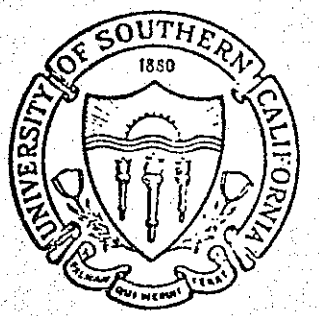
Computer Software in Education: Property Rights, Use, Royalties

by

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Abstract

The advent of computer programming by faculty members on college and university campuses and the potential value of the product of this effort in the commercial marketplace, has caused some college and university management to examine the potential benefits and problems associated with developing policy surrounding the issues of property rights and royalties associated with using computer software in education.

This paper examines the recent history of the commercialization of university-developed, general purpose statistical software. From these special purpose commercial ventures, the paper moves on to look at the developing opportunities in the computer "courseware" area. By examining one university's policy concerning university-sponsored educational material and contrasting this approach with a computer manufacturer's arrangement with its employees, a case is suggested that indicates the need for broader college and university managerial attention.

In another, but related issue, the potential property loss associated with use of proprietary software packages possibly justifies the formality with which certain software producers approach their university clients.

Finally, one commercial computer manufacturer's contractual approach to the royalty problem is presented.

Introduction

Dr. Frederick Cottrell's gift of his lifetime patent rights provided the endowment for the founding of the "Research Corporation," an entity that acts as a patent clearinghouse for many universities and government agencies.

Dr. Cottrell long ago recognized the need for an organized effort to ensure the successful transfer of scientific and technical information into specific innovations. In 1912 Dr. Cottrell saw that "the mass of scientific facts and principles developed in the course of investigation and instruction, which through the lack of necessary commercial guidance and supervision, never, or only after unnecessary delay, reaches the public-at-large in the form of useful inventions, and then often through such channels that the original discoveries are quite forgotten (Ref. 1). The federal government, along with colleges and universities, has come a long way since Dr. Cottrell's remarks. However, science and technology have also come a long way. Federal and state law as well as institutional policy and regulation have failed to keep pace with the advances. The computer, and in particular the programs that are written to run on these computers, are a new form of intellectual property that needs to be examined and considered as properties that should in certain cases find a way to the marketplace.

Federal and state legislation has generally been enacted "To Promote the Progress of Science and the Useful Acts" (Ref. 2). It is suggested that appropriate policy should be developed in colleges and universities that will encourage the disclosure of these new intellectual ideas. We begin by examining the historical development of computers and computer programs on our college campuses.

Then we will examine a technique to protect these new "products of the mind" and yet insure that commercial opportunities to provide these products to the general public are established and remain intact. Finally, we look at some legal problems associated with using this software.

Hopefully, this paper will lead to increased discussions aimed at developing useful and workable academic policy for this area. There is reason to believe that on some university campuses, efforts at developing quality computer courseware is being hampered by either the lack of institutional policy concerning property rights or by a devaluated currency being attached to the academic importance of courseware (Ref. 3).

Brief History

Numerous articles have been written over the past twenty-five years describing the role computers can, are and will paly in college and university education. Early emphasis was usually on the role of the computer as a new and significant tool for the research scientist. From the earliest days, a large degree of cooperation between government, industry and the university helped to develop this tool into the valuable research medium it is today.

One of the more significant milestones in this history was the development of the ENIAC and EDVAC at the Moore School of Electrical Engineering at the University of Pennsylvania beginning in 1942. John Mauchly, then Assistant Professor at the Moore School, wrote an internal memorandum in 1942 entitled "The Use of High Speed Vacuum Tube Devices for Calculating." This document is considered by many as one of the more important documents in the history of computers. The ENIAC patent (Ref. 4) interesting in itself, is generally acknowledged to be the first patent on a complete computer system. Other work done by Howard Aiken (Ref. 5) in cooperation with IBM on the development of the Mark I at Harvard as well as Atanasoff's (Ref. 6) pioneering work on computers at Iowa State attests to the early involvement of universities in computing developments.

In all these efforts emphasis was on hardware improvements such as circuit development, memory technology, input/output devices and auxiliary storage media with special attention to features such as the "number of gates" the machine could handle, the "speed of addition", the presence of "floating point" multiplication circuitry, the "mean time between failures", etc.

Naturally enough, in certain cases, the inventors involved, either alone, for the university, or in collaboration with a manufacturer submitted patent applications for the discoveries involved. While these hardware situations are of historical interest, and have led to other developments, they are not the chief concern of this paper.

