) mnemonics identifying the register in the micro-processor and/or the number of instructions in the program to which the operation referred to in (b) related; and
- (d) comments intended to explain the function of the particular part of the program for the benefit of a human reader of the program.

The writing has been destroyed, although it is possible to reconstruct the mnemonics, but not the labels and comments, which were comprised in it.

The source code or assembly code cannot be used directly in the computer, and must be converted into an object code, which is 'machine readable', i.e., which can be directly used in the computer. The conversion is effected by a computer, itself properly programmed. The program in object code, the object program, in the first instance consists of a sequence of electrical impulses which are often first stored on a magnetic disc or tape, and which may be stored permanently in a ROM ("read only memory"), a silicon chip which contains thousands of connected electrical circuits. The object code is embodied in the ROM in such a way that when the ROM is installed in the computer and electrical power is applied, there is generated the sequence of electrical impulses which cause the computer to take the action which the program is designed to achieve. The pattern of the circuits in the ROM may possibly be discerned with the aid of an electron microscope but it cannot be seen by the naked eye. Obviously, the electrical impulses themselves cannot be perceived. However the sequence of electrical impulses may be described either in binary notation (using the symbols 0 and 1) or in hexadecimal notation (using the numbers 0-9 and the letters A-F), and it is possible to display the description on the visual display unit of the computer, and to print it out on paper. And, as has been said, it is also possible to reconstruct the mnemonics in the source code. It will have been seen from this account that a program exists successively in source code and in object code, but the object code need not be written out in binary or hexadecimal notation in the process of producing and

storing the program.¹²

This traditional definition of software (admittedly designed for copyright law) highlights its functional nature: a set of instructions that tell a computer how to operate.¹³ My argument is that software is much more than this—it acts as a medium for communication—it is a form or variant of discourse.¹⁴ Before developing this argument, though, it is important to consider more closely the notion of discourse.

II. DISCOURSE, SOFTWARE AND THE CONSTRUCTION OF IDENTITY

A. *What Is Discourse?*

A chain of European (“linguistic”) philosophers through this century, from de Saussure,¹⁵ Heidegger,¹⁶ Gadamer,¹⁷ and Fou-

¹² *Id.* at 178-79 (emphasis added).

¹³ See Larry Long & Nancy Long, *Software: Telling Computers What To Do*, in *COMPUTERS* (6th ed. 1999). “Software refers to any program that tells the computer system what to do.” *Id.* at C73. A suggestion that software is not solely focused on directions to the computer is given when the authors note that “we interact with software to direct the overall activities within a computer program.” *Id.* at C72.

¹⁴ Consider Eben Moglen, *Anarchism Triumphant: Free Software and the Death of Copyright*, *THE NATION* (1998) (Apr. 13, 2000), available at <http://emoglen.law.columbia.edu/my_pubs/anarchism.html>.

¹⁵ See FERDINAND DE SAUSSURE, *GENERAL COURSE ON LINGUISTICS* (Charles Bally & Albert Sechehaye eds., English ed., Collins 1974) (1916); MARGARET DAVIES, *ASKING THE LAW QUESTION* 229-35 (1994); EMILE DURKHEIM, *RULES OF SOCIOLOGICAL METHOD* (English ed., Collier-MacMillan 1966) (1895); GEOFFREY SAMPSON, *SCHOOLS OF LINGUISTICS* (1980).

¹⁶ See 1-2 *THE PHILOSOPHY OF DISCOURSE* (Chip Sills & George H. Jensen eds., 1992).

¹⁷ See HANS-GEORG GADAMER, *PHILOSOPHICAL HERMENEUTICS* (David E. Linge, trans., Univ. of Cal. Press 1976); S. Feldman, *Diagnosing Power: Postmodernism in Legal Scholarship and Judicial Practice*, 88 N.W. U. L. REV. 1046, 1060-62 (1994).

Philosophical hermeneutics, contrary to foundationalism, maintains that no matter what we do, we are always and already interpreting. All experience, perception, and understanding are interpretive. Thus the text is not an object in the foundationalist sense. No uninterpreted source of meaning stands outside of an interpretive act. And since the text does not exist in an independent and uninterpreted state, its meaning cannot be derived through some mechanical technique or method. As Hans-Georg Gadamer, one of the foremost interpretive philosophers, writes: “[O]ur perception is never a simple reflection of what is given to the senses.” Nonetheless, according to philosophical hermeneutics, this reflection of objectivity does not mean that understanding or interpretation is purely subjective or capacious. The reader (or interpreter) is never an independent and autonomous subject who freely or arbitrarily imposes meaning on a text (or text-analogue). To the contrary, the interpreter is always situated in a “tradition” . . . from which we inherit prejudices and interests that constrain and direct our understandings of texts. One’s life within a community and its traditions necessarily limits one’s range of vision—what one can possibly see or understand in a text. As Gadamer says, the traditions of one’s community help to shape the interpreter’s “horizon”: “the range of vision that includes everything that can be seen from a particular vantage point.” Furthermore, the notion of an interpretive community underscores that we are historical beings who live in tradition: [W]e are always situated within traditions . . . [which are] always part of us . . . Thus, tradition is not a thing of the past; rather it is something in which we constantly participate. As Gadamer noted:

cault¹⁸ to Derrida¹⁹ and Baudrillard²⁰ have explored and explained the ways in which discourse (including language) can act to construct our existence. One of the most significant intellectual moments for legal and constitutional theory has been the development of understanding of discourse by these philosophers to explain the multitude of power relationships we experience in our daily lives, the indeterminacy of law, the construction of meaning, and the role of language, of discourse, to the construction of meaning and identity.²¹

The “linguistic turn” of these philosophers has led to the realization that discourse, which is usually but not always language, does not simply point to an external reality but rather mediates and represents such external reality.²² We only understand through prevailing discourse, which carries with it a complex web of determinants having the ability to stereotype existence through lines/labels of nationality, race, gender, class, and more recently, software products. I will discuss this constructive capacity of discourse in more detail at a later point. For the moment, we need to move toward a more exacting definition of discourse.

Discourse may be considered in the following manner:

A discourse is a group of statements which provide a language for talking about—i.e., a way of representing—a particular kind of knowledge about a topic. When statements about a topic are

“Tradition is not simply a permanent precondition; rather, we produce it ourselves inasmuch as we understand, participate in the evolution of tradition, and hence further determine it ourselves.” A crucial element of philosophical hermeneutics is the recognition that although communal traditions and the concomitant prejudices constrain our possibilities for understanding, they simultaneously enable us to communicate and to understand. Our traditions, prejudices, and interests actually open us to meaning, understanding, and truth.

Id.

¹⁸ Michel Foucault posits that “language consists of vast tectonic discursive formations embodying sinister power plays that dictate texts and predetermine authorship.” MICHEL FOUCAULT, *Archaeology of Knowledge, in POWER/KNOWLEDGE: SELECTED INTERVIEWS AND OTHER WRITINGS, 1972-1977*, at 25 (Colin Gordon ed. & Colin Gordon et al., trans., 1980).

¹⁹ See JACQUES DERRIDA, *OF GRAMMATOLOGY* (Gayatri C. Spivak, trans., John Hopkins Univ. Press 1977); JACQUES DERRIDA, *WRITING AND DIFFERENCE* (Alan Bass, trans., Chicago Univ. Press 1978).

²⁰ See JEAN BAUDRILLARD, *SIMULACRA AND SIMULATION* (Sheila F. Glaser, trans., Mich. Univ. Press 1994); JEAN BAUDRILLARD, *THE CONSUMER SOCIETY: MYTHS AND STRUCTURES* (1998).

²¹ See KENNETH J. GERGEN, *THE SATURATED SELF: DILEMMAS OF IDENTITY IN CONTEMPORARY LIFE* (1991); JEAN-FRANCOIS LYOTARD, *THE POSTMODERN CONDITION: A REPORT ON KNOWLEDGE* (1979); MARK POSTER, *THE MODE OF INFORMATION: POSTSTRUCTURALISM AND SOCIAL CONTEXT* (1990); J.M. Balkin, *Deconstructive Practice and Legal Theory*, 96 YALE L.J. 743 (1987); see also KENNETH J. GERGEN, *AN INVITATION TO SOCIAL CONSTRUCTION* (1999); DOUGLAS E. LITOWITZ, *POSTMODERN PHILOSOPHY AND LAW* (1997); Feldman, *supra* note 17.

²² See ALAN HUNT & GARY WICKHAM, *FOUCAULT AND LAW: TOWARDS A SOCIOLOGY OF LAW AS GOVERNANCE* 7-8 (1994).

made within a particular discourse, the discourse makes it possible to construct the topic in a certain way. It also limits other ways in which the topic can be constructed. A discourse does not consist of one statement, but of several statements working together to form what Foucault called discursive formation. Discourse is about the production of knowledge through language. But it is itself produced by a practice: discursive practice—the practice of producing meaning. So discourse enters into and influences all social practices.²³ *Discourse constitutes, not merely describes, its object.*²⁴

Martin Heidegger, a German philosopher whose academic reputation was later put into question due to his involvement with the Nazi regime, explained in *Being and Time*²⁵ that we construct knowledge through the three concepts of Situatedness, Understanding, and Discourse. He explained:

We—humankind—are a conversation. Because language is the medium in which reality is constituted, language is at once the house of being and home of human beings. Discourse is the literal translation of the Greek word *logos* which means *to make manifest or to let something be seen.*²⁶ Discourse is the articulation of intelligibility.²⁷ It therefore underlies both interpretation and assertion.²⁸ Discourse refers to the way we express ourselves as a being towards entities. . . .²⁹

As Heidegger's words capture the essence of what is meant by discourse in a concise and understandable manner, I adopt his words as my working definition—discourse means to make something manifest or let it be seen.³⁰ My next step then is to break with the traditional definition of software as a program of directions to a computer system and to posit software as a form of discourse, something that allows things to be seen or appreciated.

²³ S. HALL & B. GIEBEN, FORMATIONS OF MODERNITY 291 (1992).

²⁴ FOUCAULT, *supra* note 18, at 49 (emphasis added).

²⁵ MARTIN HEIDEGGER, BEING AND TIME (Joan Stambaugh, trans., State Univ. of N.Y. Press 1997) (1927).

²⁶ *Id.* at 55-56 (emphasis added).

²⁷ Charles B. Guignon, *Heidegger: Language as the House of Being*, in FORMATIONS OF MODERNITY, *supra* note 23, at 183. "Language is the medium through which our most basic sense of life comes to articulation and expression. Language constitutes our sense of reality and indeed our own identity as speakers employing sign systems." *Id.*

²⁸ HEIDEGGER, *supra* note 25, at 203.

²⁹ *Id.* at 266; see also JESSICA PRINZ, ART DISCOURSE/DISCOURSE IN ART (1991).

³⁰ Discourse in a broader sense is a context for constructing meaning. As Scott Beattie pointed out to me in reference to the work of Judith Butler on feminism and discourse, discourse, like law (and like context for that matter), is both a noun and a verb. Throughout this article, discourse should be conceived of as an inclusive concept which represents any part of the communicative architecture. See JUDITH BUTLER, BODIES THAT MATTER: ON THE DISCURSIVE LIMITS OF "SEX" (1993).

B. *Software Is Discourse: The Architecture of Knowledge*

The *raison d'être* of operating and application systems software³¹ is to construct meaning or let something be seen. In this sense, software is a discourse that acts to construct meaning amid the new digital architecture of knowledge.

Much the same way as the linguistic philosophers explain that I experience meaning through the discourse or language employed, I now experience meaning through software. It is an interpretive filter that mediates my digital communication with things external to myself. For example, if I were to pick up off the shelf and use the Australian, Italian, Chinese, or Irish language as if speaking through a loud speaker, meaning flowing in and out of me and others would be constructed in accordance with the channel or speaker (discourse) I was using. Or, closer to home, imagine me as a lay person in a court trying to speak to a judge, where often legalese, the official language of lawyers, will defeat my attempts to construct legal meaning. This power of discourse, or language, is now regarded as obvious. However, we should be mindful to translate this effect of discourse to the digital environment. For example, my use of a particular Internet browser, search engine, or other software product acts as a channel to my construction of meaning. Many of us assume that when we look into the monitor, the communication in which we are engaging is pure. Most of us are unaware of the elaborate coding structure (labyrinth) that mediates our digital world of communications.

Software, which acts as the customizing agent of information technology, has become so integral to our daily lives that I am moved to conceptualize it as a form of discourse that in turn informs my understanding of how the law might regulate software.³² Software provides us with a framework for understanding and knowing; it is a representational framework. At the most basic level, software in object or source code is seen to be a literary (discursive?) text for the purpose of copyright law. Software, though, is much more than a literary text. In a broader and more abstract way, software is seen to be a mode of understanding or a methodology for constructing meaning: it is part of the architecture of

³¹ On this distinction, see Long & Long, *supra* note 13, ch. 3. The broader issue of the construction of Internet protocols also raises interesting questions. See TIM BERNERS-LEE ET AL., WEAVING THE WEB (1999). On the notion of protocols, see Long & Long, *supra* note 13, at C165 ("Communication protocols are rules established to govern the way data are transmitted in a computer network.")

³² See Brian F. Fitzgerald, *Software as Discourse? A Constitutionalism for Information Society*, 24 ALTERNATIVE L.J. 144 (1999); Brian F. Fitzgerald, *Software as Discourse: The Challenge for Information Law?*, EUR. INTELL. PROP. REV. 47 (2000).

knowledge. The following case questions the level of appreciation of this dynamic communicative and constructive power of software.

1. *Bernstein v. United States Department of Justice*³³

Daniel Bernstein, a professor in Computer Science at the University of Illinois in Chicago developed encryption³⁴ software that he dubbed "Snuffle."

Seeking to present his work on Snuffle within the academic and scientific communities, Bernstein asked the State Department whether he needed a license to publish Snuffle in any of its various forms. The State Department responded that Snuffle was a munition under the International Traffic in Arms Regulations ("ITAR"), and that Bernstein would need a license to "export" the paper, the source code, or the instructions.³⁵

Bernstein then challenged the constitutional validity of the regulations, claiming they were facially invalid as a prior restraint on speech.³⁶ The Ninth Circuit Court of Appeals held that the regulations "(1) operat[ed] as a prepublication licensing scheme that burdens scientific expression, (2) vest[ed] boundless discretion in government officials, and (3) lack[ed] adequate procedural safeguards. Consequently, [the court held] that the challenged regulations constitute[d] a prior restraint on speech that offend[ed] the First Amendment."³⁷

Much of the controversy involved in this case concerned the question of whether software is speech protected by the First Amendment. The court specifically addressed the issue of whether the Export Administration Regulations ("EAR") restrictions on the export of encryption software in source code constituted a prior restraint in violation of the First Amendment. In his opinion, Judge Fletcher, with whom Judge Bright concurred, began by looking at the definition of source code:

"Source code," at least as currently understood by computer

³³ 176 F.3d 1132 (9th Cir. 1999), *vacated*, 192 F.3d 1308, 1309 (9th Cir. 1999) (en banc). See also *Junger v. Daley*, 209 F.3d 481 (6th Cir. 2000).

