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COMPUTER JURISPRUDENCE

LEGAL RESPONSES TO THE INFORMATION REVOLUTION

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PREFACE

As modern society moves through the early stages of the information age, the legal and technological communities are grappling with problems for which existing rules of law may not apply. Most of these problems center on issues of privacy and proprietorship. How, for example, can individuals control the kinds of data gathered on them and how that data will be used? To what lengths can an employer legally go to protect the transfer of new technological developments to a competitor, given the mobility of personnel within the computer technology field? Can such questions be adequately resolved through the application of existing legal concepts? Or is there a need to design a new system of approaches?

In considering these issues, those familiar with the history of law in Western societies, especially its development in Great Britain and the United States, will no doubt experience some *deja vu*. The legal profession has stood on this threshold before.

During the agrarian age and early years of the industrial revolution, individual rights to be free of unwanted intrusion were indirectly protected under the penumbra of rights granted in property law. However, with technological advancements in optics one individual could intrude upon another in the form of viewing that person without crossing any boundaries of land and thus not violating the narrow trespass theory of *quare clausum fregit*. Several decades later advances in photography removed the need for relatively long durations of posing with its inherent consent. A photographer could obtain and use for commercial gain a non-permitted image of

another without violating provisions against criminal theft or property trespass (*de bonis asportatus*). The rules and protection of the law as it had evolved during the agrarian age were insufficient to cope with these technological challenges. As the bar and bench wrestled with fitting the new problems into the pigeon holes of the old laws, legislators attempted to promulgate prophylactic measures that dealt with individual incidents. The solution, in hindsight, was both simple and somewhat obvious. Eventually the legal community devised the new tort of invasion of privacy.

The legal and technological communities may again be facing dilemmas for which the current system of laws may be incomplete or inadequate. The purpose of this book is to probe that possibility by providing a thorough understanding of the impact computers are having on the laws in our society.

This book is the major component of a three-part course of study and reference. The other two parts are a tape series presented by leading practitioners in the computer law field who discuss typical and special experiences in select problem areas, and a primer in video tape part that supplements the book's introduction to computer technology and terminology.

The intended users of this book are a diverse population ranging from those with general legal expertise but no previous understanding of computers, to computer-knowledgeable non-lawyers, to those having neither sub-

stantial computer nor legal backgrounds, including business persons and students. For the person with a legal background, the book has a familiar format, presenting historical, conceptual and practical aspects of such legal areas as contracts, proprietary rights and privacy. Extensive analyses and citations are presented in language understandable to readers from disciplines other than law. While not using a how-to or case book approach, the book will indicate directions for problem solving which are also extensively supplemented in the tape series. In addition to legal issues arising in the United States, the book examines international considerations, specifically with the Far East and Europe.

For non-lawyers, including academics, government, business and technological professionals, this book provides an introduction to the legal considerations surrounding the adoption and use of computer technology in our society. Readers unfamiliar with computer terminology and function should use the primer video tape supplement since the summary primer presented in the book is intended for review and not as a self-sufficient educational tool. Additionally, the practical problem approaches in the tape series supplement should prove valuable.

This book represents an integrated approach to a complex body of technology and law which has been under study for several years at the Franklin Pierce Law Center in Concord, New Hampshire, U.S.A. Some of the basic materials were initially compiled by a team of selected graduate students and professional experts in the diverse fields of law involved, aided by the guidance of leading

national and international practitioners of computer technology and law. These initial contributions were subsequently shaped into the unified and directed study resulting in this book.

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CHAPTER 1 - COMPUTER TECHNOLOGY

A PRIMER ON COMPUTERS

I. INTRODUCTION

The computer has permeated the very fabric of the modern world. Rapid changes abound in the manner of conducting our lifestyles, from contacting associates and purchasing goods to earning a livelihood. These changes, in great part, have occurred due to the acceptance and rapid advancements of computer technology.

During the early stages of computer development, these devices existed as great electronic behemoths secured in sterile and austere surroundings, with a dedicated, specially trained 'priesthood' supporting and directing the new technological marvel. However, the computer has recently become smaller, less expensive and more 'user-friendly' with regard to moderately trained individuals, further permeating the fabric of everyday routine in modern society.