Development of Software

In the early days of computing only a few persistent researchers were able to make significant uses of the computer. From the beginning, the computer was recognized as a general purpose machine. Even Charles Babbage (Ref. 6), universally recognized as the father of the computer, acknowledged the level of generality to which the machine could be put when he called it "The Analytic Engine." The effort required to use this generality by the computationally oriented scientist was hampered by the necessity to understand the machine's internal workings. The manufacturers in general, and IBM in particular, recognized that this general purpose machine would not be put to very many specific purposes unless an easier method of communicating with the machine was advanced. In 1954 John Backus at IBM developed FORTRAN (Ref. 7), an algebraically oriented language, and a whole host of analytically oriented scientists now became potential users of the machine. Other manufacturers followed suit and the FORTRAN language was soon available on most of the large scientific machines manufactured during the late 1950's and early 1960's. With proding by the Department of Defense, many of the computer manufacturers combined their interests and generated specifications for the development of the COBOL (Ref. 8) (Common Business Oriented Language) language which is probably the second most widely used computer language in universities.

Two major and critical ingredients were now combined and the university public had potential access to a general purpose computer and at least two general purpose langugages. Additional languages were soon to follow which would open the door to use of the computer by a variety of subject matter specialists whose disciplines allowed an algorithmic approach to scientific

investigations and problem solving.

During the mid-1950's and early 1960's a manufacturer's investment in hardware far outshadowed their investment in software. An approximation of the split during this period allocated seventy-five percent of the manufacturer's computer development cost to hardware and twenty-five percent to software (Ref. 9).

As with hardware, the manufacturers early recognized the value to the industry of close cooperation with colleges and universities in the new area of software development. They correctly reasoned that not only would colleges and universities have to produce a significant portion of the programming cadre that would be so necessary for industry growth, but also valuable software developments would obviously take place in the campus setting. The manufacturers understood that these developments, if shared with the user community, could make the computer a much more attractive investment to many potential clients, including the post-secondary school market.

As an inducement to universities, the major manufacturers offered considerable discounts from the then current market price for use of their computers in education and research. This policy along with a national policy to support the purchase of computer hardware by the National Science Foundation saw a tremendous growth in the presence of computers on campus (Ref. 10).

With the increased availability of computers, general purpose translators and a growing cadre of campus programmers, a tremendous spurt took place in the development of even more general purpose software. One such development, typical of many that occurred in the 1960's, the BMD project, took place at the Health Sciences Facility at the University of California in Los Angeles. Dr. Dixon and his colleagues work on this package (Ref. 11) has continued for almost fifteen years. Their developments have been shared

essentially free-of-charge by universities all over the world using a variety of computers from most of the major manufacturers.

About this time, users of IBM's large scale computers, banded together in an organization known as SHARE, Inc. A non-profit corporation, these users actively "shared" the many hundreds, even thousands, of programs that their membership developed. Other manufacturers encouraged similar organizations. It was commonly held in the computing community of the time, that many a convention trip was paid for by the shared software that the traveler acquired on the trip and added to the University Computing Center Library. In many ways, this sharing psychologically reduced the perceived value of the property to all concerned.

By the time IBM decided to "unbundle" -- that is separate its software and hardware pricing -- the entire industry was aware that the cost of software was at least equal to the cost of hardware (Ref. 9). This was true, regardless if one looked at the problem from the manufacturer's or user's point of view. It also became clear at this time that there were very few locally developed programs that could be truly shared. Software development became recognized as a complex, costly and time-consuming task. What is more important, is that the campus user community recognized that a deck of cards with a two-page handout on filling out control cards was virtually useless if one was involved in servicing serious research in data analysis of any meaningful variety. In addition to requiring comprehensive user oriented documentation, software developers realized that the release of the software package or documentation was not a one-time effort. Algorithms were constantly being improved, errors were found in pathological data cases and error messages of varying diagnostic capability were needed by

university users with varying degrees of computer sophistication and improvements in documentation were continually being suggested.

The total amount of effort now involved in developing good, reliable, useful software packages was now large enough that producers of software became more zealous in protecting the investment involved. The current state of the situation in the Statistical Program Package area is indicative of the variety of marketing approaches that have developed. In addition to the NIH sponsored BMD effort mentioned above, International Mathematical and Statistical Library (IMSL) (Ref. 12) commercially developed a proprietary package of mathematical and statistical software internationally marketed by IMSL Inc., a company naturally interested in returning a profit to their investors. The programming and consulting staff of numerical analysts, statisticians and programmers include, as full-time staff and part-time advisors to this company, some of the world's leading academic authorities in this area.

SPSS Inc. (Statistical Package for the Social Sciences) (Ref. 13), a spin-off of the private University of Chicago, now markets their software to universities and private firms throughout the world. While still offering universities a substantial discount by comparison to commercial users, the price for their once free software has risen to four-hundred dollars for a year's licensing arrangement.

Another package in this same general area, SAS (Statistical Analysis System) (Ref. 14), has been developed by the North Carolina State University in Raleigh. This package is now marketed by SAS Inc. General university users are required to pay annual licensing fees and the company takes considerable interest in the legal and managerial developments behind the proprietary nature of its product.

These four statistical packages undoubtedly present ethical and economic issues which could be discussed in this paper. The details, however, will be left to another time so that we can broaden our horizon from computing software operated by specialists in mathematics and statistics, to a more general area of relatively recent origin.

