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SEMINAR: COMPUTERS FOR APPRAISAL OFFICES

DATE: Friday, December 5, and Saturday, December 6, 1969

PLACE: Wisconsin Center Building
702 Langdon Street
Madison, Wisconsin 53706

Formal Seminar Begins 8:45 AM, Friday, December 5, 1969
Informal Seminar Begins 6:30 PM, Thursday, December 4, 1969
With Supper Meal to be Served at the Madison, Inn,
Madison, Wisconsin

Seminar Fee Includes Lunch and Dinner and All Workshop Costs.
Those Attending Responsible for Own Motel Accommodations.
Space Has Been Reserved for Those Attending at the
Madison Inn, 601 Langdon Street, Madison, Wisconsin,
Phone 257-4391, Reservation Form Enclosed

TEAR OFF

- I WILL ATTEND
- I WILL NOT ATTEND
- WILL ARRIVE FOR SUPPER THURSDAY
- WILL ARRIVE EARLY EVENING THURSDAY
- WILL BE PRESENT FRIDAY MORNING

Please attach check for \$70.00 with your acceptance notice. Please make check payable to Wisconsin Alumni Fund - Land Economics (qualifies as charitable deduction).

PLEASE NOTE: ONLY ONE PERSON CAN ATTEND PER REGISTRATION BECAUSE OF LIMITED OPENINGS.

Signed _____

Date _____



October 6, 1969

A few appraisal offices and universities have developed techniques and hardware which may be within the means and technical skills of a large number of real estate professionals. Introduction to these techniques has been greatly hindered because:

- 1) Appraisers have not had a chance to experience actual use of the hardware and
- 2) Clients require considerable re-education on what they might expect to find in a professional appraisal.

Relative to problem #1 the University of Wisconsin Real Estate Department, in conjunction with the research and education leaders of the various professional appraisal societies and mortgage banking firms will offer a seminar which will stress direct "hands-on-computer-time" for each participant for three alternative electronic computer systems within the means of small appraisal offices. No programming is required! Anyone can operate any one of the systems with 20 minutes of instruction!

By special arrangement we will offer for the use of the participants a complete Wang installation, together with the software and the expertise of Pete Ellwood. There will be a teletype terminal installation developed and explained by John Schneider in conjunction with Service Bureau Corporation. For our third alternative we will use a graphic display and dialogue terminal developed here at the University of Wisconsin by Robert Knitter and Dick McCoy of the Business School.

In addition to 9 hours of time on the equipment for each of the participants, there will be opportunity for discussion on the economics of each alternative hardware setup and on the desirable attributes of unified courses for introducing various professional groups to the use and advantages of such techniques. Admittedly the participants are guinea pigs whom we hope to infect with enthusiasm and confidence for their own use of electronic computational aids and whom we hope will suggest a prescription for contents and methodology of introductory EDP courses for real estate.

Finally, for those with an interest in regression analysis or comparison of the ready-to-use methods above with the more typical punch-card, computer apparatus, we will have available the School of Business computer installations.

This seminar will be limited to 21 participants, 7 of whom are already noted for their work in this subject area and the balance will be the first 14 of 30 invited because they are education directors in their particular field or are in the process of installing some form of EDP in their appraisal office.

JOHN S. SCHNEIDER, M.A.I., C.R.E.

APPRAISER AND CONSULTANT

530 FULTON FEDERAL BUILDING
ATLANTA, GEORGIA 30303

COMMERCIAL, INDUSTRIAL
AND RESIDENTIAL APPRAISALS
VALUATION FOR EMINENT DOMAIN
LAND USE AND MARKETABILITY STUDIES
ECONOMIC FEASIBILITY STUDIES
MEMBER: AMERICAN INSTITUTE OF
REAL ESTATE APPRAISERS
AMERICAN SOCIETY OF
REAL ESTATE COUNSELORS

JOHN T. BREEDLOVE
ASSOCIATE

TELEPHONE:
524-8477

November 17, 1969

Dr. James A. Graaskamp
Assistant Professor in Business
The University of Wisconsin
Graduate School of Business
1155 Observatory Drive
Madison, Wisconsin 53706

Re: A. I. R. E. A. \$1,500 Grant

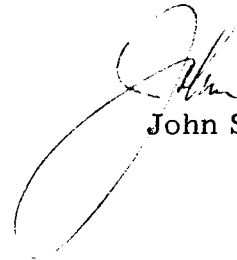
Dear Jim:

Concerning further my letter of September 12th in reply to your letter of August 15th, I am pleased to advise that the Education Committee at its November Meeting in San Francisco approved the release of the \$1,500 to The University of Wisconsin for continuation of the program in computer application research in the appraisal field as outlined in the second paragraph of your letter of August 15th.

The information and initial printing which you mentioned will be of great value to the appraisal profession.

Please advise the exact manner in which you want the check drawn, so that I may obtain it as soon as possible from the Appraisal Institute.

Very truly yours,



John S. Schneider

JSS/lr

JOHN S. SCHNEIDER

M. A. I., C. R. E.

APPRAISER AND CONSULTANT

615 FULTON FEDERAL BUILDING

ATLANTA, GEORGIA 30303

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REAL ESTATE COUNSELORS

JOHN T BREEDLOVE

M. A. I.
ASSOCIATE

TELEPHONE
524-8477

October 7, 1970

Dr. James Graaskamp
Graduate School of Business
The University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Jim:

In accordance with our telephone conversation yesterday, the following are the members of the American Institute of Real Estate Appraisers' Education Committee to whom I would like invitations extended for the EDUCARE pilot course:

✓ Mr. Richard J. Bourguignon ✓
c/o Elmer Denessen Company
414 E. Walnut, P.O. Box 1243
Green Bay, Wisconsin 54305

✓ Mr. S. Z. Bennett ✓
S. Z. Bennett Appraisal Co.
1407 Ainsley Building
Miami, Florida 33132

✓ Mr. Robert W. Ford ✓
1908 "G" Street
P.O. Box 57
Modesto, California 95353

✓ Mr. Harold R. Bowes ✓
A. G. Bowes & Son, Inc.
730 - 17th Street
Suite 801
Denver, Colorado 80202

✓ Mr. Norman R. Benedict ✓
Benedict Appraisal Company
2830 Whitney Avenue
Hamden, Connecticut 06518

✓ George F. Bloom ✓
Professor of Real Estate
Director of Real Estate
Indiana University
521 East 4th Street
Bloomington, Indiana 47401

✓ Mr. James G. Smith ✓
International Appraisal Co.
225 E. Broad Street
Columbus, Ohio 43215

✓ Mr. James L. Harper ✓
Harper-Freeman & Co.
Third National Bank Bldg.
15th Floor
Nashville, Tennessee 37219

Dr. James Graaskamp

Page Two
October 7, 1970

✓ Mr. Jack K. Mann
Wortmann and Mann, Inc.
✓ 444 North State Street
Jackson, Mississippi 39201

✓ Mr. E. T. Compere, Jr.
Compere and Compere
P. O. Box 5001
Abilene, Texas 79605

✓ Mr. George L. Mercer,
Vice President & Manager
Appraisal Division
✓ Bell Federal Savings & Loan Assoc.
73 W. Monroe Street
Chicago, Illinois 60603

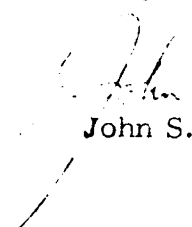
✓ I also would like invitations issued to Dr. Carl Tschappat, Georgia State University; Dr. Jerome Dasso, University of Oregon; and Mr. L. W. Ellwood of the Advisory Board.