Along with the advancements that computers have provided follows the need to understand the terminology and structure of computers. Ignorance of the capabilities and use of computers, in the near future, will be a handicap as severe as present-day modern language illiteracy. Computer-literacy, therefore, becomes a paramount concern prior to undertaking the study of the various societal and legal responses to the computer in the information revolution.

II. THE COMPUTER SYSTEM

In its simplest form, a computer is a device that can perform computations without human intervention. Such

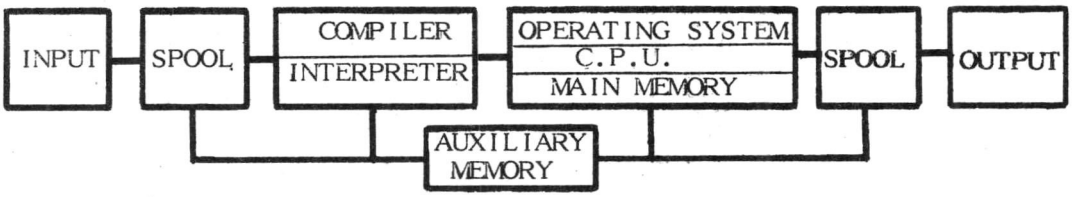
computations can take one of three forms: arithmetic operations, logical operations or input/output operations. Arithmetic operations include the standard mathematical operations of addition, subtraction, multiplication and division along with more complex procedures such as square root, factoring and powers of numbers. Logical operations require the computer to determine states of quality, such as whether one quantity is less or greater than or equal to a second quantity. Input/output operations include the receiving of information by the computer machine and the causing of an action by a machine, such as printing particular numbers on a page or rotating a mechanical robot arm. However, the computer can only perform one of these operations, as directed, at one time, but at such an accelerated rate of operative speed, that the computer appears to be performing many functions simultaneously.

Computer systems are generally subdivided into three general classifications: Mainframe, mini and micro. These divisions are traditionally related to thresholds in size, price, speed of processing and the 'bit' size of the internal electronic processor. The 'bit' is a logical binary digit or on/off switch, and bit size represents the number of bits or size of a logical word that the computer can recognize at one time. The bits are grouped into 'bytes' which represent characters to a computer, with one byte commonly consisting of eight bits, as will be described in more detail later in the chapter. A mainframe computer is represented by large and fast electronic hardware, a 32 bit processor and a pricetag from one-half to $3 million. Minicomputers have relatively small and fast hardware, about

the size of a large filecabinet with a 16 bit processor and approximately a $20 thousand to $200 thousand overall price. Micro-computers have the smallest and slowest of electronic hardware, nominally an 8 bit processer, and are fairly inexpensive, generally betweeen $100 and $15 thousand. Such bench marks are not absolute, especially within the last few years, as 16 bit micros and 32 bit minis abound while the operational speed of some micros now comfortably exceeds the best speed of last decade's mainframes.

Far greater specificity can be obtained, however, in the description of the components that comprise a computer system. In general, there are four such basic components: input/output (I/O) devices, a central processing unit (CPU), mass storage devices and software. Of these, the first three are visible, material electronic or electro-mechanical devices called hardware. The last, software, describes the evanescent sets of logical instructions and data used by the computer system electronics in performing directed operations. An even greater degree of understanding can be obtained by schematic representation of the functional modules of the computer system, each module being composed from a set of the four basic components.

A general schematic representation of a computer system would thusly contain the connected basic modules discussed below:



Input

The first of computer system modules is the input device. Such devices share in commonality the ability to convert real-world data and events into electrical impulses. Example input devices include card-reading devices, which sense the location of coded holes punched into paper cards or tapes; keyboards, which recognize the striking of designated characters on a typewriter-like pad; disk and tape readers, which sense the existence of magnetic zones on a metallic oxide coated surface; optical and audio scanners, which sense discrete quantities of differentiated electromagnetic radiation; and many other devices.

Spool

The spooling device is a hardware and software device used to minimize the differences between input/output and computer processing speeds. Since the computer CPU is capable of performing its routine operations very rapidly, generally 1000 to 1 million per second, normal input means are substantially slower than the computer's access needs. For example, the fastest of typists may input from 5 to 10 characters per second. This is at best two orders of magnitude below the operational speed or access/recognition speed of a standard computer CPU. The spooling device, therefore, as a programmed mass storage device, collects data obtained from one or more input devices and holds the data until