Before doing this, however, it should be remarked that while statiscal software development and associated marketing strategies have provided a historical instance of programming product development of interest and continuing economic value to universities, other programs in areas such as linear programming, marketing research, business gaming, numerical control software, etc. suggest the need for university policy development concerning this kind of property. At the same time, commercial interest in developing a market for these programs will fast disappear if the question of ownership is not clearly established.

Computers in Teaching

Not only have computers been seen as a valuable tool to the researcher interested in problem solving, but it is also viewed as a device capable of significantly aiding in the teaching process itself. This possibility was long considered a promise hard to fulfill because of the absence of general purpose software to aid in programming a course. Early efforts saw programmer-teacher combinations having reasonable success using FORTRAN; however, this language limited the number of projects that were initiated as well as the teaching strategies that could easily be implemented. Development of courses to be delivered by a computer have become known in the educational computing world as "courseware."

Two languages developed by IBM and CDC respectively, namely COURSEWRITER (Ref. 15) and PLATO (Ref. 16) have given the courseware developer a new linguistic tool with which to program his area of interest. However, as was learned in the earlier programming efforts, the total courseware package includes a good deal more than the computer code that drives a terminal. Each package needs many levels of documentation required for people with such titles as the system software supervisor, the courseware programmer, and the consulting courseware specialist. This is in addition to the documentation needs of the teacher and the student. In addition to written documentation there is often need for a multi-media approach to teaching the subject and each media product needs a coordinated developement effort. A developer should also consider the testing and grading aspect of a course in which the computer may or may not play a role depending on the author's views. The level of documentation required varies with the level of interest of the author or university in sharing these developments.

An available bibliography of computer assisted instructional material (Ref. 17) grows in size and variety every quarter of every year. Courses in accounting, statistics, foreign languages, law, medicine and dentistry are being developed, distributed and used. From large scale computing networks (Ref. 18) to stand-alone desk-top models (Ref. 19), computers are being used throughout the world to deliver credit and non-credit course material. Because of the large client base that potentially may find computer aided instruction effective and efficient, large corporations have taken a keen, even competitive position in delivering these services (Ref. 20). The situation that is emerging can then be summarized as follows:

Relatively inexpensive general purpose computers are available with sufficiently powerful course-writing languages so that college and university faculty members can alone or in cooperation with their colleagues develop course material which may possibly be a marketable product, both internal and external, to the college or university.

The importance of these observations stems from the fact that while patent issues are generally restricted to certain research oriented universities and copyright policy, while having many modern complexities, have evolved in varying ways on different campuses, the issues and associated policy surrounding programming and courseware property have yet to develop on most campuses.

This lack of policy may stem from issues, many of which are in a legal no-man's land, and are currently unresolvable. There is, however, some practical headway being made at certain institutions which can and should be investigated as the issues unfold.

Copyright and Patent Protection for Computer Programs

Duggan (Ref. 21) has summarized the current legal situation with respect to the viability of copyright and patent protection for computer programs.

> "In 1964, the Copyright Office announced somewhat reluctantly that it would accept computer programs for registration, however, it clearly indicated that it was a doubtful question as to whether a program is a 'writing of an author'."
>
> "Notwithstanding these substantial doubts, almost all purveyors of software have chosen to copyright at least part of their program libraries."
>
> "On the other hand, in 1972, the Supreme Court ruled that computer programs were not patentable. (Gottshalk v. Benson, 409 U. S. 63). However, the Court of Customs and Patent Appeals has indicated that it considers this decision not applicable to all computer programs, just those in which the algorithm seems to be exclusively mathematical in nature. Whether this narrow interpretation of the Supreme Court decision is justified is at best arguable."
>
> "Although computer programs may now be patentable, it is also possible that the courts might decide that programs are not 'writings' also, thus leaving them without any statutory or common law protections whatsoever."
>
> "Although no states have yet given explicit copyright statutory recognition to computer programs, unlike the sound

recording ('tape and record piracy') field, one should recognize that such enactments could be legislated, if a need should be manifest."

"Even if computer programs are properly the subject of copyright protection, the extent of that protection may be somewhat limited, e. g., it probably does not extend to the ideas imbedded in the program nor to the techniques used in developing or making the program, but only to the format. Even here, it is possible that the protection will not extend to the use of the program within the computer but only to the copying of the program for resale to others."

"Similarly, if Congress should extend patent-like protection to computer programs, it is possible that the protection would not protect the concepts or new principle but only the specific series of executable instructions deposited with the Patent Office."

"Although copyright and patent (issues) have had no measureable effect upon computer developments, the lack of firm guidelines as to what can and cannot be done to protect programs as well as to incorporate protected material in a data base has lent a substantial degree of legal uncertainty to this industry. It does not appear reasonable to assume that this uncertainty will soon be dispelled . . ."

The recent decision of the U. S. Supreme Court, Dann v. Johnston, 96, Sp. Ct. 1393, 5CLSR (1976), in which the court found the Johnson patent invalid for obviousness, stated that it would not rule on the general

question of program patentability.