Also, in connection with recent developments, I think it would be well to extend invitations to the following members of the Canadian Institute, and I am sorry I do not have their addresses, which you may have:
✓ ~~Mr. L. H. Howard, Calgary; Mr. Arthur Speed, Halifax; and Mr. Robert Leitch.~~

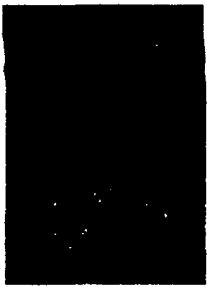
I have been unable to reach Roy Fisher or Jim Gibbons by phone to get the names and addresses of the Counselors and SREA Education Committee members, but will have them forward this information to you as soon as possible.

With best regards, I am

Very truly yours,


John S. Schneider

Mr. L.H. Howard, Calgary, Alberta
Mr. Arthur Speed, Halifax
Mr. Robert Leitch
JSS/lr



Jerry Benedict
Ames
155 Sycamore St
Chicago

SOCIETY OF REAL ESTATE APPRAISERS

AN INTERNATIONAL ORGANIZATION - HEADQUARTERS 7 SOUTH DEARBORN STREET, CHICAGO, ILLINOIS 60603, -PHONE FINANCIAL 6-7422



Designates
SENIOR
RESIDENTIAL
APPRAISER



Designates
SENIOR
REAL ESTATE
APPRAISER

October 15, 1970

Mr. James A. Graaskamp
202 A Breese Terrace
Madison, Wisconsin 53705

Dear Jim:

Roy Fisher has asked me to send you a proposed Society invitation list for your initial presentation of the computer course at the University of Wisconsin late this fall. Attached to this letter are two lists, one providing the names and addresses of the current Board of Governors of the Society and the other listing the names and addresses of the members of the 1970 Education Committee. I have checked in red pencil the names of those Governors and Committee members who I think would be particularly interested in attending your program. *List not included in SAG Collection*

With Mr. Fisher's approval, I am also suggesting your consideration of three men who have attended our Young Men's Council. All three are active in various facets of our Education program, each has a background in statistical analysis and computer applications, and all three could provide us with knowledgeable critiques of your pilot program. They are:

✓ W. Reynolds Couch, SRA, MAI
15 Peachtree Street, N.E.
Atlanta, Georgia 30303

✓ Jay T. Fitts, SREA, MAI
920 Eddy Court
Wheaton, Illinois 60187

(Continued)

Mr. James Graaskamp
October 15, 1970
Page Two

✓ Dan L. Swango, SRA, RM
4435 East Broadway
Tucson, Arizona 84711

Many thanks and kindest personal regards.

Cordially,



Donald E. Snyder
Staff Vice President

DES:al
cc: Roy R. Fisher, Jr.
enclosure

BY-LAWS OF
EDUCATIONAL FOUNDATION FOR COMPUTER APPLICATIONS
IN THE REAL ESTATE INDUSTRY, INC.

ADOPTED MAY 5, 1970

ARTICLE I

PURPOSES

THE CORPORATION IS ORGANIZED EXCLUSIVELY FOR CHARIT-
ABLE, RELIGIOUS, EDUCATIONAL AND SCIENTIFIC PURPOSES, IN-
CLUDING FOR SUCH PURPOSES THE MAKING OF DISTRIBUTIONS TO
ORGANIZATIONS THAT QUALIFY AS EXEMPT ORGANIZATIONS UNDER
SECTION 501 C 3 OF THE INTERNAL REVENUE CODE OF 1954 OR
FOR CORRESPONDING PROVISIONS OF ANY FUTURE UNITED STATES
INTERNAL REVENUE LAW , INCLUDING, BUT NOT LIMITED TO, THE
IMPROVEMENT OF THE REAL ESTATE PROFESSION THROUGH THE STUDY
OF AND RESEARCH IN THE APPLICATION OF MODERN DEVELOPMENTS
AND TECHNOLOGY TO REAL ESTATE PRACTICE, THE CONTINUING
EDUCATION OF THE REAL ESTATE PROFESSION IN THOSE DEVELOP-
MENTS AND THE PUBLICATION AND DISTRIBUTION OF ADDRESSES,
REPORTS, TREATISES AND OTHER LITERARY WORKS ON THOSE SUB-
JECTS, AND TO CARRY OUT THE FOREGOING, IT MAY ENGAGE IN ANY
LAWFUL ACTIVITY WITHIN THE PURPOSES FOR WHICH CORPORATIONS
MAY BE ORGANIZED UNDER THE WISCONSIN WITHOUT STOCK AND NOT
FOR PROFIT LAW, CHAPTER 181 OF THE WISCONSIN STATUTES.

NO PART OF THE NET EARNINGS OF THE CORPORATION SHALL
ENURE TO THE BENEFIT OR BE DISTRIBUTABLE TO ITS MEMBERS,
TRUSTEES, OFFICERS, OR OTHER PRIVATE PERSONS, EXCEPT THAT
THE CORPORATION SHALL BE AUTHORIZED AND EMPOWERED TO PAY
REASONABLE COMPENSATION FOR SERVICES RENDERED AND TO MAKE
PAYMENT AND DISTRIBUTIONS IN FURTHERANCE OF THE PURPOSES
SET FORTH IN ARTICLE THREE HEREOF. NO SUBSTANTIAL PART OF
THE ACTIVITIES OF THE CORPORATION SHALL BE THE CARRYING ON
OF PROPAGANDA, OR OTHERWISE ATTEMPTING, TO INFLUENCE LEGIS-
LATION, AND THE CORPORATION SHALL NOT PARTICIPATE IN, OR
INTERVENE IN INCLUDING THE PUBLISHING OR DISTRIBUTIONS OF
STATEMENTS ANY POLITICAL CAMPAIGN ON BEHALF OF ANY CANDI-
DATE FOR PUBLIC OFFICE. NOTWITHSTANDING ANY OTHER PROVISION
THESE ARTICLES, THE CORPORATION SHALL NOT CARRY ON ANY OTHER
ACTIVITIES NOT PERMITTED TO BE CARRIED ON A BY A CORPORA-
TION EXEMPT FROM FEDERAL INCOME TAX SECTION 501 C 3 OF THE
INTERNAL REVENUE CODE OF 1954 OR THE CORRESPONDING PROVI-
SION OF ANY FUTURE UNITED STATES INTERNAL REVENUE LAW OR
B BY A CORPORATION, CONTRIBUTIONS TO WHICH ARE DEDUCTIBLE
UNDER SECTION 170 C 2 OF THE INTERNAL REVENUE CODE OF
1954 OR THE CORRESPONDING PROVISIONS OF ANY FUTURE UNITED
STATES INTERNAL REVENUE LAW .