³⁴ "Encryption . . . involves running a readable message known as 'plaintext' through a computer program that translates the message according to an equation or algorithm into unreadable 'ciphertext.' Decryption is the translation back to plaintext when the message is received by someone with an appropriate 'key.'" *Bernstein*, 176 F.3d at 1137.

³⁵ *Id.* at 1136. This is based on the view that the power of encrypting software to secure information raises issues of national security. See *id.*

³⁶ The district court found that the source code was speech protected by the First Amendment and subsequently granted summary judgment to Bernstein on his First Amendment claims. See *Bernstein v. United States Dep't of State*, 922 F. Supp. 1426 (N.D. Cal. 1996).

³⁷ *Bernstein*, 176 F.3d at 1135.

programmers, refers to the text of a program written in a "high-level" programming language, such as "PASCAL" or "C." The distinguishing feature of source code is that it is meant to be read and understood by humans and that it can be used to express an idea or a method. A computer, in fact, can make no direct use of source code until it has been translated ("compiled") into a "low-level" or "machine" language, resulting in computer-executable "object code." That source code is meant for human eyes and understanding, however, does not mean that an untutored layperson can understand it. Because source code is destined for the maw of an automated, ruthlessly literal translator—the compiler—a programmer must follow stringent grammatical, syntactical, formatting, and punctuation conventions. As a result, only those trained in programming can easily understand source code.

Also important for our purposes is an understanding of how source code is used in the field of cryptography. . . . By utilizing source code, a cryptographer can express algorithmic ideas with precision and methodological rigor that is otherwise difficult to achieve. This has the added benefit of facilitating peer review—by compiling the source code, a cryptographer can create a working model subject to rigorous security tests. The need for precisely articulated hypotheses and formal empirical testing, of course, is not unique to the science of cryptography; it appears, however, that in this field, source code is the preferred means to these ends.³⁸

In light of this evidence, the court held that "encryption software, in its source code form and as employed by those in the field of cryptography, must be viewed as expressive for First Amendment purposes . . ." ³⁹ The government had argued that because source code was primarily functional, it was not protected by the First Amendment. The court rejected this claim, saying that source code could be read and understood by humans, and that, furthermore, an ounce of functionality does not negate the First Amendment.⁴⁰ The government also contended that the challenged regulations were immune from prior restraint analysis because they were "laws of general application" (e.g., a law requiring a building permit) rather than being "directed narrowly and specifically at expression."⁴¹ The court rejected this argument, saying that in the cryptography field, source code is utilized as a means of expres-

³⁸ *Id.* at 1140-41.

³⁹ *Id.* at 1141.

⁴⁰ See *id.* at 1141-42.

⁴¹ *Id.* at 1142.

sion, and because the regulations apply to encryption source code, they necessarily burden a particular form of expression directly through unbridled discretion vested in government officials.⁴²

The court emphasized the narrow scope of its holding, saying that it was not suggesting that all software is expressive.⁴³ This assertion is very interesting, yet somewhat vague.

Judge Nelson dissented, explaining that the majority judgment failed to recognize "the basic function of encryption source code [, which] is to act as a method of controlling computers."⁴⁴ He wrote:

[S]oftware engineers generally do not create software in object code—the series of binary digits (1's and 0's)—which tells a computer what to do because it would be enormously difficult, cumbersome and time-consuming. Instead, software engineers use high-level computer programming languages such as "C" or "Basic" to create source code as a shorthand method for telling the computer to perform a desired function. In this respect, lines of source code are the building blocks or the tools used to create an encryption machine. Encryption source code, once compiled, works to make computer communication and transactions secret; it creates a lockbox of sorts around a message that can only be unlocked by someone with a key. It is the function or task that encryption source code performs which creates its value in most cases. This functional aspect of encryption source code contains no expression; it is merely the tool used to build the encryption machine.

This is not to say that this very same source code is not used expressively in some cases. Academics, such as Bernstein, seek to convey and discuss their ideas concerning computer encryption. As noted by the majority, Bernstein must actually use his source code textually in order to discuss or teach cryptology. In such circumstances, source code serves to express Bernstein's scientific methods and ideas.

While it is conceptually difficult to categorize encryption source code under our First Amendment framework, I am still inevitably led to conclude that encryption source code is more like conduct than speech. Encryption source code is a building tool. Academics and computer programmers can convey this source code to each other in order to reveal the encryption machine they have built. But, the ultimate purpose of encryption code is, as its name suggests, to perform the function of encrypt-

⁴² See *id.* at 1142-43.

⁴³ See *id.* at 1145.

⁴⁴ See *id.* at 1147.

ing messages. Thus, while encryption source code may occasionally be used in an expressive manner, it is inherently a functional device.⁴⁵

The activity or conduct at issue here is the export of encryption source code. As I noted above, the basic nature of encryption source code lies in its functional capacity as a method to build an encryption device. Export of encryption source code is not conduct commonly associated with expression. Rather, it is conduct that is normally associated with providing other persons with the means to make their computer messages secret. The overwhelming majority of people do not want to talk about the source code and are not interested in any recondite message that may be contained in encryption source code. Only a few people can actually understand what a line of source code would direct a computer to do. Most people simply want to use the encryption source code to protect their computer communications. Export of encryption source code simply does not fall within the bounds of conduct commonly associated with expression such as picketing or handbiling.⁴⁶ This conceptualization of software as conduct, at points, betrays understanding of the expressive or discursive nature of software and also too narrowly focuses on the act of export.

The *Bernstein* opinions failed, in general, to appreciate the representational and discursive competence of software. Software is a medium for communication, for representing meaning. No matter how embedded or hidden the function of software, it is simply to construct meaning—to make something obvious. That is discourse.

To contrast the expressive nature of source code with the functional industrial processes of technology is not convincing. The dichotomy collapses when we conceptualize software as the medium for communication, for expression. Function, then, is seen to be an integral part of building the communicative framework. How would the *Bernstein* court react to a suggestion that the mechanism of voice, of speaking, or the mechanism of the brain of thinking, is not protected by the First Amendment because it is functional, in that it just tells the body what to do? Software is digital speak. The *Bernstein* court failed to appreciate that the (functional) medium can also make up the message.⁴⁷

⁴⁵ *Id.* at 1147-48 (citations omitted).

⁴⁶ *Id.* at 1149.

⁴⁷ See GARY GENOSKO ET AL., *THE MASTERS OF IMPLSION* (1999); MARSHALL McLuhan, *UNDERSTANDING MEDIA: EXTENSION OF MAN* 7-21 (1964).

Cryptography is a great example of this—it allows us to construct a private and secure identity and discourse that is otherwise not available. In this case, in essence, the court was dictating how we might speak—the discourse or dialect through which we might speak. How would one react if the government said we could not whisper or send secret notes? Or said we must talk to others in English only?

There is also a question of remoteness.⁴⁸ As the court pointed out, a building regulation does not infringe the First Amendment, even though in an abstract way a building is part of the medium and will construct meaning in some sense.⁴⁹ The “feel” of a building and its location may act to construct expression.

The proximity of code to communication, though, convinces us that software is discourse. Its primary purpose is to construct meaning and that is what the First Amendment is all about. By controlling code, one has the power to control thought processes. In this digital environment, the ability to distort the construction of meaning in any pure sense is immense, and it is in the mechanism of distortion that bias and prevailing prejudices can be invoked.⁵⁰ The protectors of speech must be vigilant.

Should all software be protected by the First Amendment? *Prima facie*, the answer must be “yes” but the process of scrutiny could well find justifiable regulation.⁵¹ For instance, the protec-

⁴⁸ See *City of Lakewood v. Plain Dealer Publ'g Co.*, 486 U.S. 750, 759 (1988) (holding that not every law involving discretion may be challenged as censorship by the press or a speaker, but only laws that have a close enough nexus to expression, or to conduct commonly associated with expression to pose a real and substantial threat of the identified censorship risks).

⁴⁹ See *id.* at 761.

⁵⁰ See JÜRGEN HABERMAS, *THE STRUCTURAL TRANSFORMATION OF THE PUBLIC SPHERE* (1996); see also JÜRGEN HABERMAS, *COMMUNICATION AND THE EVOLUTION OF SOCIETY* (1984); JÜRGEN HABERMAS, *MODERNITY AND LAW (PHILOSOPHY & SOCIAL CRITICISM)* (Mathieu Deflem ed., 1996); JÜRGEN HABERMAS, *MORAL CONSCIOUSNESS AND COMMUNICATION ACTION* (1990); JÜRGEN HABERMAS, *PHILOSOPHICAL DISCOURSES OF MODERNITY* (1987); JÜRGEN HABERMAS, *A THEORY OF COMMUNICATIVE ACTION* (1984 & 1987); JÜRGEN HABERMAS, *TOWARD A RATIONAL SOCIETY* (1971); MARK POSTER, *THE SECOND MEDIA AGE* (1995).

⁵¹ At a number of the presentations of this paper (particularly at Cardozo (New York), Baker McKenzie (Chicago) and the Institute for Information Law (Amsterdam)) some members of the audience were disturbed at the thought that software designed to be purely functional (e.g., software that assists in the operation of a steel mill) should be regarded as discursive. My claim is that functionality cannot automatically negative the discursive aspect of software—even in the steel mill, software is used to construct meaning. A court, in assessing the constitutionality of regulating this kind of speech, would consider whether the regulation is content based or content neutral and accordingly, weigh the discursive value of the software through the balancing or scrutiny process. To resile from the notion that all software is discursive would be tantamount to saying that not all speech is discursive. See LAURENCE TRIBE, *AMERICAN CONSTITUTIONAL LAW* 825-32 (2d ed. 1988). A number of people also pointed to the fact that copyright law regards software as a literary text and that this adds to the argument that all software is discursive.

tion of national security or the prevention of crime may justify well-reasoned regulation.

The *Bernstein* facts also raise the further issue of “transnational constitutionalism.”⁵² The facts of the case concern exporting cryptography—the sending of a commodity out into the sea of transnational space beyond state borders. This is a completely different topic concerning the process of law in the midst of transnational civil society and the consequent question of the protection of speech in this space; and this is no doubt why the act of export was an important criterion in the dissenting opinion.

In summary, while the majority opinion in *Bernstein* gave much support to the view that software is discourse, its inability to articulate clearly this point (conceptualization) and its hesitancy in fully embracing “all software” limit the persuasiveness of its argument. The holding that software in its coded forms can be expressive for First Amendment purposes is only one small step toward recognizing that we are talking not just about a (digital) text but also about a (digital) discourse or language. Flowing through this coded format is a constant stream of communicative activity that acts to construct meaning. It is this broader facilitative (or discursive) notion that must inform First Amendment analysis and other areas of law.

The dissenting judge, while understandably concerned with the functional aspects of software, fell prey to questionable reasoning through a lack of appreciation of the architectural capacity of software.

C. Constructing Identity: Rethinking the Traditional View of Software

As software possesses such deep discursive capabilities, it has a

⁵² “Trans”national symbolizes a notion of movement and cross-border activity. Transnational society inhabits a global space and to this extent extends beyond territory, sovereignty, and the state. “Inter”national symbolizes a static notion rooted in territory and sovereignty. If I draw a picture of the international, I might draw the blocks of stone (the buildings) in Harvard Yard, stationary in their territory, controlling whoever walks in the door. While if I draw a picture of the transnational, I might draw Harvard Yard as a space filled with a swirling mass of things, humans, corporations, blocks of stone (buildings), or states. The transnational is a space “beyond or without borders”; it does not seem to be merely a society of states, rather it is a society that inhabits spaces beyond borders, beyond territory and sovereignty; it is a space that is ever moving and not static, and one that fills every corner of the earth. See *Regina v. Bow St. Stipendiary Magistrate, ex parte Pinochet Ugarte*, 4 All. E.R. 897 (H.L. 1998), *Regina v. Bow St. Metro. Stipendiary Magistrate, ex parte Pinochete Ugarte* (No. 2), 1 All. E.R. 577 (H.L. 1999); JERRY EVERARD, *VIRTUAL STATES: THE INTERNET AND THE BOUNDARIES OF THE NATION-STATE* (2000); GLOBAL LAW WITHOUT A STATE (Gunther Teubner ed., 1997); DAVID HELD ET AL., *GLOBAL TRANSFORMATIONS* (1999); MICHAEL P. RYAN, *KNOWLEDGE DIPLOMACY* (1998); Brian F. Fitzgerald, *Trade-Based Constitutionalisms: A Framework for Universalising Substantive International Law*, 5 U. MIAMI Y.B. INT'L L. 111 (1996-97); Anne-Marie Slaughter, *International Law in a World of Liberal States*, 6 E.J. INT'L L. 1 (1995).

tremendous capacity to construct our digital identities.⁵³ It is, in essence, the womb from which digital discourse is born.⁵⁴

Understanding this capacity alerts us to the power of software developers to construct communication pathways and, consequently, identity. Since software is the quintessential element of discourse, of language, of speech, in information society, the intentions of the software creator and their accountability are crucial issues. In case you have not noticed, software is now a key part of our social structure—we sense it in our cars, our supermarkets, our televisions, and our computers. We sense it everywhere; it is a ubiquitous, undulating, architectural, air-like, water-like commodity that infiltrates our daily lives. Even more interesting is that software, through its various forms of (coded) structure,⁵⁵ can act to construct meaning and identity in much the same way as we understand speech can do. Software in the information society is discourse. It is not simply a literary text (a copyright law categorization); it is fundamental to communicative architecture.⁵⁶ The fierce debate over open code versus proprietary code software is intimately connected with this construction of identity through

⁵³ In much the same way, Gadamer saw tradition impacting upon the construction of meaning. See GADAMER, *supra* note 17; see also Feldman, *supra* note 17.

⁵⁴ It is the framework of construction; a digital interpretative community. See STANLEY FISH, *IS THERE A TEXT IN THIS CLASS?* (1980); see also STANLEY FISH, *DOING WHAT COMES NATURALLY* (1989).

