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COMPUTER PROFESSIONALS: THE NEED FOR STATE LICENSING

James E. O'Connor *

INTRODUCTION

There is an often quoted epigram within the computer industry that "Computers allow man to make mistakes faster than he ever before dreamt possible." This note is a product of that concern, and develops from the ever-increasing reality of computer fraud and the realization that, as yet, the general public is not sophisticated in the area of data processing.

This note briefly reviews the general concept of licensing, delineates the need for such control within the data processing industry, evaluates a proposal by the Society of Certified Data Processors for licensing of computer professionals and suggests proposals for licensing and implementation.

LICENSING: PURPOSE AND BACKGROUND

The Council of State Governments has defined occupational licensing as "the granting by some competent authority of a right or permission to carry on a business or do an act which would otherwise be illegal."1 Since "virtually all licensing in the United States has its legal basis in state legislation"2 state legislatures must determine which professions need to be licensed. In making this decision two important concepts clash: the concept of individual freedom versus the need to protect the health, safety and well-being of the public.

There are three basic arguments raised against the practice of licensing. First, licensing restricts the number of entrants into the occupation by establishing exceedingly restrictive and obdurate requirements. Second, it tends to create monopolistic conditions by artificially raising prices and restricting competition. And finally, it is argued that the government cannot "legislate morality" which is one of the goals of licensing. In brief, the government, through licensure, disrupts the free enterprise system and offers few tangible benefits.

Those supporting the concept of licensing believe that when "great multitudes of people live under increasingly crowded conditions, government agencies become responsible for ensuring adequate knowledge and competence among

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98
those ministering to the public health and well-being. This can be accomplished only by defining the conditions of admission to, and retention in, the occupations.\footnote{3} Rather than being unduly restrictive, the standards of licensing merely impose upon the licensees a necessary minimum of experience and educational requirements.

Supporters of licensing also point out that in occupations of extreme technical competence the public must be protected from fraud and dishonesty and have a means of swift, simple and inexpensive redress against malpractice, dishonesty or immorality. Two additional benefits attributable to licensing are the enforcement of defined standards through penalties (such as revocation of license) which are set forth in the statutes, and the fact that licensing boards are able to keep abreast of scientific and technological advances, communicating these developments to their licensees.

Over the past fifty years there has been an extraordinary increase in the number of occupations licensed by the states. As of 1968 more than 75 skills, trades and other occupations were licensed under laws establishing minimum educational and experiencial requirements. If a broader definition of the term "occupation" is used (one which did not require educational or experience standards for entry) the list of licensed occupations would soar as high as 10,000.\footnote{4}

As early as the nineteenth century, medical societies and similar associations urged legislative authorities to pass regulatory legislation to protect the community from adulteration of goods, shortweighting, incompetent practitioners and unfair prices. Today the "impetus for licensing has seldom if ever come from the public in response to a demonstrated need, but rather from associations of practitioners who have usually sought themselves to secure the passage of regulatory legislation."\footnote{5}

The motives underlying this quest for licensing by the associations are not always entirely altruistic. Concomitant with licensing comes a certain amount of prestige and restriction of entry into the occupation. The minimum amount of state control over an occupation may be viewed as immaterial when compared with the benefits of respectability and elitism.

A legislature should be firm under the pressures of lobbyists and make its decisions regarding licensing based only on the overriding consideration of whether there is a sufficient public interest to justify state regulation of the particular occupation.

**PUBLIC NEED**

In early December, 1975, Robert Rennie, a Florida state trooper, noticed a car parked alongside a highway. Before approaching to see if he could be of assistance, he radioed the car's license plate number to the computerized Florida Crime Information Center, in compliance with the standard police operating

\footnote{3} Institute of Management Consultants, Inc., *Should Management Consultants be Licensed by the States?*, IV-1 (December, 1974).
\footnote{4} Supra, n.3, at 111-1.
\footnote{5} Supra, n.2, at 12.
procedure. The license number came back a "hit" – it was reported as stolen. When Rennie approached the car the driver's motions seemed peculiar: there was a jerky motion in which the driver, Frank Booth, a local county official, appeared to reach for a gun. In mistaken self-defense Trooper Rennie shot Frank Booth. The car had never been stolen. Frank Booth died.