UPON THE DISSOLUTION OF THE CORPORATION, THE BOARD OF

TRUSTEES SHALL, AFTER PAYING OR MAKING PROVISIONS FOR THE PAYMENT OF ALL OF THE LIABILITIES OF THE CORPORATION, DISPOSE OF ALL OF THE ASSETS OF THE CORPORATION EXCLUSIVELY FOR THE PURPOSE OF THE CORPORATION IN SUCH MANNER, OR TO SUCH ORGANIZATION OR ORGANIZATIONS ORGANIZED AND OPERATED EXCLUSIVELY FOR CHARITABLE, EDUCATIONAL, RELIGIOUS, OR SCIENTIFIC PURPOSES AS SHALL AT THE TIME QUALIFY AS AN EXEMPT ORGANIZATION OR ORGANIZATIONS UNDER SECTION 501 C 3 OF THE INTERNAL REVENUE CODE OF 1954 OR THE CORRESPONDING PROVISIONS OF ANY FUTURE UNITED STATES INTERNAL REVENUE LAW, AS THE BOARD OF TRUSTEES SHALL DETERMINE. ANY OF SUCH ASSETS NOT SO DISPOSED OF SHALL BE DISPOSED OF BY THE COUNTY COURT OF THE COUNTY IN WHICH THE OFFICE OF THE CORPORATION IS THEN LOCATED, EXCLUSIVELY FOR SUCH PURPOSES OR TO SUCH ORGANIZATION OR ORGANIZATIONS, AS SAID COURT SHALL DETERMINE, WHICH ARE ORGANIZED AND OPERATED EXCLUSIVELY FOR SUCH PURPOSES.

ARTICLE II

OFFICES

THE PRINCIPAL OFFICE OF THE CORPORATION IN THE STATE OF WISCONSIN SHALL BE LOCATED IN THE CITY OF MADISON, COUNTY OF DANE. THE CORPORATION MAY HAVE SUCH OTHER OFFICES, EITHER WITHIN OR WITHOUT THE STATE OF WISCONSIN, AS THE BOARD OF DIRECTORS MAY DESIGNATE OR AS THE BUSINESS OF THE CORPORATION MAY REQUIRE FROM TIME TO TIME.

THE REGISTERED OFFICE OF THE CORPORATION REQUIRED BY THE WISCONSIN NONSTOCK CORPORATION LAW TO BE MAINTAINED IN THE STATE OF WISCONSIN MAY BE, BUT NEED NOT BE, IDENTICAL WITH THE PRINCIPAL OFFICE IN THE STATE OF WISCONSIN, AND THE ADDRESS OF THE REGISTERED OFFICE MAY BE CHANGED FROM TIME TO TIME BY THE BOARD OF DIRECTORS.

ARTICLES III

MEMBERS

SECTION 1 -- MEMBERSHIP

THE INITIAL MEMBERS SHALL BE THREE. ONE SELECTED BY THE SOCIETY OF REAL ESTATE APPRAISERS, ONE BY THE AMERICAN SOCIETY OF REAL ESTATE COUNSELORS AND ONE BY THE AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS. THE BOARD OF DIRECTORS MAY FROM TIME TO TIME EXTEND AN INVITATION TO MEMBERSHIP TO OTHER PROFESSIONAL ORGANIZATIONS WHOSE ADMISSION WOULD FURTHER THE PURPOSES OF THE CORPORATION. EACH PROFESSIONAL ORGANIZATION RECEIVING SUCH AN INVITATION SHALL EVIDENCE ITS ACCEPTANCE OF THE INVITATION TO BECOME A MEMBER OF THE CORPORATION BY AGREEING IN WRITING TO COMPLY WITH OR BE BOUND BY THE ARTICLES OF INCORPORATION, THESE BY-LAWS AND AMENDMENTS THERETO, AND THE POLICIES, RULES AND REGULATIONS AT ANY TIME ADOPTED BY THE CORPORATION IN ACCORDANCE WITH THESE BY-LAWS. EVERY ACCEPTANCE OF AN INVITATION TO BECOME

A MEMBER SHALL BE ACCOMPANIED BY AN INVESTMENT IN MEMBERSHIP CAPITAL TO BE SET BY THE BOARD OF DIRECTORS, EACH PROFESSIONAL ORGANIZATION SHALL THEREAFTER BE FURNISHED WITH A FORMAL CERTIFICATE EVIDENCING ITS SELECTION AS A MEMBER OF THE CORPORATION, SIGNED IN THE NAME OF THE CORPORATION BY ITS PRESIDENT AND SECRETARY.

EACH ACTIVE MEMBER SHALL APPOINT A PERSON TO BE ITS REPRESENTATIVE, WHO SHALL VOTE AND ACT FOR THE MEMBER ORGANIZATION.

MEMBERSHIP IN THIS CORPORATION MAY TERMINATE BY EXPIRATION OF THE MEMBER ORGANIZATION, VOLUNTARY WITHDRAWAL, OR OTHERWISE IN PURSUANCE OF THESE BY-LAWS. ALL RIGHTS, PRIVILEGES AND INTEREST OF A MEMBER IN OR TO THE CORPORATION SHALL CEASE ON TERMINATION OF MEMBERSHIPS. MEMBERSHIPS SHALL BE NON-TRANSFERABLE. ANY MEMBER MAY, BY GIVING WRITTEN NOTICE OF SUCH INTENTION, WITHDRAW FROM MEMBERSHIP. WITHDRAWAL SHALL BE EFFECTIVE ON FULFILLMENT OF ALL OBLIGATIONS TO THE DATE OF WITHDRAWAL.

FOR CAUSE ANY MEMBERSHIP MAY BE SUSPENDED OR TERMINATED. SUFFICIENT CAUSE FOR SUSPENSION OR TERMINATION SHALL BE A VIOLATION OF THESE BY-LAWS OR ANY LAWFUL RULE OR PRACTICE DULY ADOPTED BY THE CORPORATION. SUSPENSION OR EXPULSION SHALL BE BY VOTE OR OTHER PROCEDURE ESTABLISHED BY THE BOARD OF DIRECTORS, PROVIDED AN OPPORTUNITY TO APPEAR AND PRESENT DEFENSES IS GIVEN.

THE BOARD OF DIRECTORS MAY FROM TIME TO TIME CREATE ONE OR MORE CLASSES OF MEMBERS, AND THE DESIGNATION OF SUCH CLASS OR CLASSES, AND THE QUALIFICATIONS, RIGHTS AND METHOD OF ACCEPTANCE OF MEMBERS OF EACH CLASS.

SECTION 2 -- ANNUAL MEETING

THE ANNUAL MEETING OF THE MEMBERSHIP SHALL BE HELD ON THE 1ST WEDNESDAY IN THE MONTH OF MAY IN EACH YEAR BEGINNING WITH THE YEAR 1971, AT THE HOUR OF 10:30 A.M. CDT, FOR THE PURPOSE OF ELECTING DIRECTORS AND FOR THE TRANSACTION OF SUCH OTHER BUSINESS AS MAY COME BEFORE THE MEETING. IF THE DAY FIXED FOR THE ANNUAL MEETING SHALL BE A LEGAL HOLIDAY IN THE STATE OF WISCONSIN, SUCH MEETING SHALL BE HELD ON THE NEXT SUCCEEDING BUSINESS DAY. IF THE ELECTION OF DIRECTORS SHALL NOT BE HELD ON THE DAY DESIGNATED HEREIN FOR ANY ANNUAL MEETING OF THE MEMBERSHIP, OR AT ANY ADJOURNMENT THEREOF, THE BOARD OF DIRECTORS SHALL CAUSE THE ELECTION TO BE HELD AT A SPECIAL MEETING OF THE MEMBERSHIP AS SOON THEREAFTER AS CONVENIENTLY MAY BE.