Nycum (Ref. 22) generally agrees with Duggan and remarks that "one and a half decades of public debate and severn years of judicial consideration, have produced substantial verbage but little agreement in the legal and policy issues raised by the prospect of program-related patents. There have been judicial outcomes, to be sure, but as noted above, these have been largely directed to the question of subject matter, and their perserverances in the face of further judicial review and possible congressional action is uncertain."

Thus it appears that if colleges and universities wish to pursue protection of proprietary rights of the university or author or both where computer programs or courseware is concerned, they should realize that the legal issues surrounding the copyright/patent debate is at best a murky situation. That is not to say that a university and/or author should not copyright their programs. In fact, IBM (Ref. 23) gives their employees detailed instructions regarding the procedures involved in lisensable programs which are to be copyrighted. Nycum (Ref. 22) discusses "Whether, and under what conditions such protection (patenting) ought to be available." It may be that in some special situations the university's and author's best interest may be served by pursuing that avenue of protection.

One University's Approach

By no means alone in their approach, the Minnesota Board of Regents has found it advisable to address the computer program issue by instituting a separate policy on University-Sponsored Educational Material (Ref. 24). This policy, while not specifically developed because of the difficulty in the patent versus copyright issue surrounding programs, skirts the legal protection issue. It begins by acknowledging the existence of institutional departments whose role is,

> "to support work with faculty members in the development and improvement of educational materials." It further goes on to state "University participation in the development of educational materials promises to improve the quality and versatility of instructional practice. But it also raises problems concerning the ownership and use of materials in the development and production of which the university has become an active and intentional partner through the investment of materials and staff. University-wide policies are needed to govern the ownership, university use, external use and rights to income produced by external distribution of these university-sponsored materials. It is the purpose of this statement to clarify and protect the respective rights of individual faculty members and the university by defining the types of educational materials which should be designated as 'University sponsored', establish procedures for formulating and administrating policy concerning these materials, and stating university-wide policy governing their ownership and use and "the rights to income produced."

The policy goes on to clarify the types of educational materials to which the policy was designed to apply. It lists:

1. Video and audio recording
2. Study guides, tests, syllabi, bibliographies and texts
3. Films, film strips, charts, transparencies, and other visual aids
4. Programmed instructional materials
5. Live video or audio broadcasts
6. Other materials used for instruction

Time and experience led the University of Minnesota to draft an update to this policy which was approved by the University Senate in May, 1976 (Ref. 25). It has not yet been approved by the Board of Regents. There are a number of changes to the policy including the list of materials to which the new policy applies. It now lists:

1. Video and audio recordings
2. Video and audio live broadcasts
3. Study guides, tests, syllabi, bibliographies, and texts
4. Computer programs
5. Films, film strips, charts, transparencies and other visual aids
6. Programmed and instructional materials
7. Computer-assisted instruction courseware

In addition to computer material now being mentioned explicitly, an attempt is made to distinguish computer programs, programmed instructional materials and computer-assisted instruction courseware. This is a welcome distinction.

Following close behind policy establishment, which in many universities belongs to the Board of Regents, is the problem of policy implementation.

PLATO

One of the more successful computer assisted instruction systems to develop over the past few years is the PLATO system. It was developed at the University of Illinois Computer-Based Education Research Laboratory using Control Data Corporation equipment as well as support from NSF. After a number of years in a laboratory-like environment, the system is beginning to make itself felt in the marketplace (Ref. 26). One of the difficulties in bringing this system into commercial use was the somewhat confusing problem of the proprietary rights issue. As a result of rather long internal negotiations, the University of Illinois has drafted an Agreement of Release form for use by its faculty involved in PLATO Instructional Materials Development (see Attachment 1). In exchange for a participation in royalties the author agrees to turn over to the university, who can elect to become distributor and marketer of the product," a complete copy of the computer code, microfiche materials, audio disk materials, and all other materials and documentation thereto, which are necessary for or useful for the marketing and distribution of the material cited above. . ."

In another document used to negotiate a computer course development effort, the following definitions and distinctions were made in the draft contract concerning a Computer-Based Education (CBE) system:

> "University Courseware" includes all materials developed by an Author for the purpose of presenting entertainment, testing, diagnosis, prescription, instruction or information via and/or associated with a CBE System. These materials may include, but are not limited to the following:

1) CBE Component - Lessons and/or units in a form readable by a CBE System software and/or associated software; and

2) NON-CBE Components - Ancillary materials, produced by an Author, necessary or supplementary to the lesson which have been or may be dependent upon, integrated with or developed for use with one or more CBE Components, including but not limited to:

   a) Course Syllabus;

   b) Microfiche materials and/or other photographic presentation materials;

   c) Audio-visual materials, both computerized and for other media;

   d) Course workbooks;

   e) Course handbooks, textbooks, lecture materials and notes, and/or similar printed material for use by students, authors, and/or instructors;

   f) Any other materials expressly developed for use with a lesson or unit;

   g) Any courseware evaluation material, any account of the pedagogical methodology used in testing, diagnosis and prescription process of any Courseware; and

   h) Any programs developed by an Author for the management of lessons or for linking

the delivery of instruction to other media or education prescriptions, both computer-based and non-computer based "components."