⁵⁵ See LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* (1999); see also Lawrence Lessig, *Constitution and Code*, 27 CUMB. L. REV. 1 (1997); Lawrence Lessig, *Intellectual Property and Code*, 11 ST. JOHN'S J. LEGAL COMMENT. 635 (1996); Lawrence Lessig, *Law of the Horse: What Cyberlaw Might Teach* (visited Apr. 15, 2000) <<http://www.cyber.law.harvard.edu/works/lessig/finalhls.pdf>>; Lawrence Lessig, *The Limits in Open Code: Regulatory Standards and the Future of the Net*, 14 BERKELEY TECH. L.J. 758 (1999); Wired Magazine, *Tyranny in the Infrastructure* (visited Apr. 13, 2000) <http://www.wired.com/wired/5.07/cyber_rights.html>. On the notion of "open code," see David Bollier, *The Power of Openness: Why Citizens, Education, Government and Business Should Care About the Coming Revolution in Open Source Code Software* (visited Apr. 13, 2000) <<http://cyber.law.harvard.edu>>. The call for open code or free software, as opposed to proprietary software, is intimately connected with the construction of identity in the digital environment.

⁵⁶ See HABERMAS, *A THEORY OF COMMUNICATIVE ACTION*, *supra* note 50; see also HABERMAS, *COMMUNICATION AND THE EVOLUTION OF SOCIETY*, *supra* note 50; HABERMAS, *MORAL CONSCIOUSNESS AND COMMUNICATION ACTION*, *supra* note 50. On digital architecture, see generally F. BAR ET AL., *DEFENDING THE INTERNET REVOLUTION IN THE BROADBAND ERA: WHEN DOING NOTHING IS DOING HARM E-GONOMY* (Berkeley Roundtable on the Int'l Economy (BRIE) Working Paper No. 12 Aug. 1999); JERRY FITZGERALD, *BUSINESS DATA COMMUNICATIONS* chs. 8-9 (4th ed. 1993); ANTHONY WILDEN, *SYSTEM AND STRUCTURE: ESSAYS IN COMMUNICATION AND EXCHANGE* (1972); Mark A. Lemley & Lawrence Lessig, *Ex Parte Petition to FCC re Proposed Merger of AT&T and Media One* (visited Apr. 13, 2000) <<http://cyber.law.harvard.edu/works/lessig/MB.html>>; Charles R. Morris & Charles H. Ferguson, *How Architecture Wins Technology Wars*, HARV. BUS. REV. 86 (Mar.-Apr. 1993); David Reed et al., *Comment on Active Networking and End to End Arguments*, IEEE NETWORK, May/June 1998, at 69-71; Jerome Saltzer et al., *End to End Arguments in System Design* (visited Apr. 13, 2000) <<http://www.citeseering.nj.nec.com/did/83743.html>>.

software.⁵⁷

Software, then, is not just a passive text that tells a computer what to do. It is an integral part of our lives that informs a process of knowledge and identity construction. Like law, it is not just a thing, but also a practice. It is in this aspect that we are challenged to fully comprehend the construction of meaning in the digital environment.

1. The Multiplicity of Meaning: The Antitrust of Knowledge

Foucault, under the influence of Nietzschean philosophy, invoked the concept of genealogy to expose humanity as a series of interpretations.⁵⁸ The notion that there is diversity of knowledge and viewpoints nowadays seems commonplace. Whether we like it or not, the monopoly of knowledge by any one entity (at least in theory) is not acceptable. The Internet is said by some to be an agent for such diversity by ushering in an era of semiotic democracy where possibilities of self-determination are increased. Interestingly, this development of virtual social and political communities is implemented through a discourse of software.⁵⁹

To augment diversity, it is vital that law and information policy ensures that the discourse of software is open to investigation, re-

⁵⁷ The arguments are that in an environment of free (meaning freedom to change source code not free in price) or open, as opposed to proprietary, software we are guaranteed a freedom to construct our own identity. For an argument similar to the sociological and communication theories of the seventies that we need to value and open public space where discourse can be pure and not systematically distorted see *supra* note 50. Who could forget Marshall McLuhan's cry that the medium is the message! See MARSHALL McLUHAN, *UNDERSTANDING MEDIA: THE EXTENSIONS OF MAN* 7-21 (MIT Press 1994) (1964). The new medium of software, aptly described as the new silk road, has inherent characteristics that act to mold our lives, our identities. The open code movement urges us to support free software, as it allows the user to modify and build on the distributed software, thereby facilitating diversity. To prevent developers using the open code software to build a modified product which they could copyright, Richard Stallman from MIT popularised the notion of copyleft. The open code software is copyrighted, but licensed on terms that it or any product derived from it may be distributed only in accordance with the terms of the original distribution. In this way, it is argued, copyright is used to guarantee user freedom rather than to reduce user freedom, as happens with copyright protection of proprietary code. See Greg Aharonian, *Linux Curus Debate Impact of Crappy Patent on Linux* (visited Apr. 13, 2000) <<http://lpf.ai.mit.edu/Patents/ipns/ipns-19991122.txt>> (considering how this license might intersect with patent claims); Bryan Pfaffenberger, *The Coming Software Patent Crisis: Can Linux Survive?* (visited Apr. 13, 2000) <<http://www.2linuxjournal.com/articles/currents/003.html>>. The push for open code, then, is argued to be a push for a greater self-determination of identity in the digital environment. The law will need to play a similar role in the context of proprietary software.

⁵⁸ See Michel Foucault, *Theatrum Philosophicum*, 282 CRITIQUE 899 (1970); Michel Foucault, *Hommage a Jean Hyppolite*, in NIETZCHE GENEALOGIE ET L'HISTOIRE 146 (1971).

⁵⁹ See *The Palace*, *Visual Chat/Communities* (visited Apr. 13, 2000) <<http://www.communities.com>> (demonstrating the notion of virtual communities); see also *Web Raven* (visited Apr. 13, 2000) <<http://www.webraven.com.au/splash1.cfm>>.

newal, and reconstruction.⁶⁰

2. Software as an Agent of Simulation

To highlight the notion of construction of identity through software, let me refer to the writings of Jean Baudrillard, who in *Simulacra and Simulation*⁶¹ introduced us to the notion of simulation.⁶² Baudrillard wrote primarily in the context of television and aimed to highlight the layers of representation that serve to hide the origin of events through simulation. In the early 1990s, he ignited some controversy by suggesting that the Gulf War was not a real war but merely a product of simulation designed for network television.⁶³ A simple example of simulation can be found in the nature of televised field sports. These sports are played under lights, on artificial surfaces, in covered stadiums, filled with statistics and player profiles, instant replay, and so on. The original notion of the sport is now buried beneath layers of representation and commodification. Software, in its constructive or discursive capacity, has an immense power to augment simulation (from simple digitized versions of the hard copy items such as diaries, books, letters, clocks, etc., to fully functioning virtual reality) and thereby impact upon digital identity.

Without moving too far off point, let me recount some of the basic points of Baudrillard's theory, as it allows us to see more clearly the potential of software to construct or represent (let it be seen) digital identity. While Baudrillard, writing (initially) in the 1970s (and in part as a critique of Marxist philosophy), may have seen simulation as pernicious and questionable,⁶⁴ the digital era, the Internet, and virtual reality have found positive uses for simulation, although the overriding question of accountability remains.⁶⁵

⁶⁰ See *Associated Press v. United States*, 326 U.S. 1, 20 (1945); *Turner Broad. Sys., Inc. v. Federal Communications Comm'n*, 512 U.S. 622, 662-64 (1994) (plurality opinion as to Part IIIA, Kennedy, J., Rehnquist, C.J., Blackmun, Stevens & Souter JJ); *Turner Broad. Sys., Inc. v. Federal Communications Comm'n*, 520 U.S. 180, 225-26 (1997) (Breyer, J., concurring). "The basic tenet of national communication policy is that the widest possible dissemination of information from diverse and antagonistic sources is essential to the welfare of the public." *Turner Broad.*, 512 U.S. at 663-64.

⁶¹ See BAUDRILLARD, *SIMULACRA AND SIMULATION*, *supra* note 20.

⁶² "Computers lead us to construct things in new ways. With computers we can simulate nature in a program or leave nature aside and build second natures limited only by our powers of imagination and abstraction." SHERRY TURKLE, *LIFE ON THE SCREEN: IDENTITY IN THE AGE OF THE INTERNET* 47 (1995).

⁶³ See JEAN BAUDRILLARD, *THE GULF WAR DID NOT TAKE PLACE* (1995).

⁶⁴ The primary purpose of Baudrillard's work was to critique rationalist political theory like Marxism for going beyond the manifest to the latent and thereby, ignoring the surface—the layers of simulation. See JEAN BAUDRILLARD: *SELECTED WRITINGS* 4-7 (Mark Poster ed., 1988).

⁶⁵ See Brian F. Fitzgerald, *Life in Cyberspace: A Simulating Experience*, 3 *COMPUTER &*

Kenneth Gergen explains that "for Baudrillard, media portrayals of the world are driven not by the way the world 'is', but by the steadily emerging histories of portrayal itself. As these histories unfold, each new lamination is influenced by the preceding, accounts are layered upon accounts, and reality is transformed into hyperreality."⁶⁶

Howard Rheingold further explains that:

in Baudrillard's historical analysis, human civilization has changed itself in three major stages, marked by the changes in meaning we invest in our symbol systems. . . . According to Baudrillard, during the first step of civilization, when speech and then writing were created, signs were invented to point to reality. During the second step of civilization, which took place over the past century, advertising, propaganda, and commodification set in, and the sign begins to hide reality. The third step includes our step into the hyperreal, for now we are in an age when signs begin to hide the absence of reality.⁶⁷

Baudrillard, in his own words, introduces simulation in this way:

To dissimulate is to pretend not to have what one has. To simulate is to feign to have what one doesn't have. One implies a presence, the other an absence. But it is more complicated than that because simulating is not pretending . . . pretending, or dissimulating, leaves the principle of reality intact . . . whereas simulation threatens the difference between the "true" and "false," the "real" and the "imaginary."⁶⁸

By crossing into a space whose curvature is no longer that of the real, nor that of truth, the era of simulation is inaugurated by a liquidation of referentials—worse: with their artificial resurrection in the system of signs, a material more malleable than meaning, in that it lends itself to all systems of equivalences, to all binary oppositions, to all combinatory algebra. It is no longer a question of imitation, nor duplication, nor even parody. It is a question of substituting the signs of the real

TELECOMM. L. REV. 136, 139 (1997); see also MARK TAYLOR, *IMAGOLOGIES* (1994); TURKLE, *supra* note 62; SHERRY TURKLE, *THE SECOND SELF: COMPUTERS AND THE HUMAN SPIRIT* (1984).

⁶⁶ GERGEN, *THE SATURATED SELF*, *supra* note 21, at 121-22. Baudrillard's theory can be better understood by positing two words, "origination" and "simulation", which are meant to act as labels, as metaphors, and as themes. Origination is the notion that things have origin or creation (centering). Simulation is the notion that things have no origin, they exist in an imaginary way, they are make believe (decentering). See Fitzgerald, *supra* note 65, at 136, 139.

⁶⁷ HOWARD RHEINGOLD, *THE VIRTUAL COMMUNITY: HOMESTEADING ON THE ELECTRONIC FRONTIER* 298-99 (1994).

⁶⁸ BAUDRILLARD, *SIMULACRA AND SIMULATION*, *supra* note 20, at 3.

for the real⁶⁹

Representation stems from the principle of the equivalence of the sign and of the real Simulation, on the contrary, stems from the utopia of the principle of equivalence, from the radical negation of the sign as value, from the sign as the reversion and death sentence of every reference. Whereas representation attempts to absorb simulation by interpreting it as a false representation, simulation envelops the whole edifice of representation itself as a simulacrum.⁷⁰

On the contrary, it is as hyperreal events, no longer with a specific content or end, but indefinitely refracted by each other . . . it is in this sense that they cannot be controlled by an order that can only exert itself on the real and the rational, on causes and ends, a referential order that can only reign over the referential . . . but that cannot do anything against this indefinite recurrence of simulation, against that nebula whose weight no longer obeys the laws of gravitation of the real⁷¹

Baudrillard's notion of simulation highlights how discourse can act to distort and reconfigure an appreciation of events.⁷² Software is very much an agent of simulation in that it has tremendous capacity to reinvent reality through digitization. In understanding software and the regulation of it through law, we must be alert to its ability to distort and structure communication and to the power of those that create software to structure our identities through this process.

III. LEGAL REGULATION OF THE DIGITAL ARCHITECTURE (SOFTWARE): INTELLECTUAL PROPERTY

The role and function of software will initially be mediated by a blend of intellectual property law, contract law, competition law and privacy law,⁷³ which I would term informational law or informational constitutionalism. It is the development of the principles of these areas of law in their relation to software that will determine much about the way we live in the future.

⁶⁹ *Id.* at 2.

⁷⁰ *Id.* at 6 (emphasis in original).

⁷¹ *Id.* at 21. See also BAUDRILLARD, *supra* note 63.

⁷² See GENOSKO ET AL., *supra* note 47.

⁷³ Law can play an important role in ensuring diversity. See *Turner Broad. Sys., Inc. v. Federal Communications Comm'n*, 512 U.S. 622, 662-64 (1994) (discussing the importance of ensuring public access to a multiplicity of information sources where the issue is whether or not a must-carry provision is unconstitutional).

A. Copyright and Reverse Engineering

Intellectual property law in the form of copyright protects computer software as if it were a literary text, allowing the copyright owner exclusive rights in relation to the reproduction of that text.⁷⁴ The rationale of copyright is that it will protect the expression of information but not the ideas supporting such expression. An example of the way in which copyright law will serve to shape our identity through the way it treats the expressive language of software is found in the context of reverse engineering and decompilation of software.

If a software engineer or developer constructs software that becomes an industry standard, that software acts as architecture for communication; it becomes, in essence, a discourse that allows me to speak to you. Copyright law then bears upon its shoulders the need to mediate the power given to the copyright holder to monopolize rights in discourse that may have become an industry standard—in other words, a common form—with the needs of the user or speaker. Herein lie the battles over reverse engineering and the decompilation of software. In order to develop complementary and improved software products (speech), software developers have reverse engineered the industry standard software to make software that can be interoperable (conversant) with the industry standard. In many cases, in order to reverse engineer software, you need to copy (and in some cases “borrow” parts of) the software, which technically is an infringement of the copyright owner's exclusive rights over reproduction. In the United States, the courts have employed the fair use doctrine⁷⁵ to mediate this issue, while in Australia, the government has enacted a (part) legislative solution through amendment to the Copyright Act.⁷⁶ Fair

⁷⁴ Copyright Act of 1968, § 31 (Austl.); 17 U.S.C. § 106 (1995).