SECTION 3 -- SPECIAL MEETINGS

SPECIAL MEETINGS OF THE MEMBERSHIP, FOR ANY PURPOSE OR PURPOSES, MAY BE CALLED BY THE PRESIDENT OF THE BOARD OF DIRECTORS, AND SHALL BE CALLED BY THE PRESIDENT AT THE REQUEST OF THE HOLDERS OF NOT LESS THAN ONE-TENTH OF ALL THE

MEMBERS OF THE CORPORATION ENTITLED TO VOTE AT THE MEETING.

SECTION 4 -- PLACE OF MEETING

THE BOARD OF DIRECTORS MAY DESIGNATE ANY PLACE, EITHER WITHIN OR WITHOUT THE STATE OF WISCONSIN, AS THE PLACE MEETING FOR ANY ANNUAL MEETING OR FOR ANY SPECIAL MEETING CALLED BY THE BOARD OF DIRECTORS. A WAIVER OF NOTICE SIGNED BY ALL MEMBERS ENTITLED TO VOTE AT A MEETING MAY DESIGNATE ANY PLACE, EITHER WITHIN OR WITHOUT THE STATE OF WISCONSIN, AS THE PLACE FOR THE HOLDING OF SUCH MEETING. IF NO DESIGNATION IS MADE, OR IF A SPECIAL MEETING BE OTHERWISE CALLED, THE PLACE OF MEETING SHALL BE THE OFFICE OF THE CORPORATION IN STATE OF WISCONSIN, BUT ANY MEETING MAY BE ADJOURNED TO RECONVENE AT ANY PLACE DESIGNATED BY VOTE OF A MAJORITY OF THE MEMBERS REPRESENTED THEREAT.

SECTION 5 -- NOTICE OF MEETING

WRITTEN NOTICE STATING THE PLACE, DAY AND HOUR OF THE MEETING AND, THE PURPOSE OR PURPOSES FOR WHICH THE MEETING IS CALLED, SHALL BE DELIVERED NOT LESS THAN TEN NOR MORE THAN FIFTY DAYS BEFORE THE DATE OF THE MEETING, EITHER PERSONALLY OR BY MAIL, BY OR AT THE DIRECTION OF THE PRESIDENT, THE SECRETARY, OR THE OFFICER OR PERSONS CALLING THE MEETING, TO EACH MEMBER OF RECORD ENTITLED TO VOTE AT SUCH MEETING. IF MAILED, SUCH NOTICE SHALL BE DEEMED TO BE DELIVERED WHEN DEPOSITED IN THE UNITED STATES MAIL, ADDRESSED TO THE MEMBER AT HIS ADDRESS AS IT APPEARS ON THE STOCK RECORD BOOKS OF THE CORPORATION, WITH POSTAGE THEREON PREPAID.

SECTION 6 -- DETERMINATION OF MEMBERSHIP

FOR THE PURPOSE OF DETERMINING MEMBERS ENTITLED TO NOTICE OF OR TO VOTE AT ANY MEETING OF THE MEMBERSHIP OR ANY ADJOURNMENT THEREOF, OR IN ORDER TO MAKE A DETERMINATION OF MEMBERSHIP FOR ANY OTHER PROPER PURPOSES, THE BOARD OF DIRECTORS OF THE CORPORATION MAY FIX IN ADVANCE A DATE AS THE RECORD DATE FOR ANY SUCH DETERMINATION OF MEMBERSHIP, SUCH DATE IN ANY CASE TO BE NOT MORE THAN FIFTY DAYS AND, IN CASE OF A MEETING OF THE MEMBERSHIP, NOT LESS THAN TEN DAYS PRIOR TO THE DATE ON WHICH THE PARTICULAR ACTION, REQUIRING SUCH DETERMINATION OF THE MEMBERSHIP, IS TO BE TAKEN. IF NO RECORD DATE IS FIXED FOR THE DETERMINATION OF MEMBERS ENTITLED TO NOTICE OF OR TO VOTE AT A MEETING OF MEMBERS, THE CLOSE OF BUSINESS ON THE DATE ON WHICH NOTICE OF THE MEETING IS MAILED, SHALL BE THE RECORD DATE FOR SUCH DETERMINATION OF MEMBERSHIP. WHEN A DETERMINATION OF MEMBERS ENTITLED TO VOTE AT ANY MEETING OF THE MEMBERSHIP HAS BEEN MADE AS PROVIDED IN THIS SECTION, SUCH DETERMINATION SHALL BE APPLIED TO ANY ADJOURNMENT THEREOF.

SECTION 7 -- VOTING LISTS

THE OFFICER OR AGENT HAVING CHARGE OF THE MEMBERSHIP

BOOKS OF THE CORPORATION SHALL MAKE, AT LEAST TEN DAYS BEFORE EACH MEETING OF MEMBERS, A COMPLETE LIST OF THE MEMBERS ENTITLED TO VOTE AT SUCH MEETING, OR ANY ADJOURNMENT THEREOF, ARRANGED IN ALPHABETICAL ORDER, WITH THE ADDRESS, WHICH LIST, FOR A PERIOD OF TEN DAYS PRIOR TO SUCH MEETING SHALL BE KEPT ON FILE AT THE REGISTERED OFFICE OF THE CORPORATION AND SHALL BE SUBJECT TO INSPECTION BY ANY MEMBER AT ANY TIME DURING USUAL BUSINESS HOURS. SUCH LIST SHALL ALSO BE PRODUCED AND KEPT OPEN AT THE TIME AND PLACE OF THE MEETING AND SHALL ALSO BE SUBJECT TO THE INSPECTION OF ANY MEMBER DURING THE WHOLE TIME OF THE MEETING. FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS SECTION SHALL NOT AFFECT THE VALIDITY OF ANY ACTION TAKEN AT SUCH MEETING.

SECTION 8 -- QUORUM

AT ANY MEETING, THREE MEMBERS PRESENT SHALL CONSTITUTE A QUORUM. NO PROXIES SHALL BE PERMITTED.

SECTION 9 -- INFORMAL ACTION BY MEMBERSHIP

ANY ACTION REQUIRED TO BE TAKEN AT A MEETING OF THE MEMBERSHIP, OR ANY OTHER ACTION WHICH MAY BE TAKEN AT A MEETING OF THE MEMBERSHIP, MAY BE TAKEN WITHOUT A MEETING IF A CONSENT IN WRITING, SETTING FORTH THE ACTION SO TAKEN, SHALL BE SIGNED BY ALL OF THE MEMBERS ENTITLED TO VOTE WITH RESPECT TO THE SUBJECT MATTER THEREOF.

ARTICLE IV

BOARD OF DIRECTORS

SECTION 1 -- GENERAL POWERS

THE BUSINESS AND AFFAIRS OF THE CORPORATION SHALL BE MANAGED BY ITS BOARD OF DIRECTORS.

SECTION 2 -- NUMBER, TENURE AND QUALIFICATIONS

THE NUMBER OF DIRECTORS OF THE CORPORATION SHALL BE NOT LESS THAN THREE. EACH DIRECTOR SHALL HOLD OFFICE FOR THREE YEARS AND UNTIL HIS SUCCESSOR SHALL HAVE BEEN ELECTED AND QUALIFIED. DIRECTORS NEED NOT BE RESIDENTS OF THE STATE OF WISCONSIN.

