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**THE SOFTWARE INTERFACE BETWEEN
COPYRIGHT AND COMPETITION LAW**

*A Legal Analysis of Interoperability
in Computer Programs*

Ashwin van Rooijen



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Brussels, December 2009

List of Abbreviations

A-G	Advocate-General
AMI	<i>Auteurs-, Media- en Informatierecht</i> (journal)
API	Application Programming Interface
BC	Berne Convention
BGH	Bundesgerichtshof
BIE	<i>Bijblad bij de Industriële Eigendom</i> (journal)
BIOS	Basic Input/Output System
C	Programming language
C++	Programming language
CFI	European Court of First Instance
COM	European Commission document number
CONTU	Commission on New Technological Uses
CR	<i>Computerrecht</i> (journal)
DG	Directorate-General of the European Commission
DOJ	Department of Justice (United States)
ECIS	European Committee for Interoperable Systems
ECJ	European Court of Justice
ECLR	European Competition Law Review
ECR	European Court Reports
EIPR	European Intellectual Property Review
EPC	European Patent Convention
EPO	European Patent Office
EU	European Union
F.2d	Federal Reporter, second series
F.3d	Federal Reporter, third series
F.Supp	Federal Reporter, supplement
FCC	Federal Communications Commission

List of Abbreviations

FTC	Federal Trade Commission
GC	General Court of the European Union
GUI	Graphical User Interface
GRUR (Int.)	<i>Gewerblicher Rechtsschutz und Urheberrecht</i> (International) (journal)
HHI	Herfindahl-Hirschman Index
HTML	HyperText Markup Language
IER	<i>Intellectuele Eigendom en Reclamerecht</i> (journal)
IIC	International Review of Intellectual Property and Competition Law
InfoSoc	Directive 2001/29/EC on the harmonization of certain aspects of copyright and related rights in the information society
IP	Intellectual Property
IPR	Intellectual Property Right
IT	Information Technology
NJ	<i>Nederlandse Jurisprudentie</i> (Dutch case reporter)
NRA	National Regulatory Authority
NRF	New Regulatory Framework
OJ	Official Journal
ONP	Open Network Provisions
PC	Personal Computer
QWERTY	Keyboard layout
RAM	Random Access Memory
RAND	Reasonable and Non-Discriminatory (licensing terms)
ROM	Read Only Memory
SAGE	Software Action Group for Europe
S.Ct.	Supreme Court Reports
SMP	Significant Market Power
SSNIP	Small but Significant, Non-transitory Increase in Price
SSO	Standard Setting Organization
	Structure, Sequence and Organization (of a computer program)
TFEU	Treaty on the Functioning of the European Union
TPM	Technical Protection Measure
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property
USC	United States Code
VCR	Video Cassette Recorder
W.Comp.	World Competition
WCT	WIPO Copyright Treaty
WIPO	World Intellectual Property Organization
WPPT	WIPO Performances and Phonogram Producers Treaty

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Chapter 1

Introduction

When IBM approached William H. Gates III to supply the operating system for IBM's Personal Computer (PC) in the early 1980s, Mr. Gates recognized the opportunity of a lifetime. Although he had no operating system completed at the time, Gates managed to purchase one from a local developer for \$50,000. He then licensed it to IBM for \$80,000. The license has been described as the deal of the millennium, albeit not for the modest profit. The opportunities Gates envisioned stretched far beyond IBM's PC and the \$30,000 gain. Gates anticipated attempts to reverse engineer the PC's copyrighted core, the BIOS chip, resulting in PC 'clones'. In order for the clones to run the same software as IBM's PC, the clones would also require a license for Gates' operating system MS-DOS. Before long, there would be a PC on every single desk, all running Microsoft's operating system. And so it happened: within months, the first cloners presented a fully IBM compatible PC and obtained a license for MS-DOS. This newcomer named itself after its achievement: *Compaq* is short for compatibility and quality.

More than twenty years later, this interoperability between PC manufacturers has proven more advantageous for Gates than for IBM. Increased competition in fully compatible PC hardware has forced IBM to abandon the PC business; however, it has enabled Gates to roll out successive versions of his proprietary operating systems. Microsoft now serves the vast majority of consumers and businesses with its *Windows* series of operating systems. However, Gates' own failure to provide interoperability with other software firms also turned against him. Competitors, supported by IBM, have attempted to create software that interoperates with the dominant Windows system but have failed due to Microsoft's refusal to disclose its interfaces. Microsoft defended its refusal relying on intellectual property rights. Its conduct, nonetheless, led the European Commission to find an abuse of a dominant position

under competition law. The software giant was ordered to pay a record EUR 1.7 billion fine and to supply all specifications required to create interoperable software. The European Union's second-highest court, the General Court (GC), upheld the Commission's decision, and Microsoft chose not to appeal.