⁷⁵ See 17 U.S.C. § 107 (1998); *Sega Enters. Ltd. v. Accolade, Inc.* 977 F.2d 1510 (9th Cir. 1992) (applying fair use doctrine to reverse engineering); *Sony Computer Entertainment Inc. v. Connectix Corp.* 203 F.3d 596 (9th Cir. 2000); see also Brian F. Fitzgerald, *Underlying Rationales of Fair Use: Simplifying the Copyright Act*, 2 S. CROSS U. L. REV. 153 (1998). On reverse engineering and decompilation, see generally Anne Fitzgerald & Cristina Cifuentes, *Interoperability and Computer Software Protection in Australia*, 4 COMPUTER & TELECOMM L. REV. 271 (1998); Cristina Cifuentes & Anne Fitzgerald, *Reverse Engineering of Computer Programs: Comments on the Copyright Law Review Committee's Final Report on Computer Software Protection*, 6 J.L. & INFO. SCI. 241 (1995); Anne Fitzgerald & Cristina Cifuentes, *Pegging Out the Boundaries of Computer Software Copyright: The Computer Programs Act and the Digital Agenda Bill*, in GOING DIGITAL 2000: LEGAL ISSUES FOR E-COMMERCE, SOFTWARE AND THE INTERNET (Anne Fitzgerald et al. eds., Prospect Publ'g, Sydney, Austl. 2000).

⁷⁶ See Copyright Act of 1968, §§ 47 D-F introduced by Copyright Amendment (Computer Programs) Act of 1999 (Austl.); cf. Digital Millennium Copyright Act of 1998 § 1201(f), Pub. L. No. 105-305, 112 Stat. 2860 (1998); *Universal City Studios, Inc. v. Reimerdes*, 82 F. Supp. 2d 211; see also Attorney General D. Williams & Senator R. Alston, *Copyright Changes to Help Australian Software Industry* (visited Feb 23, 1999) <http://www.dcita.gov.au>.

use defines the appropriate balance between a monopoly right given as an incentive for innovation, and the public interest in the free flow of information for a variety of cultural reasons.⁷⁷ In Australia, the Copyright Law Review Committee ("CLRC") has recommended that we adopt a more broad-based fair use right, similar to the United States model, in place of our narrower and more specific fair dealing exceptions.⁷⁸

The following case, which was decided by the High Court of Australia (Australia's equivalent to the United States Supreme Court) on September 30, 1999, suggests that the legality of reverse engineering for interoperability purposes will be quite narrow. This raises concerns for the vitality and diversity of digital discourse.

1. *Data Access Corp. v. Powerflex Services Pty Ltd.*⁷⁹

Data Access Corp., a company incorporated under the law of the State of Florida in the United States, claimed to own copyright in an application development system, Dataflex, which had been in use in Australia since 1982. Dataflex was designed to develop computer programs that establish, manage, and manipulate databases by providing facilities for the storage, organization and retrieval of information and for computation and comparison with respect to the information. Dataflex also included developed computer programs that the purchaser could use instead of developing her own programs. Dataflex incorporated a "run time" program that enabled computer programs and databases developed by means of the system to operate or "run." Data Access charged a license fee for the run time program.

The third respondent, Dr. David Bennett, aspired to create an application development system that would be highly compatible with Dataflex so that persons who had been using the Dataflex application development system would be persuaded to acquire the

⁷⁷ See Fitzgerald, *Underlying Rationales of Fair Use*, *supra* note 75, at 153; see also Campbell v. Acuff-Rose Music Inc., 510 U.S. 569 (1994); PAUL GOLDSTEIN, *COPYRIGHT'S HIGHWAY* ch. 5 (1994); JOHN S. LAWRENCE & BERNARD TIMBERG, *FAIR USE AND FREE INQUIRY* (1989); WILLIAM PATRY, *THE FAIR USE PRIVILEGE IN COPYRIGHT* (1985); William Fisher III, *Reconstructing the Fair Use Doctrine*, 101 HARV. L. REV. 1659, 1700-04 (1988); Wendy J. Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and its Predecessors*, 82 COLUM. L. REV. 1600 (1982).

⁷⁸ See *Report on the Simplification of the Copyright Act 1968, Part 1, Exceptions to the Exclusive Rights of Copyright Owners* (Copyright Law Review Committee) (1998) (visited June 8, 2000) <http://law.gov.au/clrc/gen_info/clrc/rep_index.html>. For examples of Australia's fair dealing exceptions, see Copyright Act, 1968, §§ 40-42 (Austl.).

⁷⁹ (1999) 166 A.L.R. 228, available at <<http://www.austlii.edu.au>> (visited Apr. 13, 2000).

system. By December 1987, when he purchased the latest version of Dataflex, Dr. Bennett had gained a profound understanding of that system and was steadily preparing his own system. By early 1989, he had so refined the system that he procured members of the Victorian Dataflex Users' Group, a voluntary association of persons who used or were otherwise interested in the Dataflex system, to test and report on his system. In September 1989, he and his wife, Margaret Ann Bennett, (the fourth respondent) caused the second respondent (Powerflex Corp. Pty Ltd.) to be incorporated, and that company began selling Dr. Bennett's system under the name "Powerflex," which in 1990 was changed to "PFXplus." PFXplus was marketed as fully compatible with existing Dataflex files, thereby eliminating the need for payment of Dataflex run time fees.

Out of the 225 words of Dataflex language (excluding twenty-nine words relating to graphics), 192 are in the PFXplus language. The use of each of those 192 words causes a device having digital information processing capabilities to perform the same function it performs in Dataflex. Yet, there is no objective similarity between the expression in the source code of PFXplus and the expression in the source code of Dataflex, except that in each case the word is found in that expression.

The key issue for determination was whether the use of the same word in the two computer programs to perform the same function was in contravention of the copyright owner's exclusive rights bestowed pursuant to the Australian Copyright Act 1968. Further copyright issues were raised in relation to macros and a compression table. The High Court of Australia held that copying command words associated with the Dataflex program (such as "AUTOPAGE," "PAGEBREAK," and "FILELIST") was not a breach of copyright. It also held that copying three Dataflex macros (i.e., "REPORT," "ENTERGROUP," and "ENTER") in the same program did not infringe Australian copyright law. However, on the issue of the compression table, it found the product of Dr. Bennett's act of black box reverse engineering to be a breach of copyright.

a. Huffman Compression Table

In relation to the compression table, the High Court explained:

Data Access alleged that part of the PFXplus program called "Runtime Program" reproduced part of the Dataflex run-time program containing the Dataflex Huffman Compression

Table which is a system by which characters in a file expressed in a code of eight bits for each character are represented by much shorter strings of numbers. The shortest string is assigned to the most frequently occurring character and the length of each string is inversely proportional to the probability of occurrence of the character. Thus the saving of space required for the storage of data on memory devices such as hard disk drives and tapes is very great. It was common ground that the two tables, Dataflex and PFXplus, of the compressed code and corresponding character in eight bit code are identical and that Dr. Bennett intentionally caused them to be identical.

The respondent in the case, Dr. Bennett, needed to "replicate precisely the . . . compression table" (used to compress data and therefore save disk space) in a competitor's database application (called Dataflex) because he wanted his database (called Powerflex) to interoperate with the Dataflex program. In order to achieve interoperability, Dr. Bennett did not sit down and literally copy the internal code used in the Dataflex program. He used a technique called black box reverse engineering. Black box reverse engineering means that Dr. Bennett did not make a direct copy of the compression table. He indirectly copied it by observing the behaviour of the Dataflex program and deducing the exact contents of the Dataflex compression table.⁸⁰

The High Court ruled that black box reverse engineering and subsequent literal representation of a compression table in another database application was a breach of copyright. The fact that the defendant used black box reverse engineering to determine the contents of the compression table was irrelevant for the purposes of copyright law. The Court said: "the fact that Dr. Bennett used an ingenious method of determining the bit string assigned to each character does not make the output of such a process any less a 'reproduction' than if Dr. Bennett had sat down with a print-out of the table and copy-typed it into the PFXplus program."⁸¹

This raises a major issue for reverse engineering in Australia as the recent amendments to the Copyright Act, expressly allowing reverse engineering for interoperability security testing and error correction purposes, require the activity to be undertaken on behalf of the owner or licensee of the copy of the program from which the reproduction or adaptation is made.⁸² This can be con-

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² The Australian Copyright Act provides the following:

47B Reproduction for normal use or study of computer programs

(3) Subject to subsection (4), the copyright in a literary work that is a

trasted with the Digital Millennium Copyright Act⁸³ and fair use doctrine in the United States, which allow for reverse engineering without the consent of the owner or licensee of the copy of the program.⁸⁴

computer program is not infringed by the making of a reproduction of the work if:

(a) the reproduction is made in the course of running a copy of the program for the purpose of studying the ideas behind the program and the way in which it functions; and

(b) the running of the copy is done by, or on behalf of, the owner or licensee of the copy.

(4) Subsection (3) does not apply to the making of a reproduction of a computer program from an infringing copy of the computer program.

47D Reproducing computer programs to make interoperable products

(1) Subject to this Division, the copyright in a literary work that is a computer program is not infringed by the making of a reproduction or adaptation of the work if:

(a) the reproduction or adaptation is made by, or on behalf of, the owner or licensee of the copy of the program (the *original program*) used for making the reproduction or adaptation; and

(b) the reproduction or adaptation is made for the purpose of obtaining information necessary to enable the owner or licensee to make independently another program (the *new program*), or an article, to connect to and be used together with, or otherwise to interoperate with, the original program or any other program; and

(c) the reproduction or adaptation is made only to the extent reasonably necessary to obtain the information referred to in paragraph (b); and

(d) to the extent that the new program reproduces or adapts the original program, it does so only to the extent necessary to enable the new program to connect to and be used together with, or otherwise to interoperate with, the original program or the other program; and

(e) the information referred to in paragraph (b) is not readily available to the owner or licensee from another source when the reproduction or adaptation is made.

(2) Subsection (1) does not apply to the making of a reproduction or adaptation of a computer program from an infringing copy of the computer program.

Copyright Act, 1968, §§ 47B, 47D (Austl.) (emphasis in original). On the nuances of these terms, see Brian F. Fitzgerald, *Commodifying and Transacting Informational Products Through Contractual Licences: The Challenge for Informational Constitutionalism*, in *INTELLECTUAL PROPERTY IN THE COMMON LAW WORLD* (G. Austin & C. Rickett eds., 1999); Mark A. Lemley, *Beyond Pre-emption: The Law and Policy of Intellectual Property Licensing*, 87 CAL. L. REV. 111, 128-31 (1999); David Nimmer et al., *The Metamorphosis of Contract into Expand*, 87 CAL. L. REV. 17, 32-40 (1999).

The Australian House of Representatives Standing Committee on Legal and Constitutional Affairs, following a submission by Anne Fitzgerald, has recommended this requirement be removed in relation to security testing to bring Australian law into line with the DMCA. See *Advisory Report on the Copyright Amendment (Digital Agenda) Bill 1999* (1999) paras. 4.65-4.66 (visited Apr. 13, 2000) <<http://www.aph.gov.au/house/committee/laca/digitalagenda/contents.htm>>; see also Fitzgerald & Cifuentes, *Pegging Out the Boundaries*, *supra* note 75, at 37, 45-46.

⁸³ Pub. L. No. 101-305, 112 Stat. 2860 (1998).

⁸⁴ The Digital Millennium Copyright Act of 1998 states:

(f) REVERSE ENGINEERING—(1) Notwithstanding the provisions of subsection (a)(1)(A), a person who has lawfully obtained the right to use a copy of a computer program may circumvent a technological measure that effectively controls access to a particular portion of that program for the sole

A question also remains as to the extent to which reverse engineering rights can be contractually prohibited.⁸⁵ The degree to which reverse engineering can survive the contractual license is seen by many software developers as being of the utmost significance. The commentary to the Uniform Computer Information Transaction Act ("UCITA"), while not being definitive, suggests contractually prohibiting reverse engineering in some cases will fall foul of section 105(b).⁸⁶ In Australia, the current law as amended by the Copyright Amendment (Computer Programs) Act 1999 (Cth), provides in section 47H that an agreement that has the effect of limiting sections 47D-F (which permit reverse engineering for certain purposes on certain conditions) is of no effect.⁸⁷ However, as sections 47D-F are conditioned on the activities being undertaken by, or on behalf of, the owner or licensee of a copy of the program and on the copy of the software not being an infringing copy,⁸⁸ there may be scope for arguing that the software manufacturer still has the capacity to license the product on terms that do

purpose of identifying and analyzing those elements of the program that are necessary to achieve interoperability of an independently created computer program with other programs, and that have not previously been readily available to the person engaging in the circumvention, to the extent any such acts of identification and analysis do not constitute infringement under this title.

(2) Notwithstanding the provisions of subsections (a)(2) and (b), a person may develop and employ technological means to circumvent a technological measure, or to circumvent protection afforded by a technological measure, in order to enable the identification and analysis under paragraph (1), or for the purpose of enabling interoperability of an independently created computer program with other programs, if such means are necessary to achieve such interoperability, to the extent that doing so does not constitute infringement under this title.

(3) The information acquired through the acts permitted under paragraph (1), and the means permitted under paragraph (2), may be made available to others if the person referred to in paragraph (1) or (2), as the case may be, provides such information or means solely for the purpose of enabling interoperability of an independently created computer program with other programs, and to the extent that doing so does not constitute infringement under this title or violate applicable law other than this section.

(4) For purposes of this subsection, the term 'interoperability' means the ability of computer programs to exchange information, and of such programs mutually to use the information which has been exchanged.

Id. § 1201.

⁸⁵ Under the European Software Directive, contractual prohibition of reverse engineering for interoperability purposes is not allowed. See Council Directive 122/42 of 14 May 1991 on the Legal Protection of Computer Programs, arts. 6(1), 9(1) 1991 O.J. (L 122).

⁸⁶ Commentary of the NCCUSL Drafting Committee on Uniform Computer Information Transaction Act ("UCITA") (visited Apr. 14, 2000) <<http://www.law.upenn.edu/bll/ulc/ucita/citaam99.htm>>.

⁸⁷ See Copyright Amendment (Computer Programs) Act 1999 (Cth) (Austl.); Copyright Act of 1968 § 47H, available at <<http://scaletext.law.gov.au/html/pasteact/0/244/top.htm>> (visited June 8, 2000).