FIRST ELECTION. AT THE FIRST ELECTION OF THE BOARD OF DIRECTORS, ONE-THIRD OF THE DIRECTORS SHALL BE CHOSEN TO SERVE FOR A TERM OF ONE YEAR, ONE-THIRD FOR TWO YEARS, AND THE REMAINING ONE-THIRD FOR THREE YEARS, BY DRAWING STRAWS. ALL SUCCEEDING TERMS SHALL BE FOR THREE YEARS.

NO DIRECTOR UPON COMPLETION OF TWO FULL THREE-YEAR TERMS SHALL BE ELIGIBLE FOR RE-ELECTION FOR AT LEAST ONE YEAR. IF A PERSON IS ELECTED BY THE BOARD OF DIRECTORS TO FILL A VACANCY ON THE BOARD AND SERVES TWO OR MORE YEARS OF SERVICE, SHALL CONSTITUTE A FULL TERM FOR PURPOSE OF ELIGI-

BILITY FOR RE-ELECTION.

SECTION 3 -- REGULAR MEETINGS

A REGULAR MEETING OF THE BOARD OF DIRECTORS SHALL BE HELD WITHOUT OTHER NOTICE THAN THIS BY-LAW IMMEDIATELY AFTER, AND AT THE SAME PLACE AS, THE ANNUAL MEETING OF THE MEMBERSHIP, AND EACH ADJOURNMENT SESSION THEREOF. THE BOARD OF DIRECTORS MAY PROVIDE, BY RESOLUTION, THE TIME AND PLACE, EITHER WITHIN OR WITHOUT THE STATE OF WISCONSIN, FOR THE HOLDING OF ADDITIONAL REGULAR MEETINGS WITHOUT OTHER NOTICE THAN SUCH RESOLUTION.

SECTION 4 -- SPECIAL MEETINGS

SPECIAL MEETINGS OF THE BOARD OF DIRECTORS MAY BE CALLED BY OR AT THE REQUEST OF THE PRESIDENT, SECRETARY OR ANY TWO DIRECTORS. THE PERSON OR PERSONS AUTHORIZED TO CALL SPECIAL MEETINGS OF THE BOARD OF DIRECTORS MAY FIX ANY PLACE, EITHER WITHIN OR WITHOUT THE STATE OF WISCONSIN, AS THE PLACE FOR HOLDING ANY SPECIAL MEETING OF THE BOARD OF DIRECTORS CALLED BY THEM.

SECTION 5 -- NOTICE

NOTICE OF ANY SPECIAL MEETING SHALL BE GIVEN AT LEAST 48 HOURS PREVIOUSLY THERETO BY WRITTEN NOTICE DELIVERED PERSONALLY OR MAILED TO EACH DIRECTOR AT HIS BUSINESS ADDRESS, OR BY TELEGRAM. IF MAILED, SUCH NOTICE SHALL BE DEEMED TO BE DELIVERED WHEN DEPOSITED IN THE UNITED STATES MAIL SO ADDRESSED, WITH POSTAGE THEREON PREPAID. IF NOTICE BE GIVEN BY TELEGRAM, SUCH NOTICE SHALL BE DEEMED TO BE DELIVERED WHEN THE TELEGRAM IS DELIVERED TO THE TELEGRAPH COMPANY. WHENEVER ANY NOTICE WHATEVER IS REQUIRED TO BE GIVEN TO ANY DIRECTOR OF THE CORPORATION UNDER THE PROVISIONS OF THESE BY-LAWS OR UNDER THE PROVISIONS OF THE ARTICLES OF INCORPORATION OR UNDER THE PROVISIONS WHETHER BEFORE OR AFTER THE TIME OF MEETING, BY THE DIRECTOR ENTITLED TO SUCH NOTICE, SHALL BE DEEMED EQUIVALENT TO THE GIVING OF SUCH NOTICE. THE ATTENDANCE OF A DIRECTOR AT A MEETING SHALL CONSTITUTE A WAIVER OF NOTICE OF SUCH MEETING, EXCEPT WHERE A DIRECTOR ATTENDS A MEETING AND OBJECTS THERETO TO THE TRANSACTION OF ANY BUSINESS BECAUSE THE MEETING IS NOT LAWFULLY CALLED OR CONVENED. NEITHER THE BUSINESS TO BE TRANSACTED AT, NOR THE PURPOSE OF, ANY REGULAR OR SPECIAL MEETING OF THE BOARD OF DIRECTORS NEED BE SPECIFIED IN THE NOTICE OR WAIVER OF NOTICE OF SUCH MEETING.

SECTION 6 -- QUORUM

A MAJORITY BUT NOT LESS THAN THREE MEMBERS OF THE BOARD OF DIRECTORS SHALL CONSTITUTE A QUORUM TO TRANSACT BUSINESS OF THE CORPORATION, EXCEPT AS OTHERWISE PROVIDED IN THESE BY-LAWS.

SECTION 7 -- REMOVAL

ANY MEMBER OF THE BOARD OF DIRECTORS WHO SHALL BE ABSENT FROM TWO CONSECUTIVE MEETINGS WITHOUT ADEQUATE EXCUSE AS DETERMINED BY THE BOARD OF DIRECTORS, SHALL BE SUBJECT TO FORFEITURE OF OFFICE UPON DECLARATION THEREOF BY THE BOARD OF DIRECTORS.

SECTION 8 -- VACANCIES

A MEMBER ORGANIZATION MAY FILL ITS VACANCY ON THE BOARD HAPPENING AFTER ANY REGULAR ANNUAL ELECTION OR ANY VACANCY CREATED BY AN INCREASE IN THE AUTHORIZED NUMBER OF DIRECTORS UNTIL THE NEXT SUCCEEDING ELECTIONS.

SECTION 9 -- COMMITTEES AND BOARDS

THE BOARD OF DIRECTORS MAY APPOINT FROM TIME TO TIME SUCH COMMITTEES OR ADVISORY BOARDS AS THE HANDLING OF THE AFFAIRS AND THE ATTAINMENT OF THE OBJECTIVES AND PURPOSES OF THE CORPORATION MAY REQUIRE AND MAY DEFINE THEIR DUTIES AND PRESCRIBE THEIR POWERS.

ARTICLE V

OFFICERS

SECTION 1 -- NUMBER

THE PRINCIPAL OFFICERS OF THE CORPORATION SHALL BE A PRESIDENT, ONE OR MORE VICE-PRESIDENTS, A SECRETARY, AND A TREASURER, EACH OF WHOM SHALL BE ELECTED BY THE BOARD OF DIRECTORS. SUCH OTHER OFFICERS AND ASSISTANT OFFICERS AS MAY BE DEEMED NECESSARY MAY BE ELECTED OR APPOINTED BY THE BOARD OF DIRECTORS. ANY TWO OR MORE OFFICES MAY BE HELD BY THE SAME PERSON EXCEPT THE OFFICES OF PRESIDENT AND SECRETARY AND THE OFFICES OF PRESIDENT AND VICE-PRESIDENT.