The number would have been a hit had the year been 1971. It was not a hit in 1975. Rennie didn't know, however, that the record...[indicating the car was stolen] was entered in 1971. And he didn't know that that same license tag number had probably been issued to three different individuals since the original auto bearing that tag was stolen.6

Florida law enforcement officials called the inaccurate computer report a "once-in-a-million" occurrence. It happened again in Florida barely four weeks later. This time it did not result in death but could have.

And the "once-in-a-million" error happened again, this time in Massachusetts during June, 1976. A routine policy query to a computer system came back with a false report that a motor bike had been stolen. This also ended in human tragedy. It was caused by a "computer system error." It could have been avoided.7

State auto reporting systems are not the only computer systems which when poorly designed or defective have the potential to cause death.

For the third time in a month, a computer error has led to the improper arrest of a person in Greensburgh....

The potential impact of such arrests was demonstrated on April 7, when Steve Karaginais [sic] 20, committed suicide in jail just two hours after being arrested by Yonkers police on a warrant that had been cancelled a month earlier....

A review of police records in Greensburgh show that two other arrests made in the last four weeks were based on improper warrants.

One police officer who is familiar with all three cases in Greensburgh said, "Computers make few mistakes. It's the people who run them that make mistakes."8

Human tragedy and death are not the only results of abuse and error by some data processing personnel. Computer fraud is rapidly becoming a frightening problem.

The average loss per case will rise astronomically.... In 1975 the average loss in bank cases, according to the Federal Bureau of Investigation reports was $19,000, whereas the loss involving D[ata] P[rocessing] was $450,000.... Computer fraud could be approaching $100 million a year; much

Licensing Computer Professionals

goest unreported by corporations so it is difficult to estimate .... 9

The important point to remember in evaluating these statistics, and the actual and potential harm to the health, safety and well-being of the public these figures represent, is that the computer industry is only a few decades old and will grow enormously. J. Paul Lyet, UNIVAC chairman and chief executive officer, has hypothesized that if aviation had evolved at the speed of computers have, Neil Armstrong would have walked on the moon less than a year after the Wright brothers took off from Kitty Hawk.10

In a report released to the President by the Domestic Council's Committee on the Right to Privacy, which dealt primarily with the impact new technology will have upon the nation's economy and business style, it was found that today, "one-third to one-half of the nation's gross national product is derived from the production and distribution of information and knowledge. The United States has entered the 'information age' . . . "11 Computer systems and related technologies are the main factors in the information and economic revolution.

The fact that computers are being used so extensively indicates that "...society has become dependent on a new force surpassing all others in its universal use: the computer. And the computer is powerless without programming. Programs are trusted to count votes, electing lawyers to political office, or to monitor doctors' hospital patients. The assets of all major corporations are balanced in the delicate instructions of programs. And one day, they tell us, we'll have a cashless society with computer programs managing the assets of every human and organization on earth . . . ."12

It is clear that the computer is a vital, integral part of American society. It remains a mystery to the public, who may fail to distinguish between incompetence and competence, between honorable and dishonorable programmers, or to recognize fraud. The public clearly needs protection of its health, safety and well-being. As the sheer computing powers of society increase so does the resulting danger. As Kenniston W. Lord, Jr., former president of the Society of Certified Data Processors, pointed out:

The potential for dealing death by computer is limitless. We've now killed Frank Booth and Steve Karagianis. How many more must die before we awaken to the problem?13

CERTIFICATION

The U.S. Department of Health, Education, and Welfare describes certification or registration as "the process by which a non-governmental agency or association grants recognition to an individual who has met predetermined

qualifications specified by that agency or association."14 The data processing occupation has such an organization which awards the Certificate in Data Processing (CDP).

The CDP program was pioneered by the Data Processing Management Association in 1961. It was viewed as a failure by many members of the industry. In August, 1973, one commentator wrote: "It is time to recognize that the Data Processing certification program is dead and that the carcass is beginning to smell . . . . The various organizations are still fighting over possession of the carcass, but the stench is getting stronger. Why don't we just carry the poor thing back into the trees and bury it . . . ?"15

The carcass was not buried but rather revived under the auspices of the Institute for the Certification of Computer Professionals (ICCP) in 1974. The program has not increased significantly in prestige or in numbers. In 1975, ICCP stated that it currently has about 14,400 CDP holders.16 There are about 350,000 people in data processing.17 Slightly more than 4% of the data processing pool currently hold a CDP designation. With regard to prestige, Fred Harris, the current president of ICCP, said that the CDP program is "not widely respected by the industry and public alike."18

There are many possible factors contributing to the failure of the ICCP's CDP program. One is that programmers and other data processors tend to be social and professional mavericks. Another reason is that the CDP designation is not held in respect by the computer industry, and therefore does not impart prestige within the industry. The public automatically holds computers and their "masters" in respect, and thus prestige is already attained from the public at large. Finally, the job market is still favorable to data processors, so competition is at a minimum and the CDP has no basis in the decision making process which surrounds employment.