⁸⁸ See Copyright Act of 1968 §§ 47D-F, available at <<http://scaletext.law.gov.au/html/pasteact/0/244/top.htm>> (visited June 8, 2000).

not permit reverse engineering, thereby defeating sections 47D-F and circumventing 47H.

In summary, it is suggested that a well reasoned and evenly balanced view of the legality of reverse engineering (analyzed through the framework of software as discourse) is vital to a diverse and vibrant digital communicative architecture/discourse (premised on interoperable or conversant standards) and should be vigorously asserted.

B. Intellectual Property: Patent Law

A patent gives a very strong form of protection (monopoly right for up to twenty years) over the using and selling of inventions. It is now clear that software (in the form of algorithms and data structures) can be patented,⁸⁹ even though under the TRIPS Agreement, the preferred form of protection is through copyright.⁹⁰ The role of copyright in this area has now been overtaken by events.

During the last decade, the number of software patents granted in the United States has increased tremendously. Over 13,000 software patents were issued in 1997; 17,500 are estimated for 1998; and 22,500 are estimated for 1999. In fact, ten times the number of patents granted in 1992 and 1993 will be granted in 1998 and 1999.⁹¹

In recent times, there have been more and more extensive claims to (monopoly) patent rights in the kinds of software that act as the basic architecture of electronic commerce. There have been a number of claims in the United States that methods of transacting electronic commerce (including digital cash) are patented and

⁸⁹ See J. Swinson & G. Middleton, *Patents in Cyberspace: Electronic Commerce and Business Methods Patents*, in GOING DIGITAL 2000: LEGAL ISSUES FOR E-COMMERCE, SOFTWARE AND THE INTERNET 71 (Anne Fitzgerald et al. eds., 2000); cf. European Patent Convention art. 52(2)(c) (1978) 13 I.L.M. 270; E. Liesegang, *Software Patents in Europe*, 5 COMPUTER & TELECOMM. L. REV. 48 (1999).

⁹⁰ Article 10(1) of the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"), part of the World Trade Organization Agreement of 1994 and binding on all members of the World Trade Organization, provides that: "Computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971)." Agreement on Trade-Related Aspects of Intellectual Property Rights, Part II, § 1, art. 10, available at <<http://www.wto.org/wto/intellect/4-ipstan.htm#1>> (visited June 8, 2000). See also Brian F. Fitzgerald, *Computer Copyright: Same Words, Different Source Code: Data Access v. Powerslex 2* COMPUTER & TELECOMM. L. REV. 120 (1996); Brian F. Fitzgerald, *Lotus Development Corporation v. Borland International Inc.: Is the Lotus 1-2-3 Menu Command Hierarchy Copyrightable*, 6 J. L. & INFO. SCI. 277 (1995).

⁹¹ See Gregory Aharonian, INTERNET PATENT NEWS, Oct. 18, 1998, available from <<http://www.bustpatents.com>>; see Fitzgerald & Cifuentes, *Interoperability and Computer Software Protection*, *supra* note 75, at 271.

cannot be replicated without a license.⁹² Here the very foundations of the information society, the commercial structure or architecture, are being monopolized by the patent holder. We aspire to the patent monopoly in order to reward inventors for the public good, but the patent monopoly is troubling where the basic building blocks of action or speech are patented. As the following case demonstrates, in defining the patenting of software, we will be defining accessibility to new forms of discourse.

1. *State Street Bank*⁹³

This case concerned the validity of a patent for a system that allowed a bank administrator to monitor and record the financial information flow and make all calculations necessary for maintaining a partner fund financial services configuration. A partner fund financial services configuration essentially allows several mutual funds, or "Spokes," to pool their investment funds into a single portfolio, or "Hub," allowing for consolidation of, inter alia, the costs of administering the fund and providing the tax advantages of a partnership. The court was asked whether the claimed subject matter fell into one of two alternative judicially-created exceptions to statutory subject matter; the "mathematical algorithm" exception and the "business method" exception.⁹⁴

⁹² See, e.g., *State St. Bank & Trust Co. v. Signature Fin. Group Inc.*, 149 F.3d 1368 (Fed. Cir. 1998) (discussing patent on computing financial data); Teresa Riordan, *A Dangerous Monopoly? Paying Computer Users to Read Internet Ads and then Storing Their Data*, N.Y. TIMES, Feb. 1, 1999, at C1 (discussing Cybergold's patent on paying to view Internet advertisements and SightSound.com's patent for downloading audio or visual material for a fee transmitted over the network). For a list of recent e-commerce software patent claims see League of Programming Freedom, *Software Patents*, (visited Apr. 14, 2000) <<http://lpf.ai.mit.edu/Patents/patents.html>>. In *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 73 F. Supp. 2d 1228 (W.D. Wash. 1999), a district court judge in Seattle granted a preliminary injunction prohibiting Barnes & Noble from using one-click technology in the online shopping process. Paragraph One of the complaint read:

Amazon.com brings this suit to redress Defendants' willful infringement of Amazon.com's patent encompassing its 1-Click method for processing on-line shopping orders. Amazon.com's 1-Click system is a major innovation in e-commerce: it allows customers to order, pay for, and arrange for delivery of any item Amazon.com sells, all with a single click of the mouse. The 1-Click method is popular with customers because it gives them a faster, more convenient, more efficient, and more pleasant shopping experience. In May 1998, Defendants meticulously copied Amazon.com's 1-Click process, dubbed it "Express Lane," and introduced it on their barnesandnoble.com website. Defendant's Express Lane ordering system infringes Amazon.com's United States Patent No. 5,960,411 (the "411 patent").

Complaint, for Patent Infringement and Demand for Trial, *Amazon.com v. Barnesandnoble.com*, 73 F. Supp. 2d 1228 (W.D. Wash. 1999), available at <<http://lpf.ai.mit.edu/Patents/amazon-vs-bn.html>>.

⁹³ *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368 (Fed. Cir. 1998).

⁹⁴ Section 101 of the U.S. Patent Act reads: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful

The court explained that the plain and unambiguous meaning of section 101 of the Patent Act meant that any invention falling within one of the four stated categories of statutory subject matter may be patented, provided it meets the other requirements for patentability set forth in sections 102, 103, and paragraph two of section 112. They further explained that repetitive use of the expansive term "any" in section 101 evidenced Congress's intent not to place any restrictions on the subject matter for which a patent could be obtained beyond those specifically recited in the section. The court stated that the Supreme Court has acknowledged that Congress intended section 101 to extend to "anything under the sun that is made by man,"⁹⁵ and that therefore it would be improper to read limitations into the statute restricting the subject matter that may be patented.⁹⁶

Addressing the claim that a mathematical algorithm exception invalidated this patent, the court reasoned:

The Supreme Court has identified three categories of subject matter that are unpatentable, namely "laws of nature, natural phenomena, and abstract ideas." Of particular relevance to this case, the Court has held that mathematical algorithms are not patentable subject matter to the extent that they are merely abstract ideas. . . . [T]he Court explained that certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, i.e., "a useful, concrete and tangible result."

Unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not "useful." From a practical standpoint, this means that to be patentable an algorithm must be applied in a "useful" way. . . .

Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"—a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.⁹⁷

improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title." 35 U.S.C. § 101 (1984).

⁹⁵ *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182 (1981) (quoting S. REP. NO. 1979, 82d Cong., 2d Sess., 5 (1952); H.R. REP. NO. 1923, 82d Cong., 2d Sess., 6 (1952), 1952 U.S.C.C.A.N. 2394, 2399).

⁹⁶ See *State St. Bank*, 149 F.3d at 1372-73.

⁹⁷ *Id.* at 1373 (citations omitted).

Regarding the claim that a business method exception invalidated the patent the court held:

As an alternative ground for invalidating the . . . patent . . . the [lower] court relied on the judicially-created, so-called "business method" exception to statutory subject matter. We take this opportunity to lay this ill-conceived exception to rest. Since its inception, the "business method" exception has merely represented the application of some general, but no longer applicable legal principle, perhaps arising out of the "requirement for invention"—which was eliminated by § 103. Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method.

The business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable. Application of this particular exception has always been preceded by a ruling based on some clearer concept of Title 35 or, more commonly, application of the abstract idea exception based on finding a mathematical algorithm. Illustrative is the CCPA's analysis in *In re Howard*, wherein the court affirmed the Board of Appeals' rejection of the claims for lack of novelty and found it unnecessary to reach the Board's section 101 ground that a method of doing business is "inherently unpatentable."

Similarly, *In re Schrader*, while making reference to the business method exception, turned on the fact that the claims implicitly recited an abstract idea in the form of a mathematical algorithm and there was no "transformation or conversion of subject matter representative of or constituting physical activity or objects." . . . *Maucorps* dealt with a business methodology for deciding how salesmen should best handle respective customers and *Meyer* involved a "system" for aiding a neurologist in diagnosing patients. Clearly, neither of the alleged "inventions" in those cases falls within any § 101 category. However, closer scrutiny of these cases reveals that the claimed inventions in both *Maucorps* and *Meyer* were rejected as abstract ideas under the mathematical algorithm exception, not the business method exception.

Even the case frequently cited as establishing the business method exception to statutory subject matter, *Hotel Security Checking Co. v. Lorraine Co.*, did not rely on the exception to strike the patent. In that case, the patent was found invalid for lack of novelty and "invention," not because it was improper subject matter for a patent. The court stated "the fundamental principle of the system is as old as the art of bookkeeping, i.e., charging the goods of the employer to the agent who takes

them." "If at the time of [the patent] application, there had been no system of bookkeeping of any kind in restaurants, we would be confronted with the question whether a new and useful system of cash registering and account checking is such an art as is patentable under the statute." This case is no exception.⁹⁸

The court pointed out that the district court, while explaining the rationale of the business method exception as set forth in several treatises, actually gave as the primary reason for its decision the following statement:

If Signature's invention were patentable, any financial institution desirous of implementing a multi-tiered funding complex modelled [sic] on a Hub and Spoke configuration would be required to seek Signature's permission before embarking on such a project. This is so because the '056 Patent is claimed [sic] sufficiently broadly to foreclose virtually any computer-implemented accounting method necessary to manage this type of financial structure.⁹⁹

The appeals court explained that whether the patent's claims were too broad to be patentable was not to be judged under section 101, but rather under sections 102, 103, and 112 and had nothing to do with whether what was claimed was statutory subject matter.¹⁰⁰

In summary, the court rejected the existence of judicially created exceptions to the statutory subject matter and confirmed the validity of the patent in what has been seen as a landmark decision for e-commerce software patents.

One may ponder whether the business method would have been patentable without the software. What made the claim patentable? One interpretation of the case is that the business method was patentable because it was wrapped up in software (in digital speak) and that digitizing the business method has some magical legal effect.¹⁰¹

The ever-increasing number of e-commerce business method

⁹⁸ *Id.* at 1374-76 (citations and footnotes omitted).

⁹⁹ *Id.* at 1376-77 (quoting *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 927 F. Supp. 502, 516 (D. Mass. 1996)).

¹⁰⁰ *Id.* at 1375-76.

¹⁰¹ As one writer points out, the real space non-digital "drive through" business method for delivery of fast food would not have been patentable in the past. See Claus D. Melarti, Note, *State Street Bank Trust Co. v. Signature Financial Group Inc: Ought the Mathematical and Business Method Exceptions Return to Business as Usual?*, 6 J. INTELL. PROP. L. 359 (1999). This real space business method could be protected to some extent through contract (e.g. franchise agreement), trademark, and unfair competition law.

software patents, especially those involving fundamental e-commerce architecture is making it impossible to move (speak) in digital space without fear of patent infringement.

This is a matter of serious concern, as a method of doing business is a discourse. The way we communicate to transact commercial affairs is a discursive practice. How would one react to a claim that they had to pay a license fee to say, "The item costs five dollars; please hand over your money"? As can be seen from this example, digital architecture is inherently discursive, so the more we allow proprietary rights in it, the more we impact upon the freedom of communication or discourse. The incentive to build digital architecture, however, is intertwined with the enforcement of intellectual property rights.

This interconnection raises an interesting question. The development of digital discourse is an expensive business; and, if we aspire to build the best digital communicative architecture, we may be expected to pay for such development. The difficulty is that more traditional elements of discourse, like speaking the English language, are not proprietary but open; they are not subject to a patent. I do not expect to have to pay someone a license fee to speak to you here today. My dilemma is that I strongly believe that if we are to fully exploit the amazing opportunities inherent in information society, we need to reward inventors and to understand the importance of commodifying informational products. On the other hand, I shudder at the thought that when e-commerce becomes the norm, the basic communicative architecture of business will become proprietary.¹⁰²

Audiences to these arguments have given various responses. One person suggested that a solution might well lie in more effective patent claim processes that accord more attention to the prior art, thereby protecting the fundamental value of free and open discourse.¹⁰³ Others suggest use of compulsory licensing or the patent misuse defense to allow access to the essential architecture.¹⁰⁴

¹⁰² See Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999); see also G. DREWS, *THE PATENT RIGHT IN THE NATIONAL ECONOMY OF THE UNITED STATES* (1952); Mark D. Janis, *Second Tier Patent Protection*, 40 HARV. INT'L L.J. 151 (1999); Francisc Marius Keeley-Domokos, Note, *Intellectual Property*, 14 BERKELEY TECH. L.J. 153 (1999); Melart, *supra* note 101.

¹⁰³ See Merges, *supra* note 102.

¹⁰⁴ For an overview of patent misuse cases, see DONALD S. CHISUM, 6 CHISUM ON PATENTS: A TREATISE ON THE LAW OF PATENTABILITY, VALIDITY AND INFRINGEMENT § 19.04[3] (1999). See also *infra* note 124. In the future we may see stronger arguments for application of the antitrust-based essential facilities doctrine to proprietary digital architecture, although current case law would suggest this is not an easy route to take. See Australian

Some have queried whether we have a right to expect the business infrastructure to be free—after all, phone lines are not free! Although, in reply, the English language is not proprietary, software patents have the potential to exclude competitors who invest resources, not just free riders (as the District Court pointed out in *State Street*), and no one is claiming that you do not have to pay for a business service provided. These issues are complex and deserve more thought, but an immediate response is that they can be accommodated if we remember that free and open discourse is a fundamental value, but not the only value to be weighed in the balance.

In summary, the conceptualization of software as discourse makes us aware of the broad-reaching power of e-commerce software patents and of our need to consider carefully the proprietary nature of digital discourse/architecture.