1.1. BACKGROUND AND OBJECTIVE

These brief excerpts from the history of the PC¹ illustrate that the success of computer programs often depends on their ability to *interoperate* – or communicate – with other systems. This is due to *network effects* – the demand for a particular program often increases with its number of users. Network effects cause consumers to select the product with the largest number of other users, which can ultimately lead to all consumers using the same vendor's product. Absent interoperability with that product, competitors often will be unable to attract any consumers to their rival products. However, the substantial market power associated with exploiting network effects can also stimulate significant innovation efforts. Network effects and interoperability thus significantly affect innovation and competition in many software industries.

This raises the question of whether the effects of interoperability on innovation and competition are recognized in the law. Innovation and competition are primarily affected by two legal disciplines: intellectual property rights – primarily copyright law – and competition law. In order to create interoperable software, a developer must use and have access to the target program's interoperability information, or interface specifications. For example, all programs designed for the Windows operating system rely on Windows' interfaces. This information, however, can be protected by intellectual property rights, enabling the rightsholder to control the development of competing, interoperable software. However, a refusal to supply this information to competitors could fall under scrutiny of competition law.

Although the exclusivity awarded by intellectual property rights might appear to conflict with free competition, there is an increasing awareness in the legal and economic community that intellectual property rights and competition actually serve complementary purposes: both regimes stimulate and balance innovation, or dynamic efficiency, and price competition, or static efficiency. Intellectual property rights accomplish this by structurally establishing in advance (*ex-ante*) what is protected and under what conditions. Competition laws accomplish this by after-the-fact (*ex-post*), case-by-case review of a firm's behavior. The objective of this study is to contribute to

1. Cringeley 1996. IBM had first sought to contract Gary Kildall, the creator of the highly regarded CP/M operating system. However, Kildall refused upon advise of his lawyers, who were concerned about IBM's insistence on signing non-disclosure agreements. Clearly, law and business are separate arts. The operating system purchased by Gates was, ironically, a reverse engineered version of Kildall's CP/M.

the debate about the complementary relationship between intellectual property rights and competition laws by introducing the network effects prominent in the software industry as a complicating factor.

1.2. PROBLEM DEFINITION

As part of their complementary relationship, intellectual property and competition laws are increasingly called on to anticipate matters traditionally addressed primarily by the other. Thus, intellectual property rights must be curtailed to allow for sufficient static competition despite the existence of the exclusive intellectual property right, whereas competition laws, in addition to the more traditional goal of stimulating static competition, must also safeguard innovation, or dynamic competition. Against this background, the following questions arise: (i) *how interoperability affects the balance between innovation and free competition in software*; (ii) *which of two regimes – copyright law or competition law – primarily should be concerned with striking this balance as affected by interoperability*; and (iii) *which particular instruments are suitable to approach this problem within these respective regimes*.

1.3. OUTLINE AND METHODOLOGY

In order to answer its three-layered research question (*supra*), this study first evaluates, based on a normative framework (Chapter 2), the current law addressing interoperability in software (Chapters 3 and 4), followed by a comparison with related legal disciplines (Chapter 5), and, finally, conclusions and recommendations (Chapter 6).

Thus, Chapter 2 of this study first provides a normative framework, determining the effects of interoperability (openness) versus non-interoperability (control) based on economic theory. It will demonstrate, first, that the strong need for interoperability in computer programs causes a degree of interdependency between firms, which affects both innovation and competition. Thus, in software development, competing firms are more dependent on each other than in many other industries, in which firms can innovate and compete more independently. Subsequently, Chapter 2 will demonstrate that both interoperability and absence of interoperability can yield positive effects and that a balance must be struck between these two extremes. An analysis of empirical data falls outside the scope of this study. Instead, the focus lies on the legal framework in which the relevant determinations can be made by the appropriate institutions. Chapter 2 will also introduce the two main legal approaches to interoperability – namely, more rigid but certain *ex-ante* intellectual property rights and more flexible *ex-post* competition laws – and demonstrate that there is a trade-off involved in selecting either one of these approaches to addressing interoperability.