SECTION 2 -- ELECTION AND TERM OF OFFICE

THE OFFICERS OF THE CORPORATION TO BE ELECTED BY THE BOARD OF DIRECTORS SHALL BE ELECTED ANNUALLY BY THE BOARD OF DIRECTORS AT THE FIRST MEETING OF THE BOARD OF DIRECTORS HELD AFTER EACH ANNUAL MEETING OF THE MEMBERSHIP. IF THE ELECTION OF OFFICERS SHALL NOT BE HELD AT SUCH MEETING, SUCH ELECTION SHALL BE HELD AS SOON THEREAFTER AS CONVENIENTLY MAY BE. EACH OFFICER SHALL HOLD OFFICE UNTIL HIS SUCCESSOR SHALL HAVE BEEN DULY ELECTED AND SHALL HAVE QUALIFIED OR UNTIL HIS DEATH OR UNTIL HE SHALL RESIGN OR SHALL HAVE BEEN REMOVED IN THE MANNER HEREINAFTER PROVIDED.

SECTION 3 -- REMOVAL

ANY OFFICER OR AGENT ELECTED OR APPOINTED BY THE BOARD OF DIRECTORS MAY BE REMOVED BY THE BOARD OF DIRECTORS WHENEVER IN ITS JUDGMENT THE BEST INTERESTS OF THE CORPORATION

WILL BE SERVED THEREBY.

SECTION 4 -- VACANCIES

A VACANCY IN ANY PRINCIPAL OFFICE BECAUSE OF DEATH, RESIGNATION, REMOVAL, DISQUALIFICATION OR OTHERWISE, SHALL BE FILLED BY THE BOARD OF DIRECTORS FOR THE UNEXPIRED PORTION OF THE TERM.

SECTION 5 -- THE CHAIRMAN OF THE BOARD OF DIRECTORS

THE PRESIDENT OF THE CORPORATION SHALL ACT AS THE CHAIRMAN OF THE BOARD OF DIRECTORS AND SHALL PRESIDE AT ALL MEETINGS OF MEMBERS AND DIRECTORS.

SECTION 6 -- PRESIDENT

THE PRESIDENT SHALL BE THE PRINCIPAL EXECUTIVE OFFICER OF THE CORPORATION AND, SUBJECT TO THE CONTROL OF THE BOARD OF DIRECTORS, SHALL IN GENERAL SUPERVISE AND CONTROL ALL OF THE BUSINESS AND AFFAIRS OF THE CORPORATION. HE SHALL PRESIDE AT ALL MEETINGS OF THE MEMBERS AND OF THE BOARD OF DIRECTORS. HE MAY SIGN, WITH THE SECRETARY OR ANY OTHER PROPER OFFICER OF THE CORPORATION THEREUNTO AUTHORIZED BY THE BOARD OF DIRECTORS, ANY DEEDS, MORTGAGES, BONDS, CONTRACTS, OR OTHER INSTRUMENTS WHICH THE BOARD OF DIRECTORS HAS AUTHORIZED TO BE EXECUTED, EXCEPT IN CASES WHERE THE SIGNING AND EXECUTION THEREOF SHALL BE EXPRESSLY DELEGATED BY THE BOARD OF DIRECTORS OR BY THESE BY-LAWS TO SOME OTHER OFFICER OR AGENT OF THE CORPORATION, OR SHALL BE REQUIRED BY LAW TO BE OTHERWISE SIGNED OR EXECUTED, AND IN GENERAL SHALL PERFORM ALL DUTIES INCIDENT TO THE OFFICE OF PRESIDENT AND SUCH OTHER DUTIES AS MAY BE PRESCRIBED BY THE BOARD OF DIRECTORS FROM TIME TO TIME.

SECTION 7 -- THE VICE-PRESIDENT

IN THE ABSENCE OF THE PRESIDENT OR IN THE EVENT OF HIS DEATH, INABILITY OR REFUSAL TO ACT, THE VICE-PRESIDENT OR IN THE EVENT THERE BE MORE THAN ONE VICE-PRESIDENT, THE VICE-PRESIDENTS IN THE ORDER DESIGNATED AT THE TIME OF THEIR ELECTION, OR IN THE ABSENCE OF ANY DESIGNATION, THEN IN THE ORDER OF THEIR ELECTION SHALL PERFORM THE DUTIES OF THE PRESIDENT, AND WHEN SO ACTING, SHALL HAVE ALL THE POWERS OF AND BE SUBJECT TO ALL THE RESTRICTIONS UPON THE PRESIDENT. EACH VICE-PRESIDENT SHALL PERFORM SUCH OTHER DUTIES AS FROM TIME TO TIME MAY BE ASSIGNED TO HIM BY THE PRESIDENT OR BY THE BOARD OF DIRECTORS.

SECTION 8 -- THE SECRETARY

THE SECRETARY SHALL-- A KEEP THE MINUTES OF THE MEMBERS AND OF THE BOARD OF DIRECTORS MEETINGS ON ONE OR MORE BOOKS PROVIDED FOR THAT PURPOSE-- B SEE THAT ALL NOTICES ARE DULY GIVEN IN ACCORDANCE WITH THE PROVISIONS OF THESE BY-LAWS OR AS REQUIRED BY LAW-- C BE CUSTODIAN OF THE COR-

PORATE RECORDS AND OF THE SEAL OF THE CORPORATION AND SEE THAT THE SEAL OF THE CORPORATION IS AFFIXED TO ALL DOCUMENTS THE EXECUTION OF WHICH ON BEHALF OF THE CORPORATION UNDER ITS SEAL IS DULY AUTHORIZED- D KEEP A REGISTER OF THE POST OFFICE ADDRESS OF EACH MEMBER WHICH SHALL BE FURNISHED TO THE SECRETARY BY SUCH MEMBER AND E IN GENERAL PERFORM ALL DUTIES INCIDENT TO THE OFFICE OF SECRETARY AND SUCH OTHER DUTIES AS FROM TIME TO TIME MAY BE ASSIGNED TO HIM BY THE PRESIDENT OR BY THE BOARD OF DIRECTORS.

SECTION 9 -- THE TREASURER

IF REQUIRED BY THE BOARD OF DIRECTORS, THE TREASURER SHALL GIVE A BOND FOR THE FAITHFUL DISCHARGE OF HIS DUTIES IN SUCH A SUM AND WITH SUCH SURETY OR SURETIES AS THE BOARD OF DIRECTORS SHALL DETERMINE. HE SHALL- A HAVE CHARGE AND CUSTODY OF AND BE RESPONSIBLE FOR ALL FUNDS AND SECURITIES OF THE CORPORATION, RECEIVE AND GIVE RECEIPTS FOR MONIES DUE AND PAYABLE TO THE CORPORATION FROM ANY SOURCE WHATSOEVER, AND DEPOSIT ALL SUCH MONIES IN THE NAME OF THE CORPORATION IN SUCH BANKS, TRUST COMPANIES OR OTHER DEPOSITARIES AS SHALL BE SELECTED IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE V OF THESE BY-LAWS, AND B IN GENERAL PERFORM ALL OF THE DUTIES INCIDENT TO THE OFFICE OF TREASURER AND SUCH OTHER DUTIES AS FROM TIME TO TIME MAY BE ASSIGNED TO HIM BY THE PRESIDENT OR BY THE BOARD OF DIRECTORS.