C. *Contract Law: The Software License*

We distribute software primarily through a software license—shrink-wrap or click-wrap. Software is not distributed through the sale of a tangible good but rather through the licensing of an intangible commodity. The license is the product.¹⁰⁵

"Shrink-wrap licenses" are normally used where the software is shrink-wrapped and sold in a store. The license is disclosed only

Trade Practices Act, 1974, Part IIIA (Austl.); *MCI Communications Corp. v. American Tel. & Tel. Co.*, 708 F.2d 1081 (7th Cir. 1983), *cert. denied* by American Tel. & Tel. Co. v. MCI Communications Corp., 464 U.S. 891 (1983); *Byars v. Bluff City News Co., Inc.*, 609 F.2d 843 (6th Cir. 1980); *Hecht v. Pro-Football Inc.*, 570 F.2d 982 (D.C. Cir. 1977), *cert. denied*, 436 U.S. 956 (1978); *Cyber Promotions Inc. v. AOL*, 948 F. Supp 456 (E.D. Pa. 1996); *AOL v. Cyber Promotions Inc.*, (E.D. Pa. 1996); *Intergraph Corp. v. Intel Corp.*, 3 F. Supp. 2d 1255 (N.D. Ala. 1998), *vacated* 195 F.3d 1346 (Fed. Cir. 1999); *Data Gen. Corp. v. Grumman Sys. Support Corp.*, 36 F.3d 1147 (1st Cir. 1994); *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985); *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 (1992); *Image Technical Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195 (9th Cir. 1997); *In re Independent Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322 (Fed. Cir. (Kan.) 2000); *Melway Publ'g Pty Ltd. v. Robert Hicks* [1999] FCA 664, *available in* <http://www.austlii.edu.au/> (visited Apr. 14, 2000); *Hammersley Iron Pty Ltd. v. Nat'l Competition Council*, [1999] FCA 867, *available in* <http://www.austlii.edu.au/> (visited June 8, 2000); *Radio Televis Eireann & Indep. Television Publications Ltd. v. E.C. Comm'n* (Magill Case), [1995] 4 C.M.L.R. 718; *Oscar Bronner v. Mediaprint Zeitungs- und Zeitschriftenverlag GmbH & Co. KG C-7/97*, *available in* <http://curia.eu.int/> (visited Apr. 14, 2000); Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 A.B.A. ANTITRUST L.J. 841 (1990); Allen Kezsbom & Alan V. Goldman, *No Shortcut to Antitrust Analysis: The Twisted Journey of the "Essential Facilities" Doctrine*, 1 COLUM. BUS. L. REV. 1 (1996); W. Greg Paciak, *Essential Facilities Doctrine: Intergraph Corp. v. Intel Corp.*, 14 Berkeley Tech. L.J. 323 (1999).

¹⁰⁵ See Robert W. Gomulkiewicz, *The License Is The Product: Comments on the Promise of Article 2B for Software and Information Licensing*, 13 BERKELEY TECH. L.J. 891 (1998); see also G. Evans & Brian F. Fitzgerald, *Information Transactions Under UCC Article 2B: The Ascendancy of Freedom of Contract in the Digital Millennium*, 21 U. NEW S. WALES L.J. 404 (1998); Nimmer et al., *supra* note 82, at 17.

after the purchaser opens the package. "Click-wrap licenses" are used in an online environment, such as the Internet. The user accepts the terms and conditions of a software license by clicking on a button prior to using a program. After the decision in *ProCD, Inc. v. Zeidenberg*,¹⁰⁶ shrink-wrap, and arguably, click-wrap, licenses are enforceable in parts of the United States.¹⁰⁷

In the digital world, the essential transaction consists of licensing information commodities, rather than the transferring of a tangible product. The value of the commodity is the information, and the right to control and exploit it. In this regard, the rights that are assigned in conjunction with the license, set out as terms of the contract, are crucial, as they define the product the licensee receives. The more restrictions are placed on the licensee's use of the software, the less its value will be to the licensee, and the greater the value retained by the licensor to use the same information in future transactions. The proposed Uniform Commercial Code ("UCC") Article 2B in the United States, which has become the Uniform Computer and Information Transactions Act ("UCITA"), adopted by the National Conference of Commissioners on Uniform State Laws ("NCCUSL") on July 29, 1999,¹⁰⁸ is an attempt to provide guidelines for software licensing. At this point in time, it has not achieved total support.¹⁰⁹

Yet, this licensing mechanism, said to be necessary to protect investment in innovation, is mooted to allow privately legislated informational property rights to arise. It is even suggested that the public domain rights currently recognized by copyright law can be ousted by the contractual software license. Contract law then, needs to be infused with some notion of public interest in relation to informational goods such as software; and if software is discourse, we need to factor that into the rights that private ordering will allow.¹¹⁰

¹⁰⁶ 86 F.3d 1447 (7th Cir. 1996).

¹⁰⁷ See *id.* at 1453.

¹⁰⁸ See commentary at <<http://www.badsoftware.com>>.

¹⁰⁹ See *id.*

¹¹⁰ See generally JAMES BOYLE, SHAMANS, SOFTWARE, SPLEENS (1996); Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74 N.Y.U. L. REV. 354, 429-40 (1999); David Lange, *Recognizing the Public Domain*, 44 LAW & CONTEMP. PROBS. 147 (1981); Charles R. McManis, *The Privatization (or Shrink-Wrapping) of American Copyright Law*, 87 CAL. L. REV. 173 (1999); Madison, *supra* note 1, at 1025 (1998); Nimmer et al., *supra* note 82; Lemley, *supra* note 82; J.H. Reichman & Jonathan A. Franklin, *Privately Legislated Intellectual Property Rights: Reconciling Freedom of Contract with Public Good Uses of Information*, 147 U. PA. L. REV. 875 (1999); cf. Raymond T. Nimmer, *Breaking Barriers: The Relationship Between Contract and Intellectual Property Law*, 13 BERKELEY TECH. L.J. 827 (1998).

D. Competition/Antitrust Law

In an ideal world, competition law will balance the monopolies that copyright, patent, and contract create in software. It will define the scope of the grant of intellectual property rights. Originally, the approach in the European Union was that dealings within the scope of the intellectual property rights granted by the relevant intellectual property law were immune from competition law, while other dealings were subject to competition law. This approach was questioned in a decision that looked primarily at the anti-competitive effect of intellectual property rights—in other words, the scope of the grant as defined by intellectual property and competition law.

The appropriate interplay between competition law and intellectual property law, which is of utmost importance to the construction of our digital identity, is currently being played out in the *United States v. Microsoft* case.¹¹¹

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The appropriate interplay between competition law and intellectual property law, which is of utmost importance to the construction of our digital identity, is currently being played out in the *United States v. Microsoft* case.¹¹² In Australia, much focus has been

¹¹¹ See JOSEPH TAUBMAN, COPYRIGHT AND ANTITRUST (1960).

¹¹² See *United States v. Microsoft Corp.*, ___ F. Supp. ___ (D.D.C. June 7, 2000), available in 2000 WL 726757; <<http://www.microsoft.com>>. Judge Jackson concluded that Microsoft violated antitrust law (sections 1 and 2 of the Sherman Act and section 1 of the Clayton Act) in the Internet browser software market. See *United States v. Microsoft Corp.*, 87 F. Supp. 2d 30 (D.D.C. April 3, 2000). He subsequently ordered that Microsoft be split into an Operating Systems Business and an Applications Business. See *United States v. Microsoft Corp.*, 97 F. Supp. 2d 59 (D. D.C. June 7, 2000). This judgment has been stayed, subject to an appeal to the Supreme Court. See *Court Stays Final Judgment, Sends Microsoft Case to Supreme Court* (Microsoft press release) (visited June 28, 2000) <<http://www.microsoft.com/presspass/trial/Jun00/062000.asp>>

On the notion of copyright misuse, which at this point is seen as being distinct from general competition law, see *Alcatel USA, Inc. v. DGI Techs., Inc.*, 166 F.3d 772 (5th Cir. 1999); *Practice Management Info. Corp. v. American Med. Ass'n*, 121 F.3d 516 (9th Cir. 1997); *Lasercomb Am. v. Reynolds*, 911 F.2d 970 (4th Cir. 1990); Lemley, *supra* note 82.

placed on section 51(3) of the Trade Practices Act 1974 (Cth), which exempts licensing of certain intellectual property rights from the full application of the Act.¹¹³ Section 51(3) was targeted for reform in accordance with the Draft Report¹¹⁴ published by the National Competition Council.¹¹⁵ The proposal to remove the licensing of intellectual property rights from the section 51(3) exemption¹¹⁶ would have made competition lawyers even more eager

¹¹³ See Trade Practices Act 1974 § 51(3) (Cth) (Austl.), available from <<http://www.austlii.edu.au/>> (visited June 8, 2000).

¹¹⁴ NATIONAL COMPETITION COUNCIL, DRAFT REPORT, REVIEW OF SECTIONS 51(2) AND 51(3) OF THE *Trade Practices Act 1974*, at 93-132, available at <<http://www.ncc.gov.au/nationalcompet/section%2051%20review/section%2051.htm>> (visited Apr 14, 2000).

¹¹⁵ See National Competition Council (visited Apr. 14, 2000) <<http://www.ncc.gov.au/>>; see also J. Fung, *The Case of an Awkward Interface—Patents versus Competition*, 21 U. NEW SOUTH WALES L.J. 757 (1998).

¹¹⁶ Section 51(3) does not prevent application of section 46, which covers abuse of market power. See Trade Practices Act 1974 § 46 (Cth) (Austl.), available from <<http://www.austlii.edu.au/>> (visited June 8, 2000). It is suggested that section 46 can be infringed through exercise of property and contract rights. See *QWI Pty Ltd. v. BHP Co. Ltd.*, (1989) 167 C.L.R. 177, 202 (Dawson, J.); cf. *Warman Int'l Ltd. v. Envirotech Australia Pty Ltd.*, (1986) 11 F.C.R. 478. For a general introduction to Australian law, see S. CORONES, *COMPETITION LAW IN AUSTRALIA* (1999); A. BRUCE & E. WEBB, *TRADE PRACTICES LAW* (1999). Section 46 reads:

Misuse of market power

(1) A corporation that has a substantial degree of power in a market shall not take advantage of that power for the purpose of:

(a) eliminating or substantially damaging a competitor of the corporation or of a body corporate that is related to the corporation in that or any other market;

(b) preventing the entry of a person into that or any other market; or

(c) deterring or preventing a person from engaging in competitive conduct in that or any other market.

(1A) For the purposes of subsection (1):

(a) the reference in paragraph (1)(a) to a competitor includes a reference to competitors generally, or to a particular class or classes of competitors; and

(b) the reference in paragraphs (1)(b) and (c) to a person includes a reference to persons generally, or to a particular class or classes of persons.

(2) If:

(a) a body corporate that is related to a corporation has, or 2 or more bodies corporate each of which is related to the one corporation together have, a substantial degree of power in a market; or

(b) a corporation and a body corporate that is, or a corporation and 2 or more bodies corporate each of which is related to that corporation, together have a substantial degree of power in a market; the corporation shall be taken for the purposes of this section to have a substantial degree of power in that market.

(3) In determining for the purposes of this section the degree of power that a body corporate or bodies corporate has or have in a market, the Court shall have regard to the extent to which the conduct of the body corporate or of any of those bodies corporate in that market is constrained by the conduct of:

(a) competitors, or potential competitors, of the body corporate or of any of those bodies corporate in that market; or

(b) persons to whom or from whom the body corporate or any of those bodies corporate supplies or acquires goods or services in that market.

(4) In this section:

to look at the monopolies created through intellectual property legislation. Such scrutiny would be aimed particularly at the monopolies imposed by a contractual license of intellectual property such as software,¹¹⁷ but the Final Report on the matter recommends against removing the licensing of intellectual property rights from the section 51(3) exemption.¹¹⁸ Nevertheless, the Australian Intellectual Property and Competition Review Committee are currently undertaking another government inquiry into the interplay of intellectual property and competition law.¹¹⁹

In 1995, the United States Department of Justice and the Federal Trade Commission issued the *Antitrust Guidelines for the Licensing of Intellectual Property*, which govern the interaction of intellectual property and competition law. The guidelines' three main principles set forth:

- (a) for the purpose of antitrust analysis, the Agencies [the DOJ and FTC] regard intellectual property as being essentially comparable to any other form of property;
- (b) the Agencies do not presume that intellectual property creates market power in the antitrust context; and
- (c) the Agencies recognize that intellectual property licensing

(a) a reference to power is a reference to market power;

(b) a reference to a market is a reference to a market for goods or services; and

(c) a reference to power in relation to, or to conduct in, a market is a reference to power, or to conduct, in that market either as a supplier or as an acquirer of goods or services in that market.

(5) Without extending by implication the meaning of subsection (1), a corporation shall not be taken to contravene that subsection by reason only that it acquires plant or equipment.

(6) This section does not prevent a corporation from engaging in conduct that does not constitute a contravention of any of the following sections, namely, sections 45, 45B, 47 and 50, by reason that an authorization is in force or by reason of the operation of section 93.

(7) Without in any way limiting the manner in which the purpose of a person may be established for the purposes of any other provision of this Act, a corporation may be taken to have taken advantage of its power for a purpose referred to in subsection (1) notwithstanding that, after all the evidence has been considered, the existence of that purpose is ascertainable only by inference from the conduct of the corporation or of any other person or from other relevant circumstances.

Trade Practices Act 1974 § 46 (Cth) (Austl.).

¹¹⁷ See David McGowan, *Free Contracting, Fair Competition and Draft Art. 2B: Some Reflections on Federal Competition Policy, Information Transactions and "Aggressive Neutrality"*, 13 BERKELEY TECH. L.J. 1173 (1998); Ronald A. Cass, *Copyright, Licensing, and the "First Screen"*, 5 MICH. TELECOMM. & TECH. L. REV. 35 (1999).

¹¹⁸ See Final Report, Review of Sections 51(2) and 51(3) of the Trade Practices Act 1974, available at <<http://www.ncc.gov.au/nationalcompet/section%2051%20review/section%2051.htm>>.