THE SCDP PROPOSAL

In December, 1974, the Society of Certified Data Processors19 (SCDP) submitted draft legislation to all state legislatures which would, if enacted, require "only licensed and registered persons shall practice, offer or attempt to practice data processing . . . . "20 Only three legislatures took action on the proposal: Massachusetts, New Hampshire, and Florida.

In 1975, Massachusetts Rep. Wilfred Balthazer introduced a bill 21 which

17. Supra, n. 16.
18. "DP Too Young for Licensing, ICCP Officer Says," Computerworld, March 5, 1975, at 1, col. 2.
was reported out unfavorably by the Committee on Government Regulations, and subsequently was defeated.\footnote{22}

In New Hampshire a similar bill\textsuperscript{23} to license "computer professionals" was introduced in 1975 and referred to the Senate's Select Intern Study Committee. The bill was never reported out by the committee.

In Florida, a substantially modified bill\textsuperscript{24} providing for the voluntary registration of data processors was introduced in 1975 by Rep. John R. Forbes. This bill, which was supported by the Florida Society of Certified Data Processors (not affiliated with SCDP), was referred to the Regulated Industries and Licensing Committee, which took no action.\footnote{25}

The legislation which SCDP advanced declared data processing to be a "learned profession to be practiced and regulated as such . . . ." To accomplish this, the bill would establish a state board of regulation composed of six professional data processors appointed by the governor with the advice and consent of the senate. This board would be empowered to make and enforce all needed rules and regulations, to establish standards of conduct and ethics, and to institute actions for the revocation or suspension of licenses granted under its authority.\footnote{27}

The central element of this legislation provides that any firm, proprietorship, co-partnership, corporation, or joint stock association may engage in the "practice of professional data processing" provided such practice is carried on or certified by a registered (licensed) data processor.\footnote{28} The act also prohibits individuals from practicing professional data processing. However, it exempts from certification requirements: non-residents, subordinates, or employees of a person holding a license, officers or employees of the government of the United States, persons engaged in providing data processing services for a private corporation and those persons solely engaged in research or educational pursuits.\footnote{29}

Under the aegis of the proposed legislation a person applying for a license must meet one of three sets of criteria: (1) The applicant has graduated from a four-year school or college with a degree in data processing and completed three years of active practice in data processing supervised by a data processor who is already licensed; (2) The applicant pass a written or oral examination designed to show "knowledge and skill approximating that attained through graduation from a four (4) years [sic] data processing course" and complete five years of active practice in data processing; (3) The applicant has a 12 year record in data processing which is "deemed suitable and/or satisfactory to the Board and indicating that the applicant is qualified to design, operate, or to supervise development of data processing work and has had responsible charge of important data processing work for at least five years . . . ." \footnote{30}

The overall reaction of the data processing industry to this proposed legis-

\begin{footnotes}
\item[22] Letter from Linda A. Sweeney, Massachusetts Legislative Aide, to the author, January 19, 1977, on file at the \textit{Notre Dame Journal of Legislation}.
\item[23] New Hampshire 1975 Senate Bill 2082.
\item[25] Legislative History of Florida (1975), House Bill H. 2105.
\item[26] SCDP Act, \textit{supra}, n. 20.
\item[27] SCDP Act, \textit{supra}, n. 20 Sec. 3, 8.
\item[28] SCDP Act, \textit{supra}, n. 20, Sec. 17.
\item[29] SCDP Act, \textit{supra}, n. 20, Sec. 20.
\item[30] SCDP Act, \textit{supra}, n. 20, Sec. 12.
\end{footnotes}
lation was negative. In general, the articulated reasons for resisting licensing at that time can be classified into two categories. First, and most often asserted, is that the data processing industry has not yet come of age.\footnote{See: editorial: "Too Young," \textit{Computerworld}, March 26, 1975, at 12, col. 1.} This objection encompasses the feelings that, as of yet, there are no firmly established job definitions nor is there a "complete set of validated tests to measure individual knowledge."\footnote{\textit{Supra}, n. 16 at 9.}

The second major argument against the SCDP proposal is identical to the standard arguments raised against licensing in general: there is nothing to gain by government intrusion into the industry. It is also noted that government is already a massive bureaucracy and this proposal would only add to the mass.