The comprehensive nature of the description not only points out the potential scope to which a "University Sponsored Educational Material Policy" may extend, but also suggests that supportive material that may be considered valuable intellectual property may or may not be developed by the author and may or may not be necessary to assure a marketing success. The net result of considering these developments is the realization of the importance of the projections (Ref. 9) that by 1985 hardware development will account for twenty percent of computer manufacturers' development cost and software will account for eighty percent of these costs. In the courseware area much of the development can take place on a college or university campus.

Industry Approach

In property rights matters, many a commercial organization requires as a condition of employment that the employee sign over certain rights to his employer. Attachment 2 entitled "Agreement as to Patents, Inventions and other Creative Property Rights and Regarding Competitive Activities" is one such document currently in use by a major computer manufacturer. The comprehensive nature of this agreement stands in striking contrast to the usual university approach.

The university problem with certain property rights becomes even more complicated when one considers (as Minnesota did) what happens to certain rights when a faculty member leaves the university. The industrial situation is nowhere near as complicated in this regard.

Vendors Rights

Another aspect in using computer software in education is the developing sensitivity of suppliers of computing software concerning the proprietary nature of their products. It is not surprising that with the current state of patent and copyright legislation providers of software go to considerable effort to protect their product. While universities may not choose to be that protective of its developments, as users of certain proprietary software they should be aware of the software developers point of view. Brandon and Segelstien (Ref. 27) discusses the matter:

> "In the data processing industry, the most common example of a proprietary idea or process is the packaged program. As is discussed elsewhere, vendors of proprietary packages go to great lengths in an attempt to secure the proprietary aspects of their product by imposing restrictions upon the user. These are directed toward prohibiting the user from disclosing, reproducing and making unauthorized uses of the proprietary information."
>
> "The significance of the concept of proprietary information, in the context of the creation of data processing ideas, is twofold. The user must understand the reasons for the vendor's insistence upon a variety of onerous restrictions and must be prepared to accede to most. The user must also maintain an awareness of the potential liabilities if he violates these restrictions. Since the proprietary information being licensed by the vendor is his stock-in-trade and since the loss of its

secrecy may render it valueless to him, the careless, disorganized or malicious user may find itself faced with a lawsuit of monstrous proportions by reason of its unauthorized disclosure."

Attachment 3 includes a draft contract which outlines the form of the provisions that one proprietary software developer wished to use with a university.

It is well to note that many university computing centers have acquired proprietary software for which the provider may have requested that such an agreement be signed. In the absence of any "trade secret" promise on the part of all university computing users, it seems difficult to conceive how such an agreement could be negotiated.

Royalties

The development of good useful courseware in recent years has seen the evolution of contractual clauses aimed at a royalty arrangement for rewarding the owner of a program product. Attachment 4 includes one such draft arrangement and keys on the student-contract hour as the unit of measure for royalty purposes. Other flat fee and flat fee plus royalty arrangements will undoubtedly evolve. It is important to note that the distributor in this case wished (naturally enough) to work entirely with the university and leave the university-author relationship out of their contract.

Conclusions

Computer software developments will continue to grow as computers play an even more important role in our post-industrial society. Colleges and universities have already played a significant role in developing useful software packages capable of returning at least a portion of the investment involved. Those colleges, universities and faculty members wishing to become significantly involved in the development of computer courseware, will have to address the issues involved in property rights in these programs. They will also have to develop policy, procedure and organization to ensure that these "products of the mind" can be shared with the public and that reasonable choices concerning which products to invest in are made.

References

1. Cottrell, Frederick - "Address Before the 8th Annual Congress of Applied Chemistry," New York 1912 contained in "Quarterly Bulletin" Research Corporation Summer 1974.

2. U. S. Constitution, Art. 1 Sec. 8.

3. Costello, D. F. (Ed.) "Planning Academic Computing Systems" to be published in 1977. In addition to discussing Academic Computing Planning efforts at the University of Nebraska, the book discusses results of an internal questionnaire containing questions aimed at Deans and Chairmen's attitudes towards considering a computer program as a valid intellectual activity contributing to academic advancement.

4. U. S. Patent No. 3, 120, 606 issued 1964 February 4.

5. Aiken, Howard A.: "Proposed Automatic Calculation Machine" (previously unpublished memorandum) IEEE Spectrum pg's. 62-69, August 1964.

6. Randell, Brian (Ed.) "The Origins of Digital Computers" Springer-Verlag, New York 1973

7. Bachus, John, "The IBM 701 Speed Coding System," Journal ACM Vol. 1 (1954), pp. 4-6 - A precursor to the FORTRAN language.

8. Sammet, Jean E. "Basic Elements of COBOL 61." Communications of the ACM (1962) pp. 237-253.

9. Dolatta, T. A., Berstein, M. E., Dickson, R. S. Jr., France, N. A., Rosenblatt, B. A., Smith, D. M. and Steel, T. B. Jr. "Data Processing in 1980-1985" Wiley 1976.