¹¹⁹ See further Intellectual Property & Competition Review Committee (visited Apr. 14, 2000) <<http://ipcr.gov.au/>>.

allows firms to combine complementary factors of production and is generally procompetitive.¹²⁰

These guidelines, along with the European approach and the call for reform in Australia, are a good indication that competition law will act to inform the scope of intellectual property rights in the future and mediate attempts by any one entity to dominate the construction of informational discourse and identity. Furthermore, the fact that digitization facilitates the merging of communication and distribution channels (through a discourse of software) demands that competition/antitrust law act to preserve the multiplicity of meaning and the antitrust of knowledge.¹²¹ This will be no easy task, as the Microsoft case demonstrates; the allegation of technology tying and the digital converging of two software products challenges the ability of antitrust law to fathom new business methods.¹²²

The intention of making competition law more prominent in the digital environment in order to open access to discourse is evidenced by the wide-reaching decision in *Alcatel v. DGI*.¹²³ This decision overrides the copyright owner's right in the name of misuse.¹²⁴ This doctrine is said to derive from the equitable notion of clean hands¹²⁵ (and seems to invoke constitutional enumerated

¹²⁰ Antitrust Guidelines for the Licensing of Intellectual Property § 2.0.

¹²¹ The tradition of antitrust law in the United States and the important role it is likely to play in the digital environment highlights the fact that while it is not formally entrenched as a constitutional principle it will certainly act like one, especially in relation to intellectual property rights in software where speech restrictions have been legitimated and First Amendment challenges negated. In this last instance antitrust law has the potential to act as a surrogate champion of open and free (digital) speech/discourse.

¹²² See *United States v. Microsoft Corp.*, 147 F.3d 935 (D.C. Cir. 1998).

¹²³ 166 F.3d 772, *reh'g denied*, 180 F.3d 267 (5th Cir. 1999).

¹²⁴ The patent of architecture is vitally important and will necessarily invoke competition law. On patent misuse and associated anti-competitive conduct, see *Vitamin Technologists, Inc. v. Wisconsin Alumni Research Found.*, 146 F.2d 941, 946-47, 956 (9th Cir.), *cert. denied* 325 U.S. 876 (1945); *United States v. General Elec. Co.*, 272 U.S. 476 (1926); *United States v. Line Materials Co.*, 333 U.S. 287 (1945); *General Talking Pictures Corp. v. Western Elec. Co.*, 304 U.S. 175, *reaff'd. on reh'g*, 305 U.S. 124 (1938); HERBERT HOVENKAMP, *FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE* 218-25 (1994); PHILIP E. AREEDA & LOUIS KAPLOW, *ANTITRUST ANALYSIS: PROBLEMS, TEXT AND CASES* 182-85 n.428 (4th ed. 1988); *Intergraph Corp. v. Intel Corp.*, 3 F. Supp. 2d 1255 (N.D. Ala. 1998), *vacated* 195 F.3d 1346 (Fed. Cir. 1999); *Data Gen. Corp. v. Grumman Sys. Support Corp.*, 36 F.3d 1147 (1st Cir. 1994); *Image Technical Servs., Inc. v. Eastman Kodak Co.*, 125 F.3d 1195 (9th Cir. 1997); *In re Independent Serv. Orgs. Antitrust Litig.*, 203 F.3d 1322 (Fed. Cir. (Kan.) 2000).

¹²⁵ See *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 492 (1942) ("It is a principle of general application that courts, and especially courts of equity, may appropriately withhold their aid where the plaintiff is using the right asserted contrary to the public interest."); *SEC v. United States Realty Co.*, 310 U.S. 434, 455 (1940); *United States v. Morgan*, 307 U.S. 183, 194 (1939); *Virginian Ry. Co. v. System Fed'n No. 40*, 300 U.S. 515, 552 (1937); *Central Ky. Natural Gas Co. v. Railroad Comm'n of Ky.*, 290 U.S. 264, 270 (1933);

powers rhetoric¹²⁶) inherent in copyright and patent law. While the doctrine of misuse is said not to emanate directly from competition/antitrust law, such law surely defines its motivation.

1. *Alcatel USA, Inc. v. DGI Technologies, Inc.*: Copyright Misuse¹²⁷

The facts of the case concerned telephone switching systems that were designed, made, and sold by DSC (which later became Alcatel) to long-distance telephone service providers, such as MCI and Sprint.¹²⁸ DSC switches were controlled by its copyrighted operating system software that, unlike the switches, was not sold but licensed to users on the following terms:

- (1) the operating system software remains the property of DSC;
- (2) the customer has the right to use the software only to operate its switch;
- (3) the customer is prohibited from copying the software or disclosing it to third parties; and
- (4) the customers are authorized to use the software only in conjunction with DSC-manufactured equipment.¹²⁹

DSC's customers frequently needed to expand the call-handling capacity of their switches and often achieved the expansion by adding groups of "cards" to the switch. In 1989, DGI was founded to design and sell expansion cards for use with DSC switches. Prior to 1989, however, DSC was the only manufacturer of such cards.¹³⁰

DGI claimed that it developed its cards by reverse engineering DSC's unpatented products and then duplicating their functionality to achieve a better-designed card using newer-generation electronics and including additional features. DSC asserted that "DGI

Harrisonville v. W.S. Dickey Clay Mfg. Co., 289 U.S. 334, 337 (1933); *Beasley v. Texas & Pac. Ry. Co.*, 191 U.S. 492, 497 (1903).

¹²⁶ See *Morton Salt*, 314 U.S. at 492.

The grant to the inventor of the special privilege of a patent monopoly carries out a public policy adopted by the Constitution and laws of the United States, 'to promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right . . . ' to their 'new and useful' inventions. But the public policy which includes inventions within the granted monopoly excludes from it all that is not embraced in the invention. It equally forbids the use of the patent to secure an exclusive right or limited monopoly not granted by the Patent Office and which it is contrary to public policy to grant.

Id.

¹²⁷ For a detailed introduction to this topic, see P. GOLDSTEIN, *COPYRIGHT* ch. 9.6 (2d ed. 1999); MELVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* § 13.09, at 13-284 (1999).

¹²⁸ See *Alcatel*, 166 F.3d at 777-80. "A telephone switch routes long distance telephone calls to their destinations." *Id.* at 777.

¹²⁹ *Id.*

¹³⁰ *Id.*

did not engage in legitimate reverse engineering, but rather misappropriated DSC's intellectual property by wrongfully obtaining schematics and manuals provided only to DSC customers on the express condition that there be no disclosure to third parties."¹³¹

[B]etween 1992 and 1994, DGI developed and introduced four DSC-compatible cards—the Digital Trunk Interface (“DTI”), the Bus Terminator (“BT”), the Digital Tone Detector (“DTD”), and the Pulse Code Modulation Interface (“PCMI”). None of these initial DGI cards were microprocessor cards. . . .

When installed in a switch, a microprocessor card controls the “boot up”—that is, it downloads DSC's copyrighted operating system software into its random access memory (“RAM”). A DTI, DTD, or BT card alone cannot expand the capacity of a switch; a customer must install a group of cards together with a microprocessor card to achieve expansion. For this reason, DGI obtained DSC microprocessor cards—then known as MP-2s—in the used market to sell along with three DGI cards. This enabled DGI to offer a customer a complete expansion card complement, which it did.

In 1995, as a result of a new dialing plan implemented by the Federal Communications Commission (“FCC”) and customer demands for new features, DSC revised and expanded its operating system software. These changes required DSC customers to upgrade to a new microprocessor card—the MP-8. As few MP-8 cards were available on the used market, DGI was no longer able to offer a complete card complement. Its marketing problems were exacerbated by DSC's practice of offering substantial discounts to customers who purchased whole complements of cards from DSC, but charging much higher prices for individual MP-8 cards. This motivated DGI to develop its own microprocessor card—the DMP-2800.

To develop a microprocessor card, DGI had to overcome several difficulties. First, DGI needed to understand DSC's firmware. For this purpose, DGI purchased an MP-8 card and, using a “burner” to remove the DSC firmware from a memory chip, obtained the machine-readable object code. DGI engineers then used a process called “disassembly” to convert the firmware into human-readable form. In this way, DGI was able to write its own firmware—which it claims is not substantially similar to DSC's firmware—for its DMP-2800 microprocessor card. DSC asserts that DGI violated the copyright on its firmware when it copied DSC's firmware several times in this process.

¹³¹ *Id.*

Second, the DGI microprocessor card had to accept a download from the switch of the DSC operating system. To obtain the software needed for this function, several DGI engineers took an MP-8 card to NTS Communications (“NTS”), a DSC switch owner/ software licensee and DGI customer. There, Ernie Carrasco, an NTS employee who also consulted for DGI, placed the MP-8 card into an NTS switch and copied the operating system to a laptop computer. DGI engineers then took the laptop back to DGI. DSC maintains that DGI never told NTS that it was copying and removing DSC's copyrighted software, only that it was “testing” MP-8 cards.

DGI engineers returned to NTS several times to test MP-8 cards containing versions of DGI's firmware. To avoid having to perform all this testing at NTS, DGI modified an MP-8 card to include a device called a “punch” card or “snooper” card, which monitored the firmware during the operating system download. Using this snooper card, DGI was able to understand which parts of the DSC firmware were accessed during the “boot” of the operating system. DSC maintains that DGI used this snooper card to copy the messages contained in DSC's copyrighted operating system software. It insists that, but for DGI's “theft” of DSC's operating system, it would have been extremely expensive and time-consuming for DGI to develop its own microprocessor card.

DGI counters that the copy was used only to discern the size of the operating system download to the MP-8 card, as it was investigating the possibility of upgrading the older MP-2 card. DGI insists that, as the content of the software was irrelevant in determining its size, it never even disassembled the operating system software from unreadable machine language. DSC filed suit in 1994, alleging that DGI had misappropriated its trade secrets and engaged in unfair competition. . . .¹³²

DGI counterclaimed, asserting among other things, that DSC had breached the Sherman Act “by monopolizing the relevant product market for expansion products compatible with DSC telephone switches.”¹³³

In 1995, DSC filed a supplemental complaint, asserting direct and indirect copyright infringement claims. . . . After a three week trial, the jury returned a mixed verdict, finding that DSC violated the Sherman Act . . . and that DGI infringed certain DSC copyrights, engaged in unfair competition by misappropriating DSC's time, labor, skill, and money, and misappropriated DSC's trade

¹³² *Id.* at 778-79.

¹³³ *Id.*

secrets. The jury also determined that both parties had "unclean hands."¹³⁴

Nine months later, in November 1997, the district court entered its Final Judgment and Permanent Injunction dismissing DGI's antitrust claim. The court stated that DGI had "failed to prove the relevant product market" as required under *Eastman Kodak Co. v. Image Technical Services, Inc.*¹³⁵ It "permanently enjoined DGI from developing any new microprocessor cards with the assistance of DSC's operating system software and from selling any other DGI microprocessor card designed to use DSC's software."¹³⁶ The court further ordered DGI to turn over all DMP-2800 microprocessor cards to DSC for destruction, staying the order pending resolution of any appeal. DGI appealed, and DSC cross-appealed.

a. Copyright Misuse

On appeal to the Fifth Circuit Court of Appeals, DGI reasserted its claim that even assuming that it committed acts of copyright infringement, the "copyright misuse" doctrine precluded injunctive relief based on that infringement.¹³⁷ In accepting this argument, the court explained the doctrine and its application in this way:

This doctrine—which has its historical roots in the unclean hands defense—"bars a culpable plaintiff from prevailing on an action for the infringement of the misused copyright." It "forbids the use of the [copyright] to secure an exclusive right or limited monopoly not granted by the [Copyright] Office and which it is contrary to public policy to grant." The copyright misuse defense is analogous to the patent misuse defense, which was originally recognized by the Supreme Court in *Morton Salt Co. v. G.S. Suppiger*. The Fourth Circuit was the first to extend

¹³⁴ *Id.* at 779-80.

¹³⁵ *Id.* at 780. "The offense of monopoly under § 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident." *Id.* at 781 (quoting *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451 at 481 (1992)) (internal quotes omitted).

¹³⁶ *Alcatel*, 166 F.3d at 780.

¹³⁷ *Id.* at 794. DGI's antitrust claim was also dismissed on appeal. The court explained: We are convinced that DGI, like the plaintiff in *United Farmers*, is trying to define the market as narrowly as possible (in order to make it look as if [defendant] had market power). Because (1) DGI did not present legally sufficient evidence that DSC's customers faced significant information and switching costs, and (2) DGI's proffered relevant market does not comport with market realities, its aftermarket monopoly claim fails as a matter of law.

Id. at 784.

the rationale behind patent misuse to copyrights. In *Lasercomb America, Inc. v. Reynolds*, the Fourth Circuit explained that, whereas "copyright law [seeks] to increase the store of human knowledge and arts by rewarding . . . authors with the exclusive rights to their works for a limited time . . . , the granted monopoly power does not extend to property not covered by the . . . copyright."

We agree with the *DSC I* panel's conjecture and the jury's finding that DSC's licensing agreement for its operating system constitutes misuse. The district court instructed the jury, in pertinent part:

If DSC has used its copyrights to indirectly gain commercial control over products DSC does not have copyrighted, then copyright misuse may be present. The grant to the author of the special privilege of a copyright carries out a public policy adopted by the Constitution and laws of the United States, "to promote the Progress of Science and useful arts, by securing for limited Times to [Authors] . . . the exclusive Right . . ." to their "original" works. But the public policy which includes original works within the granted monopoly excludes from it all that is not embraced in the original expression. It equally forbids the use of the copyright to secure an exclusive right or limited monopoly not granted by the Copyright Office and which is contrary to public policy to grant.

A reasonable juror could conclude, based on the licensing agreement, that "DSC has used its copyrights to indirectly gain commercial control over products DSC does not have copyrighted," namely, its microprocessor cards. The facts on which we based our misuse prediction in *DSC I* have not changed substantially. As we reasoned then:

Any competing microprocessor card developed for use on DSC phone switches must be compatible with DSC's copyrighted operating system software. In order to ensure that its card is compatible, a competitor such as DGI must test the card on a DSC phone switch. Such a test necessarily involves making a copy of DSC's copyrighted operating system, which copy is downloaded into the card's memory when the card is booted up. If DSC is allowed to prevent such copying, then it can prevent anyone from developing a competing microprocessor card, even though it has not patented the card.

Under these facts, DSC's assertion that its licensing agreement does not prohibit the independent development of compatible software is simply irrelevant. Despite the presence of

some evidence—the testimony of a DSC executive—that DGI could have developed its own software, there was also evidence that it was not technically feasible to use a non-DSC operating system because the switch has a “common control” scheme in which each microprocessor card in a network of such cards runs the same operating system. Hence, without the freedom to test its cards in conjunction with DSC’s software, DGI was effectively prevented from developing its product, thereby securing for DSC a limited monopoly over its uncopyrighted microprocessor cards. Furthermore, the jury instructions never mentioned that misuse could only be present if DSC’s agreement prohibited the independent development of software. Consequently, we conclude that the district court abused its discretion in awarding injunctive relief based on DGI’s infringing acts.¹³⁸

This doctrine has the potential to play a significant role in determining the scope of proprietary rights in software. It will normally arise as a defense to an action for copyright infringement, and it is apparently broader in scope than antitrust law. The copyright misuse defense, is idiosyncratic yet potentially broad-reaching in its operation, and will most likely take its primary (but not sole) definition from fundamental principles of antitrust law. *Alcatel* highlights how effective copyright misuse will be in defining the ambit of copyright in software, and provides an avenue for assessing the property right and associated actions against other fundamental values, such as free and open discourse.