ARTICLE VI

CONTRACTS, LOANS, CHECKS, AND DEPOSITS

SECTION 1 -- CONTRACTS

THE BOARD OF DIRECTORS MAY AUTHORIZE ANY OFFICER OR OFFICERS, AGENT OR AGENTS, TO ENTER INTO ANY CONTRACT OR EXECUTE AND DELIVER ANY SUCH INSTRUMENT IN THE NAME OF AND ON BEHALF OF THE CORPORATION, AND SUCH AUTHORIZATION MAY BE GENERAL OR CONFINED TO SPECIFIC INSTANCES.

SECTION 2 -- LOANS

NO LOANS SHALL BE CONTRACTED ON BEHALF OF THE CORPORATION AND NO EVIDENCES OF INDEBTEDNESS SHALL BE ISSUED IN ITS NAME UNLESS AUTHORIZED BY OR UNDER THE AUTHORITY OF A RESOLUTION OF THE BOARD OF DIRECTORS. SUCH AUTHORIZATION MAY BE GENERAL OR CONFINED TO SPECIFIC INSTANCES.

SECTION 3 -- CHECKS, DRAFTS, ETC.

ALL CHECKS, DRAFTS OR OTHER ORDERS FOR THE PAYMENT OF MONEY, NOTES, OR OTHER EVIDENCES OF INDEBTEDNESS ISSUED IN THE NAME OF THE CORPORATION, SHALL BE SIGNED BY SUCH OFFICER OR OFFICERS, AGENT OR AGENTS OF THE CORPORATION AND IN SUCH MANNER AS SHALL FROM TIME TO TIME BE DETERMINED BY OR UNDER THE AUTHORITY OF RESOLUTION OF THE BOARD OF DIRECTORS.

SECTION 4 -- DEPOSITS

ALL FUNDS OF THE CORPORATION NOT OTHERWISE EMPLOYED SHALL BE DEPOSITED FROM TIME TO TIME TO THE CREDIT OF THE CORPORATION IN SUCH BANKS, TRUST COMPANIES OR OTHER DEPOSITARIES AS MAY BE SELECTED BY OR UNDER THE AUTHORITY OF THE BOARD OF DIRECTORS.

ARTICLE VII

FISCAL YEAR

THE FISCAL YEAR OF THE CORPORATION SHALL BEGIN ON THE FIRST DAY OF JANUARY AND END ON THE THIRTY-FIRST DAY OF DECEMBER IN EACH YEAR.

ARTICLE VIII

AMENDMENTS

SECTION 1 -- BOARD OF DIRECTORS

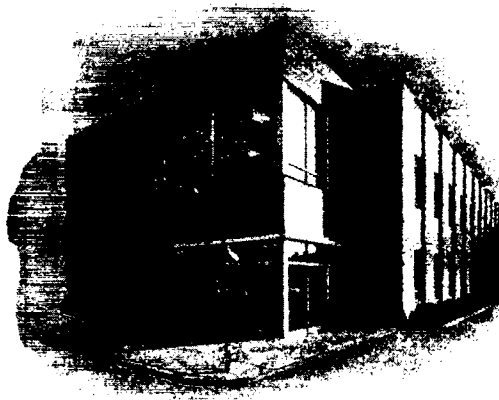
THE BOARD OF DIRECTORS MAY FROM TIME TO TIME, BY VOTE OF A MAJORITY OF ITS MEMBERS, ADOPT, AMEND OR REPEAL ANY AND ALL OF THE BY-LAWS OF THIS CORPORATION EXCEPT SUCH BY-LAWS AS MAY HAVE BEEN ADOPTED BY THE MEMBERSHIP OF THIS CORPORATION.

SECTION 2 -- MEMBERS

THE MEMBERSHIP MAY FROM TIME TO TIME BY VOTE OF A MAJORITY, ADOPT, AMEND OR REPEAL ANY AND ALL OF THE BY-LAWS OF THIS CORPORATION.

Mary's Copy

SACKMAN-GILLILAND
CORPORATION



260 - 68TH STREET
BROOKLYN, N. Y. 11220
TELEPHONE: 833-2700

October 20th, 1970

Professor James Grasskamp
University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Professor Grasskamp:

John S. Schneider has requested that we furnish you with the names and addresses of the Counselors' Education Committee in connection with the invitations to the pilot course of EDUCARE the first week in December.

Accordingly, please be advised of the following:

- ✓ Thurston H. Ross, Vice Chairman of Education Committee
1900 Avenue of the Stars (Suite 2200), Century City, Los Angeles 90067
- ✓ Abram Barkan, Chairman of Case Study Seminar (1970) Subcommittee
James Felt & Co., Inc., 362 Fifth Avenue, New York, N.Y. 10001
- ✓ James L. Harper, Chairman of Higher Education Subcommittee
Harper-Freeman & Co., 1000 Stahlman Bldg., Nashville, Tenn. 37201
- ✓ James A. Lowden, Chairman High Level Conference Subcommittee
Cummings Properties Limited, Suite 700, 1 Calgary Place
330 5th Avenue, S.W.
Calgary, Alberta Canada

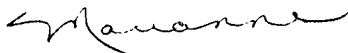
Professor James Grasskamp
University of Wisconsin

10/20/70

✓ William H. Crouch, Chairman of Research Subcommittee
✓ The American Appraisal Company, 525 E. Michigan Street
Milwaukee, Wisconsin 53201

Mr. Gibbons has asked me to extend his best regards, and if we may be of any further assistance please do not hesitate to contact us.

Very truly yours,


Marianne L. Dee,
Secretary to Mr. Gibbons

/s

cc: John S. Schneider, MAI

EDUCATIONAL FOUNDATION FOR COMPUTER APPLICATIONS
IN THE REAL ESTATE INDUSTRY, INCORPORATED
(EDUCARE)

A non-profit corporation, incorporated under the laws of Wisconsin in March of 1970.

Board of Directors as of November 1, 1970:

Mr. John Schneider of Atlanta, Georgia, President
Mr. Howard Benedict of New Haven, Connecticut, Vice President & Treasurer
Mr. Roy Fisher of Davenport, Iowa, Secretary

Financial Structure:

The present capital of EDUCARE has been advanced by member organizations in the form of loans to be amortized as tuition revenues permit. Membership is limited to professional non-profit organizations and is at the invitation of the Board of Directors. Evidence of membership is in the form of a certificate as it is a non-stock corporation. Evidence of a loan outstanding is a demand note payable after 24 months notice with interest at 6%. Tuition schedules anticipate allocating \$75 per student to the amortization of outstanding loans on a pro rata basis according to the funding ratio of funding memberships and after retirement of advances by sponsoring professional organizations, all surplus will be used for further education and development of computer applications to the real estate industry. After successful trial and development of course materials, other real estate professional organizations will be invited to join.

Present membership:

The American Institute of Real Estate Appraisers - \$10,000 funded
The Society of Real Estate Appraisers - \$10,000 funded
The American Society of Real Estate Counselors - \$10,000 funded

Purpose of the Foundation:

(Paragraph #1 - article 1, By Laws of EDUCARE adopted May 5, 1970)

The corporation is organized exclusively for charitable, religious, educational and scientific purposes, including for such purposes the making of distributions to organizations that qualify as exempt organizations under section 501 (c) (3) of the Internal Revenue Code of 1954 (or for corresponding provisions of any future United States Internal Revenue Law), including, but not limited to, the improvement of the Real Estate Profession through the study of and research in the application of modern developments and technology to real estate practice: the continuing education of the real estate profession in those developments and the publication and distribution of addresses,

reports, treatises and other literary works on those subjects; and to carry out the foregoing, it may engage in any lawful activity within the purposes for which corporations may be organized under the Wisconsin Without Stock and Not for Profit Law, Chapter 181 of the Wisconsin Statutes.