10. Pierce, J. R. "Report of the President's Science Advisory Committee on Computers in Higher Education" U. S. Government Policy Office, Washington, D. C. 1967, Dixon, W. J. (Editor)

11. "BMD - Biomedical Computer Programs." University of California Press, Berkeley 1968.

12. "IMSL Reference Manual," IMSL Inc., Houston, Texas 1974.

13. "SPSS" - Nie, Norman, Bent, Dale, Hull, C. Hadlai, McGraw Hill, New York 1970.

14. Service, Jolayne - "The Users Guide to the Statistical Analysis System," Student Supplies Stores, North Carolina State, Raleigh, North Carolina, August 1972.

15. "Coursewriter Author Guide," I.B.M. Corporation, New York, Order No SH20-1009-1.

16. "PLATO Authors Guide." Control Data Corporation, Minneapolis, Minnesota Publication No. 97405100.

References Cont'd.

17. Wang, Anastasia "Index to Computer Based Learning" - 1976 Edition University of Wisconsin-Milwaukee Instructional Media Laboratory, Milwaukee 1976.

18. Greenberger, M. Annofsky, J. McKenney, J. Mary W., "Networks for Research and Education" MIT Press 1974.

19. Conklin, Richard F. "Using APL for Drill and Practice and CAI Processing" Association for Educational Data Systems, May 1976.

20. "Control Data's Education Offering: Plato Would have Enjoyed PLATO" Datamation May 1976, pp. 183-187.

21. Duggan, Michael A. "Computer Aspects of Copyright and Patents" Working Paper 75-6, the University of Texas at Austin Graduate School of Business, 1975.

22. Nycum, Susan H. "Legal Protection of Proprietary Rights in Software" Stanford Research Institute, 1976.

23. IBM Circular 120-2083-1 Released 1969.

24. University of Minnesota Policy on University-Sponsored Education Materials. Ratified and enacted as University Policy by the Board of Regents April 14, 1967.

25. University of Minnesota Policy on University-Sponsored Education Materials. Draft July 3, 1975. Approved by University Senate May 1976.

26. "Turning the Inside Out: Education For Sale" CONTACT May 1976 Control Data Corporation Internal Publication.

27. Bandon, Dick H. and Segelstein, Sidney, "Data Processing Contracts Structure, Contents and Negotiation" Van Norstrand and Reinhardt, New York 1976.

Attachment 1

APPENDIX A TO AGREEMENT FOR
PLATO INSTRUCTIONAL MATERIALS
DEVELOPMENT

AGREEMENT OF RELEASE

I (we), _____
(hereinafter referred to as the Author), hereby release and The Board of Trustees of the University of Illinois (hereinafter referred to as the University) hereby accepts, upon execution of this Agreement, pursuant to the terms and conditions of the agreement entitled"Agreement for PLATO Instructional Materials Development" executed between the parties hereto and dated _____, the instructional materials entitled,

_____
for consideration with regard to the University's right to elect to become distributor and marketer of said materials. These materials _____ do _____ do not represent revision of previously transmitted materials.

A complete copy of the computer code, microfiche materials, audio disk materials, and all other materials and documentation thereto, which are necessary for or useful for the marketing or distribution of the materials cited above, are supplied herewith. These materials are in the form required by the University.

The Author certifies and warrants that:

(a) Except as specified below, the materials transmitted herewith are the original work of the Author and no material has been used in the preparation of the transmitted materials in which others have rights, whether by way of copyright or otherwise.

(b) The following is a complete and accurate listing of all of the materials, in which others have rights, which have been used in the preparation of the materials transmitted herewith.

(1)_____

(2)_____

(3)_____

(4)_____

(5)_____

(c) The materials listed above have been utilized with the permission of the rightful owner of the materials. A copy of each agreement, giving such permission and specifying any limitations on the use of such materials, is attached.

(d) Nothing transmitted herewith contains any material which is libelous or slanderous or which invades the privacy of any party.

(e) The list of persons included under the definition of Author in the first paragraph above is a complete listing of all persons who have contributed to the development of the materials transmitted herewith and that the following is an accurate listing of the employee or student relationship that each person holds with regard to the University:

Name	Employee or Student Status
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(f) The following is a complete listing of the support, either by way of released time or otherwise, provided by the University for the production of the materials transmitted herewith.

_____

_____

_____

_____

_____

In the event that any suit or process is brought or threatened against the University or third party with whom the University contracts to market or distribute the materials transmitted hereunder, in respect of any item so transmitted, which process, suit, or threat asserts facts which if true would constitute a breach of the warranties provided above, the University may forthwith withhold any further distribution of royalties to the Author, pending prosecution, settlement, or other disposition of such process, suit, or threat. The University shall be entitled to retain all such royalties in the amount of the cost of resisting or defending against such process, suit, or threat, provided, however, that if such process, suit, or threat shall prove to be groundless, the maximum royalties which can be so withheld shall be the percent indicated below of five hundred (500) dollars.