IV. POWER¹³⁹ AND THE NEW CONSTITUTIONALISM

Traditionally, constitutionalism (which means the regulation of power) has focused on regulating or limiting the vertical exercise of government or public power over the citizen.¹⁴⁰ On the other hand, the horizontal exercise of power between citizens has occurred in the private sphere and has been rarely analyzed in terms of power or constitutionalism, although the (largely common) law has played a mediating role.

The writing of Michel Foucault informed us that power was not just something exercised by sovereign entities like the state, but that power relations were everywhere. As Foucault explained:

¹³⁸ *Id.* at 792-94 (internal cites and footnotes omitted).

¹³⁹ See generally JORDAN, *supra* note 2.

¹⁴⁰ “Constitutionalism refers to implicit and or explicit limits on political or state decision making, limits which can be procedural or substantive. Constitutionalism defines the proper forms and limits of state action.” D. Held, *The Development of the Modern State, in FORMATIONS OF MODERNITY* 71, 89 (S. Hall & B. Gieben eds., 1992).

What I mean is this: in a society such as ours, but basically in any society, there are manifold relations of power which permeate characterise and constitute the social body, and these relations of power cannot themselves be established, consolidated nor implemented without the production, accumulation, circulation and functioning of a discourse. . . . We are subjected to the production of truth through power and we cannot exercise power except through the production of truth. . . . Power never ceases its interrogation, its inquisition, its registration of truth: it institutionalises, professionalises and rewards its pursuit. In the last analysis, we must produce truth as we must produce wealth, indeed we must produce truth in order to produce wealth. . . .¹⁴¹

This redefinition of power raises our awareness that power is ubiquitous in our daily lives and demands a reassessment of the mechanism, methodology, or epistemological framework that we invoke for understanding the role and effect of power within our world.

It seems that the nature and role of corporate power, combined with the information revolution (especially increasing reliance on digitized information) and the growth of transnational civil society, have motivated arguments that talk about the exercise of power in the private sphere in terms of the regulation of power or constitutionalism. Interestingly, the three-dimensional process of Congress/Parliament regulating (vertical) the power relations of private citizens (horizontal) is starting to be more vigorously questioned (at least in the United States) in terms of constitutionalism.

In the United States, the First Amendment, along with a generous view of the notion of state action,¹⁴² has the potential to intersect with legislatively mediated power relations between individuals¹⁴³ in the private sphere.¹⁴⁴ In other countries, like my

¹⁴¹ FOUCAULT, *supra* note 18, at 93.

Every relation of force implies at each moment a relation of power (which is in a sense its momentary expression) and every power relation makes a reference, as its effect but also as its condition of possibility, to a political field of which it forms a part. To say that ‘everything is political,’ is to affirm this ubiquity of relations of force and their immanence in a political field. . . .

Id. at 189.

¹⁴² See, e.g., *Shelley v. Kraemer*, 334 U.S. 1 (1948) (holding that state court enforcement of restrictive covenants excluding certain races from purchasing real property was sufficient state action); *cf. Flagg Bros., Inc. v. Brooks*, 436 U.S. 149 (1978) (holding that a proposed sale by a warehouseman made pursuant to the New York Uniform Commercial Code did not constitute state action); *TRIBE, supra* note 51, at n.1711.

¹⁴³ This could be categorized as horizontal, as opposed to vertical, constitutionalism. See P. Berni Hugenoltz, *Copyright and Freedom of Expression in Europe*, Paper presented at the NYU Law School Engelberg Centre in Florence (Spring 1998) (copy on file with author of paper) (publication forthcoming).

own, the statutory (e.g., copyright) or common law (e.g., contract) rules that mediate relations between individuals in the private sphere are largely beyond constitutional review by the courts.¹⁴⁵ In Australia, this is a product of the Westminster notion of parliamentary sovereignty: Parliament can make or unmake any law and it is through Parliament and the common law that rights are protected. I am trying to convince my colleagues that power relations in the private sphere—in particular, those defined by information law—are fundamental constitutional issues that should be informed by fundamental constitutional principles, like freedom of discourse.¹⁴⁶ In the United States, a new generation of scholars is showing that the First Amendment will inform the private sphere in this regard by arguing that the DMCA, proposed database legislation, and UCITA are infringing principles of free speech¹⁴⁷ (although I do not think they have got to the Patent Act—yet!).¹⁴⁸

¹⁴⁴ It has been suggested that the First Amendment to the U.S. Constitution, the right to free speech, will play a role in determining the constitutional validity of database legislation; as will the limiting scope of Article I, Section 8, Clause 8 of the U.S. Constitution (in part, the copyright head of legislative power). See Marci A. Hamilton, *Database Protection and the Circuitous Route around the United States Constitution*, in INTERNATIONAL INTELLECTUAL PROPERTY AND THE COMMON LAW WORLD (Charles Rickett & G. Austin eds., 2000); William Patry, *The Enumerated Powers Doctrine and Intellectual Property: An Imminent Constitutional Collision*, 67 GEO. WASH. L. REV. 359 (1999). On the limiting scope of Article I, Section 8, Clause 8, see *Bonito Boats, Inc. v. Thundercraft Boats, Inc.*, 489 U.S. 141, 146 (1989); *Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966).

¹⁴⁵ For an excellent overview of the position in Europe, see Hugenholtz, *supra* note 143.

¹⁴⁶ See Brian F. Fitzgerald, *Software as Discourse? A Constitutionalism for Information Society*, *supra* note 32, at 144; see also *Associated Press v. United States*, 326 U.S. 1, 20 (1945) ("Freedom of the press from governmental interference under the First Amendment does not sanction repression of that freedom by private interests."); EUGEN EHRlich, *FUNDAMENTAL PRINCIPLES OF THE SOCIOLOGY OF LAW* (W.L. Moll, trans., Arno Press 1975) (1936); BRIAN F. FITZGERALD, *AUSTRALIAN CONSTITUTIONALISM* (manuscript on file with author); ANTHONY GIDDENS, *THE CONSTITUTION OF SOCIETY* (1984); ALAN HUNT, *FOUCAULT AND LAW: TOWARDS A SOCIOLOGY OF LAW AS GOVERNANCE* (1994); ALLAN C. HUTCHINSON, *WAITING FOR CORAF: A CRITIQUE OF LAW AND RIGHTS* (1995); Brian F. Fitzgerald, *Principles of Australian Constitutionalism*, 1(2) *Proceedings of the 49th ALTA Conference* 799 (1994), available from Australasian Law Teachers Association, <<http://www.austlii.edu.au/au/special/alta/index.html>>.

¹⁴⁷ See, e.g., Benkler, *supra* note 110, at 354; Hamilton, *supra* note 144; LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE*, *supra* note 55; cf. Netanel, *Copyright and a Democratic Civil Society*, 106 YALE L.J. 283 (1996). For an overview of arguments, see GOLDSTEIN, *supra* note 127, at ch. 103; NIMMER & NIMMER, *supra* note 127, § 1.10. For established case law arguably in conflict with this view, see *San Francisco Arts & Athletics, Inc. v. United States Olympics Comm'n*, 483 U.S. 522 (1987); *Harper & Row Publishers Inc. v. Nation Enters.*, 471 U.S. 539 (1985); *Zacchini v. Scripps-Howard Broad. Co.*, 433 U.S. 562 (1977).

¹⁴⁸ On challenges to the Patent Act, see *Bloomer v. McQuewan*, 55 U.S. 539 (1852); *Jordan v. Dobson*, 13 F. Cas. 1092, 1095-96 (C.C.E.D. Penn. 1870); *The Fire-Extinguisher Case*, *Graham v. Johnston*, 21 F. 40, 42 (C.C.D. Md. 1884); *Bloomer v. Stolley*, 3 F. Cas. 729 (C.C.D. Ohio 1850); *Blanchard's Gun-Stock Turning Factory v. Warner*, 3 F. Cas. 653, 657 (C.C.D. Conn. 1846); *Blanchard v. Sprague*, 3 F. Cas. 648 (C.C.D. Mass. 1839); *Evans v. Jordan*, 8 F. Cas. 872 (C.C.D. Va. 1813); Richard M. Cooper, *Legislative Patent Extensions*, 48 *FOOD & DRUG L.J.* 59 (1993). I owe thanks to Jonathan Zittrain and members of the Berkman Center at Harvard Law School for pointing out these authorities. For an Australian perspective on this issue, see *The Grain Pool of Western Australia v. The Commonwealth*,

The pervasiveness of the digital environment of the information age and its discursive nature (along with the ever-increasing importance of corporate power and globalization) has forced a reassessment of where constitutionalism starts and finishes. The interesting question is how far the United States Supreme Court, through the act of balancing or scrutiny, will travel into civil society to determine constitutionality (of legislation like the Copyright Act or the Patent Act, which impose restrictions on digital speech).¹⁴⁹ In the challenge to and subsequent scrutiny of this type of legislation, we will see the U.S. Supreme Court draw the boundaries of (public) constitutionalism for the information age. In other countries the new constitutionalism will depend on courts realizing that fundamental issues of copyright, patent, contract, and competition/antitrust laws are the constitutional questions of the information age. In these other countries, shepherding constitutional lawyers from atoms to bits may not ride on the back of or enter through the spectrum of First Amendment jurisprudence¹⁵⁰ but rather will come from a broader appreciation of the dynamic constitutive choices to be made in adjudicating upon issues of interpretation of the private law.

The limits of information law and, in particular, rights in digital architecture, raise important issues of constitutionalism. In appreciating software as discourse, we start to see the importance of the new communicative structures to our social and cultural being and to the question of constitutionalism.

CONCLUSION: THE CHALLENGE

As we enter the digital (discursive¹⁵¹) millennium, it is ever

[2000] HCA 14 para. 133 n.218 (March 23, 2000) (Kirby, J.) (visited June 28, 2000) <<http://www.austlii.edu.au>>.

¹⁴⁹ Like an arm reaching out, the First Amendment, along with the notions of state action and enforceable judicial review, gives public constitutionalism the potential in the digital era to touch what traditionally may have been regarded as private rights/affairs between two citizens. The growth of corporate power and its pivotal role in ordering the digital environment mean this further exploration of private power relations will be fiercely pursued.

¹⁵⁰ In the sense that the digital environment is a new discourse, in the United States, the First Amendment has the potential to play a dominant role. However, this should not blind people in the United States to the fact that other areas of (non constitutional) law such as antitrust law have an important role to play, especially where First Amendment challenge has been negated by lawful commodification of software/information through intellectual property rights. And in this instance the constitutional principle of a free and open discourse will be implemented through interpretation of non-constitutional antitrust law.

¹⁵¹ It may be more appropriate to say we are entering the discursive millennium as convergence and digitization make us ever more reliant on digital discursive frameworks like software. And this suggests that our paradigm of thought will rapidly and necessarily move

more pressing for us (especially as lawyers) to fathom the genetic structure/code (natural and manufactured) of life. Here I have highlighted how software will act to construct us and how the law will facilitate such a process. The task is for us to appreciate this perspective in the development of (information) law.

beyond (as it no doubt has started to do) the sacred yet rudimentary notion of freedom of speech to something more intimately concerned with the free and open nature of discursive frameworks and practices. Ultimately then, the spectrum—or should I say the transporter—that will move constitutional scholars from atoms to bits may not be the First Amendment but a broader understanding of communicative architecture and how software, digitization and informationalism are coming to inhabit most everything we do!

LICENSE TO COPYRIGHT: THE ONGOING DISPUTE OVER THE OWNERSHIP OF JAMES BOND

A martini shaken, not stirred, is his drink of choice. His passion for fine cars is rivaled only by his lust for women. He is handsome, sophisticated, and of course, adventurous. It is hard to imagine that these simple character traits amount to a nearly \$3,000,000,000 empire that has made James Bond the "most valuable cinema franchise in history."¹ This Comment analyzes the development of the James Bond character and how nearly thirty-eight years after the production of the first Bond film, *Dr. No*, parties are still litigating the ownership of 007.

English novelist Ian Fleming created the dashing James Bond character. Fleming, who took the name James Bond from the author of *A Field Guide to Birds of the West Indies*, developed the secret agent based on his own traits.² Fleming and Bond were both the same height, wore the same clothes, shared the same tastes, and both had a unique sense of adventure.³

The dispute over Bond's ownership began in 1959, shortly after Fleming finished writing his seventh James Bond novel, *Goldfinger*.⁴ Fleming decided to work with film director, writer, and producer, Kevin McClory, in the hope of creating the first Bond film.⁵ McClory hired writer, Jack Whittingham, and together they developed a movie script.⁶ Thereafter, Fleming appropriated the movie script and used it as the basis of one of his novels.⁷ McClory brought suit, and in an English court settlement, Fleming agreed to give McClory all rights to the movie script.⁸

In 1997, the Sony Corporation, in an undisclosed deal, ac-

¹ Denise Hamilton, *Bond vs. Bond*, NEW TIMES L.A., Nov. 5-11, 1998, at 2; see also James Bates, *Company Town: 2 Bonds? Sony Says 'Never Say Never'*, L.A. TIMES, Oct. 14, 1997, at D10; Plaintiff's First Amended Complaint For Declaratory Relief for Adjudication of Rights; Declaratory Relief for Adjudication of Rights; Copyright Infringement; Trademark Infringement; Federal Unfair Competition; Federal Trademark Dilution; California Trademark Dilution; Inducing Breach of Contract [Redacted Version] at 13, *Danjaq, LLC v. Sony Corp.*, No. 97-8414 (C.D. Cal. Jan. 23, 1998) [hereinafter First Amended Complaint for Plaintiff].

² See Hamilton, *supra* note 1, at 28. Fleming bought James Bond's *A Field Guide to Birds of the West Indies* for his girlfriend after he left the military service. See *id.* See also *amazon.com* (visited Jan. 31, 1999) <<http://www.amazon.com>>.

³ See Hamilton, *supra* note 1, at 29.

⁴ See *id.* at 11.

⁵ See *id.* at 9.

⁶ See *id.* at 11.

⁷ See *id.* at 13.

⁸ See *id.* at 14-15.