The majority of the data processing industry sees licensing as an unwarranted intrusion. They believe the industry is too young for licensing and that "at this time . . . such laws would be detrimental to the development of the profession . . . ."\footnote{Data Processing Management Association, position statement, news release number 0102, August 4, 1976.}

It appears that self-interest is, in reality, the controlling impetus behind this opposition. The public, in general, supposedly views the data processing industry with respect; thus, licensing would not attain that treasured objective. The data processing industry is relatively new; thus, there is no need to restrict the influx of new data processors. The decision by occupational groups to propose or oppose licensing has always been the result of a balancing between the benefits, respect and control of entry versus the supposed detriments of governmental intrusion. In the case of the data processing field the scales are still tipped against such action.

\section*{A POSSIBLE SOLUTION}

The overriding issue lawmakers should concern themselves with when considering legislation to establish licensure of the data processing industry is not the positive or negative effect upon that industry, but rather whether such control is mandated by a sufficient public need.

It has been shown that in many areas of our increasingly computer-based society the public needs protection against incompetent, amoral or otherwise unqualified data processors. In areas such as criminal justice information systems this need can validly be characterized as a matter of life and death.

The proponents of the SCDP proposal were among the first to recognize this need. However, they also pursued another important and related goal. That goal was to instill in data processing practitioners a sense of professionalism, and correspondingly, to have the occupation recognized as a profession.\footnote{See: C. Arst, "SCDP Licensing Proposal Splits DP Community In 1975," \textit{Computerworld}, December 31, 1975 / January 5, 1976, at 9, col. 1.} Because of this additional emphasis on professionalism, the legislation drafted by the SCDP approached the subject of licensing from the standpoint of its effect upon the data processing industry.\footnote{SCDP Act, \textit{supra}, n. 20.}

A different approach to this licensing problem, with a corresponding
change in emphasis, might develop a feasible solution. The best approach would be legislation with the specific and primary purpose of securing protection for the public, rather than protection being a mere side benefit.

Translating this into specifics the licensing statute should affect only those data processors who work on, or are in charge of, computing systems which affect the public. Computer systems which are strictly internal to a company, such as inventory control, financial projection packages, or intraoffice accounting routines, do not possess sufficient public contact to merit licensure.

It is not argued that all computer systems which affect the public be designed and controlled by licensed data processors. There are some applications which, even if defective, do not pose enough of a threat to the health, safety or well-being of the public to merit licensure. A typical example of such a system is one designed to keep track of library books. Other examples include a system which compiles statistics regarding the number of long distance telephone calls during specific time periods, or one which generates internal management information reporting for government agencies.

Computer systems which clearly have sufficient public impact to require licensed data processors are those systems which affect the public health or safety in any manner and also those systems which have a direct and substantial influence on the public well-being.

Examples within the categories of public health and safety include systems such as hospital information systems which have recently been introduced into the market and which are rapidly increasing in numbers. These systems monitor life functions of patients, schedule individual medicines and dosages, catalogue case histories and indicate allergic reactions, in addition to other routine and extra-routine tasks.

Systems which bear upon the public safety are also numerous and easy to identify. Air traffic control systems, such as the one employed by Chicago's O'Hare International Airport, which handles thousands of lives per hour; 36 computerized transportation systems such as the San Francisco Bay Area Rapid Transit system (BART); and criminal justice information systems are a few of the many computer systems affecting the public safety which are being integrated into society.

The third and final category composed of computer systems which influence the public well-being is harder to circumscribe. This would include systems which directly affect the financial or economic status of the general public (such as credit card billing systems); systems which catalogue substantial amounts of information regarding individuals; or systems which analyze data regarding individuals or their characteristics (such as personal credit reporting services or educational testing services). This is the broadest of the three categories and also the most often abused.

For analytical and practical purposes these three categories will be referred to as "critical areas" or as having a "critical capacity."