The Author further agrees to cooperate in or cause to be done all acts and to execute such documents necessary or appropriate, in the judgment of the University, to prosecute or sue for infringement of the rights to any of the materials transferred hereunder.

In the event that the University elects to act as the marketer or distributor of the materials transmitted hereunder, the University will distribute _____ percent of the gross royalties received by the University in respect of such marketing or distribution of said materials to the Author. In the event that this distribution shall take place to more than one person, as indicated under the definition of Author above, such _____ percent of the gross royalties so received shall be distributed according to the following schedule:

NAME	%
_____	_____
_____	_____
_____	_____
_____	_____
	100 %

The distribution of royalties to the Author by the University shall be semi-anually, on dates to be determined by the University.

It is agreed that the period for the University to elect to act as distributor or marketer as specified in Section (2) of the "Agreement for PLATO Instructional Materials Development", shall begin on the date of execution of this agreement.

In the event of any conflict between the terms and conditions of this agreement and the terms and conditions of the above referenced "Agreement for PLATO Instructional Materials Development", the "Agreement for PLATO Instructional Materials Development" agreement shall prevail.

IN WITNESS WHEREOF, the parties have caused this agreement to be duly executed as of this _____ day of _____, 19___.

Author _____

Address _____

_____

Social Sec. No. _____

THE BOARD OF TRUSTEES OF THE
UNIVERSITY OF ILLINOIS

_____
Comptroller

ATTEST:

_____
Secretary

University Approval

_____

Attachment 2

AGREEMENT AS TO PATENTS, INVENTIONS AND OTHER CREATIVE PROPERTY RIGHTS AND REGARDING COMPETITIVE ACTIVITIES

WHEREAS, I am about to enter or continue in the employ of _____, a corporation of _____ having its principal place of business at _____, _____ (herinafter called "_____"), and in such employment will or may become informed as to many of its procedural and technical needs, problems, developments and projects as well as activities directed thereto.

Now, THEREFORE, in consideration of the premises and of said employment being given or continued and the compensation therein.

PATENTS, COPYRIGHTS AND INTELLECTUAL PROPERTY

(1) I hereby agree, for myself, my heirs and representatives, to assign, transfer and set over, and I do hereby assign, transfer and set over to _____, its successors and assigns, all my rights, title and interest in and to any and all creations which are or may become legally protectible or recognized as forms of property including all designs, ideas, inventions, improvements, writing and other works of authorship, theses, books , computer programs, lectures, illustrations, photographs, motion pictures, scientific and mathematical models, prints and any other subject matter which is or may become legally protectible or recognized as a form of property which I, either solely or jointly with _____ or its successors and the six-month period next following the termination of such employment, and which in any way relate directly or indirectly to its business, procedural, technical or commerical needs, problems, developments or projects or to its production, research or experimental developments and projects of every name and nature under consideration and/or being carried on by or for _____prior to termination of my employment.

(2) I further agree to execute, acknowledge, make and deliver to _____ or its attorneys without additional compensation but without expense to me, any and all instruments, including United States and foreign patent applications, applications for securing, protecting or registering any property rights embraced within this agreement, powers of attorney, assignments, oaths or affirmations, supplemental oaths and sworn statements, and to do any and all lawful acts which in the judgment of _____ or its attorneys may be needful or desirable to vest in or secure for or maintain for the benefit of _____ adequate patent and other property rights in the United States and all foreign countries with respect to any and all such designs, ideas, inventions, improvements, and other creations embraced within this agreement, whether published or unpublished, and whether or not the subject of statutory industrial property or copyright protection.

(3) I further agree in connection with paragraph (1) hereof to disclose promptly to _____ or its attorneys, any and all such ideas, designs, inventions, improvements, and other creations when conceived or made by me.

PROPRIETRAY AND TRADE SECRET INFORMATION

(4) I further agree not to make any unauthorized use or disclosure, during or subsequent to my employment of any knowledge or information of an unpublished confidential or proprietary nature respecting _____' inventions, designs, methods, systems, improvements, trade secrets or other provate or confidential matter of _____ generated or acquired by me during the course of my employment.

COMPETITIVE ACTIVITIES

(5) As an independent covenant, I further agree to refrain during my employment by _____ without the written permission of the Vice President of my Activity, from becoming interested in any way in the business of manufacturing, designing, programming, servicing, repairing, selling, leasing or renting ef any new or used machines, articles, parts, supplies, accessories or services competitive with those furnished by _____.

(6) As an independent covenant, I further agree not to engage in any capacity with a business or organization competitive with _____ in the activity of selling, leasing, renting, servicing, or programming in customer-contact or prospective-customer-contact-related positions involving any accounts or within the geographical boundaries of any territory to which I have been assigned and in which I have contacted customers and prospects while in the employ of _____ during any or all or the twelve months next preceding the termination of my employment with _____. This restriction shall run for a period of one year after cessation of such violation. This undertaking shall be enforceable by injunction or other process of law or equity.