Drawing on the normative framework, Chapters 2–4 aim to provide an analysis of the current respective *ex-ante* copyright and *ex-post* competition approaches to interoperability. The legal analyzes in Chapters 3 and 4 are limited to the laws of the European Union and its implementation in the Member States. Chapter 3 will demonstrate how copyright protection of computer programs can enable rightsholders to control interoperability with their programs and which instruments have been implemented to limit such control. It will also demonstrate that, notwithstanding these limiting instruments, copyright law still leaves the rightsholder with substantial control over interoperability. Conversely, competitors may have insufficient means to establish interoperability with a copyright-protected computer program. This outcome does not correspond with the normative balance established in Chapter 2. Since the problems related to the interaction between copyright law and interoperability have been harmonized at a European level, this analysis will primarily focus on this harmonization instrument – the European Software Directive – and will study the Member States’ national copyright laws insofar as they implement or interpret this directive. Whether copyright law provides for legal certainty will be analyzed in the abstract – that is, by identifying any open norms, and subsequently examining whether a coherent interpretation of these norms exists in the literature and by the judiciary.

Chapter 4 discusses the *ex-post* application of competition law to interoperability. It first focuses on the trade-off between the *ex-ante* copyright approach and the *ex-post* application of competition laws, and demonstrates that there are several arguments to address interoperability within copyright law rather than through application of competition laws. The second part of the chapter demonstrates that, should competition law nonetheless be applied, it does not necessarily lead to a more adequate balancing of interests involved in interoperability. The rigid application of the established case law on anticompetitive conduct neither comfortably nor adequately accommodates the specific concerns of a refusal to provide interoperability information. This rigidity also undermines the flexibility that application of competition law is designed to offer. The analyzes in Chapters 3 and 4 demonstrate that both copyright and competition law essentially promote a model of completely independent competition, rather than the type of partial interdependency present in the software industry. In sum, the evaluative analyzes in Chapters 3 and 4 reveal that neither current copyright nor competition laws provide entirely adequate frameworks to balance the interests of interoperability and non-interoperability.

In Chapter 5, the copyright approach to software interoperability will be compared to two legal disciplines in which an *ex-ante* approach to interconnection is rooted more solidly: European design protection law and telecommunications law. Design protection laws are of interest because they explicitly exclude from intellectual property protection those elements of a design that are necessary for interconnections. A similar approach could eliminate much of the

uncertainty surrounding the use of interface specifications under copyright law. Telecommunications law is not an intellectual property right, but it offers an interesting comparison because it is a body of law in which courts and regulators have accumulated substantial experience with interdependent competition and network effects through *ex-ante* interconnection regulation. Moreover, some of its instruments, in particular regulatory oversight of interconnection negotiations, appear suitable to facilitate access to interface specifications within copyright law.

Chapter 6 will summarize and combine the findings of previous chapters in order to draw conclusions and to discuss several recommendations, which are aimed at aligning the treatment of software interoperability in copyright and competition laws more closely with the normative framework established in Chapter 2. Some of its recommendations are inspired by U.S. copyright law because there is a substantial body of U.S. case law and accompanying literature on the interaction between interoperability and copyright law.

1.4. SCOPE

A number of issues are related to but beyond the scope of this study. This study will focus on two main legal disciplines: copyright law and competition law. The focus on copyright law, rather than other intellectual property regimes, follows from the historical tendency to protect computer programs primarily through copyright rather than other intellectual property regimes. Whether copyright law is indeed the most suitable regime to protect computer programs has been subject to some debate previously. Although this debate will not be revisited, the peculiar role of copyright law in protecting computer programs will be examined in depth in section 3.1 in the context of its implications for interoperability.

Software interoperability is a form of standardization: where two or more manufacturers' products interoperate, there is a (limited) standard. Standards can emerge *de-jure* – by law, formal agreement or consent – or *de-facto*, that is, without a formal act. Each standard raises different issues. *De-jure* standardization primarily raises issues of anticompetitive cooperation between multiple firms (collusion), whereas the principal risk of *de-facto* standards is a possibly anticompetitive refusal to allow others to use the standard. The focus of this study is on single-firm (*unilateral*) conduct and *de-facto* standardization, rather than *de-jure* standardization and concerted practices between multiple firms.

The problem of software interoperability manifests itself primarily in so-called *proprietary* software markets, where software is distributed without the original 'blue print' (or *source code*) of the program. By contrast, the *open source* model allows the source code of the program to be distributed

and modified, which enables other developers to improve the software. The release of a computer program's source code under an open source license generally obviates the need to regulate access to interface information, while the underlying economics are fundamentally different. The focus of this study will be on interoperability in proprietary software rather than under open source models.