36. Currently, there are no federal laws or regulations requiring licensure of data processors who work on, or supervise, computer systems in the area of air traffic control. In the absence of such congressional intent to regulate in this area, state legislation would be effective and controlling. (See: Hancock v. Train, 96 S.Ct. 2006 (1976); Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 94 S.Ct. 1879, 40 L.E. 2d 315 (1974)). In light of the obvious need, however, it is urged that the legislation proposed in the final sections of this note be adopted not only at the state but also at the federal level.
In summary, a proposal is advanced which would require licensing of data processors who direct, plan, supervise, or work on computer systems which affect the public in a "critical capacity." These data processors would earn the designation of Licensed Public Data Processor (LPDP).

THE PROPOSED LPDP ACT

An exhaustive and comprehensive act to license public data processors will not be presented since model acts have already been published which could easily be adopted for this purpose and also since legal publications have treated the general concept of occupational licensing.

The essence of the proposed Licensed Public Data Processor (LPDP) act is the mandate that all computer professionals and data processors who direct, plan, supervise, or work on a computer system which affects the public in a "critical capacity" must be licensed. (An alternative but less rigorous approach would eliminate licensing for those who merely work on a system, but retain licensing for those who direct, plan or supervise the systems involved.)

A legislative definition as to what constitutes a "critical capacity" should be incorporated into the specific state statute. The specifics of this definition should be left to the judgement and decision of the individual state legislatures, as the particular public need varies from state to state.

Among those "critical" areas which a state may wish to license are computer systems such as criminal justice information systems, air traffic control systems, hospital information systems, personal credit reporting systems, and systems for the control of public surface transportation operations.

The executive agency responsible for this LPDP licensing function should be empowered to add additional areas to the "critical capacity" list after holding public hearings. This power must rigidly be defined within the statute so as to not violate the constitutional mandate against delegation of legislative powers.

The licensing function herein proposed may be exercised by a state education department, the Secretary of State of a particular state, a general state licensing board, or by a board created exclusively for this specific function. For example, in New York, the State Education Department, which licenses professionals, would be the appropriate agency, as the licensing functions of New York's Secretary of State relate primarily to non-professional occupations and trades.

Should a state determine that a new board is the most appropriate vehicle for this licensing function, a portion of the board members should be non-data processors. These public members should include users of computer systems; the consumer interest in this area is the essential basis for the public need for this licensing function.

This consumer concept is in keeping with the progressive and positive practice initiated in early 1977 by Governor Edmund G. Brown, Jr., of California; it is designed to prohibit a situation wherein the data processing industry would determine the membership of the board. The public policy argument in support of this type of board membership is that, by having some of the licensing board members come from outside the body of those to be regulated, the state can minimize "exclusionary practices and self-protective rules." The purpose of a state's licensing function is to protect the public, not to protect the industry.

We must avoid what A.H. Raskin, the respected labor and economic affairs writer for *The New York Times*, refers to as "the danger that wolves will watch the sheep..." and of "restricted entry into crafts and professions." Other considerations are: the mechanism for appointment to the board, terms of appointment, basis of authority, funding, procedures of the board, powers to make rules and regulations, power to conduct disciplinary hearings, suspension and revocation of license, powers to determine qualifications for licensure and guidelines for issuance and renewal of licenses.

Kenniston W. Lord, Jr., the author of the original SCDP proposal, indicated that he would support this type of approach to the licensing problem, stating: "I fully support any effort which will bring some mandatory standardization to the data processing activities of the country, particularly those areas which affect the public health, safety and well-being."

**CONCLUSION**

It is clear that there is a substantial and tangible public need for the licensing of computer professionals and other data processors whose work affects the public health, safety and well-being.

Despite the data processing industry's fears about state licensing, the public's interest must outweigh industry hesitations. State licensing of data processors will help this growing industry, not harm it.

The elements of the proposed Licensed Public Data Processor Act suggested in this note generate from the need for public protection. Such an LPDP act would, if enacted, protect citizens affected by public data processing systems without harming the industry.

To those who have observed and followed the development of our computer-based technological society, it is apparent that computers, and those who develop and work with computer systems, have a significant influence over the health, safety and well-being of the public.

Today a socioeconomic revolution is occurring in which our technologically-based society can either degenerate into a dehumanizing idolotry of electronic gadgetry, or it can develop into a computer-catalyzed Elesian type environment, enabling man to pursue more creative, more humanistic activities.

41. *Supra*, n. 40.
42. *Supra*, n. 37, at 173.
Data processors have the power to influence the direction of this revolution, and society must insure the responsible exercise of this power. The proposed Licensed Professional Data Processor Act will facilitate society's exercise of this responsibility.