GENERAL

(7) This agreement supersedes all earlier employee invention agreements made between me and _____ without extinguishing or diminishing in any manner whatsoever rights heretofore acquired by it under any such previous or current contract or covenant or otherwise; and this agreement shall continue in full force and effect so long as I shall be employed by _____ under any present and/or future contract(s), written of unwritten (and for the additional periods as set forth herein).

(8) The enforceability or nullity of any of the foregoing provisions shall not render any other provision unenforceable or null and void.

IN WITNESS WHEREOF, I have hereunto set my hand and seal at

_____, this _____ day of _____, 19__.

_____ (L.S.)

Witnesses:

_____

_____

EMPLOYEES RESPONSIBILITY FOR CONFIDENTIAL INFORMATION

Every employee is cautioned that _____ policy forbids accepting information from a source outside _____ as "confidential" or "trade secret" information. Use utmost care not to receive "confidential" or "trade secret" information, and in case of question or doubt, contact the Legal Devision or Patent Division immediately. Further, you are not expected to and should not disclose to _____ "trade secret" information obtained from a former employer.

STATE OF }
} ss.
COUNTY OF }

On this _____ day of _____, 19_____, before me, a Notary Public in and for said county, personally came _____, known to me to be the person who executed the foregoing instrument, and who, being duly sworn, acknowledged the same to be his (her) free act and deed.

_____
Notary Public

County of _____

State of _____

My Commission Expires _____, 19__

Attachment 3

CONTRACT

AGREEMENT dated _____, between _____, hereinafter called the Employer, and _____, hereinafter called the Employee.

Employee acknowledges that Employer is the Licensee of the (Program name) _____ in machine readable form and the program documentation in printed form associated therewith, which include the following:

(a) Overall Systems Documentation ---- general systems description, systems flow charts, file definitions and layouts, inputs and output definitions and layouts.

(b) Program Documentation ---- including logic charts, narratives and program listings from source statements.

(c) Operations Documentation ---- detailed operating instructions covering both real-time and batch operations, and describing all abnormal operating conditions and corresponding recovery procedures.

1. Confidential Information. For the term of his employment and for a period of five years thereafter, Employee agrees that he will hold in confidence all knowledge or information of a confidential nature with respect to the computer software and other material described above of (Corp. name) _____, furnished to and utilized by the Employer, including, without limitation, trade secrets, processes, designs, confidential or restricted information, and will not disclose, publish or make use of same without the consent of the Employer or unless and until such knowledge and information shall have ceased to be secret or confidential as evidenced by general public knowledge.

2. Injunctive Relief. Employee agrees that the remedy at law for any breach of the covenents contained in Paragraphs 8 and 9 above is inadequate and that the Employer shall be entitled to injunctive relief in addition to any other remedy it may have. Employee represents and agrees that such injunctive relief shall not prohibit him from earning a livelihood acceptable to him.

3. Third Party Beneficiary. Employee and Employer agree that (Corp. name) _____ is a Third Party beneficiary of this contract and may enforce the rights of the Employer hereunder.

4. Waiver of Breach. The waiver by the Employer of a breach of any provision of this agreement by the Employee shall not operate or be construed as a waiver of any subsequent breach by the Employee.

5. Assignment. The rights and obligations of the Employer under this agreement shall inure to the benefit of and shall be binding upon the successors and assigns of the Employer.

6. Entire Agreement. This instrument contains the entire agreement of the parties. It may not be changed orally but only by an agreement in writing signed by the party against whom enforcement of any waiver, change, modification, extension or discharge is sought.

7. Binding Effect and Governing Law. This Agreement shall be binding upon and accrue to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, and shall be construed in accordance with the laws of the State of Nebraska.

IN WITNESS WHEREOF each of the parties hereto has executed this agreement under seal, in duplicate, the corporate party in its corporate name by its officers hereunto duly authorized, as of the day and year first above written.

Attachment 4

Upon the exercise of its right of first refusal to University Courseware, the Company will pay royalties to the University for each item of University Courseware marketed by the Company or its licensees and sublicensees. The royalty rates on sale within the USA will be computed as follows:

1) Two cents ($.02) per customer/student contact hour for University Courseware when the primary market for which the material was developed is elementary and secondary schools.

2) Two and three quarters cents ($.0275) per customer/student contact hour when the primary market for which the material was developed is college and undergraduate and master level university.

3) Four cents ($.04) per customer/student contact hour when the primary market for which the material was developed is doctoral and professional level university.

Contact hour means a full sixty minutes of on-line access through a CBE terminal to a particular item of University Courseware.

Royalties will also be computed upon the sale of workbooks, texts, audio-visual materials and other non-CBE components of the University Courseware. The applicable royalty rates with respect to such non-CBE Components will be as follows:

Workbooks:	Five percent (5%) of net proceeds of all copies sold
Text:	Ten percent (10%) of net proceeds of all copies sold
Audio/Visual:	Ten percent (10%) of net proceeds of all copies sold
Other:	Five percent (5%) of net proceeds of all copies sold.