Advisory Board:

The Board of Directors with the assistance of the American Real Estate and Urban Economics Association has created an advisory board whose present members include:

UNIVERSITY MEMBERS:

Prof. Gerald Dasso, University of Oregon, Eugene, Oregon
Prof. Arthur B. Kahn, University of Wisconsin, Madison, Wisconsin
Prof. H. Robert Knitter, University of Wisconsin, Madison, Wisconsin
Prof. James A. Graaskamp, University of Wisconsin, Madison, Wisconsin
Prof. Carl Tschappat, Georgia State University, Atlanta, Georgia

INDUSTRY MEMBERS:

Mr. L.W. Ellwood, Englewood, New Jersey
Mr. James Gibbons, Brooklyn, New York

November 1, 1970

Draft

1970

Mr. Ronald ~~Gray~~ ^{Gray} ~~Bal~~
Realmetrics, Inc.

Graybeal

24 California St.

San Francisco, Calif 94111

Dear Ron,

Never seems to be enough time to visit at meetings or over the phone. Chuck Clettenberg and I are trying to assemble a pot to lure you out this summer for a month or so.

Enclosed is the ~~first~~ first problem the students had to do on our mini-model which is a card inout setup and doesn't permit direct sensitivity analysis. I would suggest raising the interest rate on the second option mortgage and dropping the default point maximums somewhat. A real estate tax cost should be added for inside parking stall and the cost of such a stall should be raised to \$3,000. Then note the crazy Graaskamp rule of comparing different projects with different discount rates implied by the last line of page two. Assuming payback in years is an index of equity risk I require them to compare alternative projects by adding this number to the cost of capital. If project A had a payback period of three years and B a payback period of six years and the cost of capital is 10%, project A should provide a minimal return of 13% and B 16%. This is the kind of real estate mysticism we foist on the students at this point of discussion on comparative risks.

1970

Relative to EDUCARE we cannot expand the number of vendors for our experimental session November 29-December 4 as we have reserved Friday morning for a critique of course content by the participants while in the ~~future~~ future this time will be additional presentation time for vendors.

*

So you will be receiving an official invitation ~~for~~ as a vendor-participant for the first presentation of ~~EDUCARE~~ EDUCARE ~~in~~ January 31-February 4. However we would still like you to participate in the initial offering to comment and contribute toward the substance of the educational package from November 29-December 4. In following sessions the vendors will have a man provided for in the Lowell Hall facilities but for this session EDUCARE is charging \$100 ~~for everyone~~ per man for room and board. Reservation ~~that~~ card is enclosed for Lowell Center. Everyone will have a single room. Unfortunately the former occupants of this private luxury residence hall for rich out-of-state girls have moved away to slummier and thus more stylish quarters. Those invited to the November-December 4 session have been limited to the education committees of the sponsoring organizations or a few selected advisors who may comment knowledgeably on course content and presentation techniques.

new
91

Hope you can make it this November but otherwise we will look forward to seeing you here at the end of January.

Best Regards.

James A. Graaskamp
Associate Professor in Business

*Financial Real Estate
Accounting & Insurance model
market comparison model*

Graduate School of Business  1155 Observatory Drive, The University of Wisconsin, Madison 53706

work with SPC accounting model

November 25, 1970

TO: J.A. Graaskamp
A.B. Kahn

FROM: H. Robert Knitter

SUBJECT: Proposed Meeting on EDUCARE Status

I would like to propose that the three of us get together some time quite soon to discuss the status of the course now that the schedule has been changed. A tentative proposal for the meeting might be November 30th, sometime in the late afternoon to accommodate Jim's class schedule. For this meeting, I would propose atleast the following agenda:

- 1) Let's firmly establish the beginning date for the next course.
- 2) Let's take a reading on our budget status for the EDUCARE course development. By that time, let's try to gather together all our accounts payable and consolidate them to determine our position with respect to the original proposed budget.
- 3) Relevant to #2 above, I would like to more clearly establish the rate of pay for some of the people that have been assisting me. I have left open the discussion of hourly rate for individuals such as Alan Hayes and the secretary that has been doing some typing.
- 4) In looking at the various elements of the course, it becomes quite clear that the possibilities of providing an accounting system for real estate professionals is one that they would very likely be quite interested in and one that seems inadequately covered by the software available at present. This is a problem that Art and I have discussed in the past and which has been set aside in view of the rapidly approaching deadline for the first course date. Since the schedule has changed, I would like to discuss the development of accounting system designed for the professional using a time sharing system. It could be handled

J.A. Graaskamp
A.B. Kahn
November 25, 1970
Page 2

in one of several ways, if funded through EDUCARE, it could become the property of that foundation and marketed to the professionals. This would probably take EDUCARE board approval, but I suspect that the funding would not exceed the amount originally committed by the foundation. I am sufficiently convinced that something both useful and profitable could be developed along these lines to suggest that if the EDUCARE foundation does not chose to support development along these lines, that I would speculate atleast to the extent of my own personal time and develop such a package with someone else who would be willing to do the programming and the debugging on a similar basis. Under those conditions, the EDUCARE foundation would not have the exclusive right to such a package. I would like your opinions on this possibility.

5) A question raised by Bill Chatterton is "When will the EDUCARE board meet?" I presume that the meeting originally scheduled for November 29th has been either cancelled or postponed due to the course rescheduling. I expect that there are a number of issues that ought to be brought before the board. At the very least, I would suggest that we communicate to all board members our current status with respect to the course development and the budget and mail to them as much of the materials as we have developed to-date, so that they can provide for us any comments they might like to make.

6) I would suggest if you have any other items to place on the agenda, you note them below. I would propose that the purpose of this meeting specifically not include the course content. I think most of our time could be occupied by these several matters suggested above.

MEMBER
AMERICAN INSTITUTE OF
REAL ESTATE APPRAISERS
—
SOCIETY OF REAL ESTATE
APPRAISERS
—
URBAN LAND
INSTITUTE

M. B. HODGES, JR.
VALUATION AND INVESTMENT COUNSELING
1200 POTOMAC SCHOOL ROAD
MCLEAN, VIRGINIA 22101
703 356-4425

23 August 1971

Dr. James A. Graaskamp
Assistant Professor in Business
1155 Observatory Drive
The University of Wisconsin
Madison, Wisconsin 53706

Dear Jim,

This would have been written to Bob Knitter, but I have misplaced his address - the letter he sent me a few days ago, transmitting information on new programs and a message that he was writing Tom Prince for a possible further reduction in charges for using the TAP (IMV) program model. Please give a copy of this to Bob for me.

Prince, as you may already know, is now with Ryan Homes, main office in Pittsburgh. His wife and children will join him there at the end of this month. Last Saturday evening Tom and his wife visited our house for both social and business purposes.

First, for some background, some of which you and Bob already know. Tom owns the IMV model 100%. I encouraged him to write it, and was the practitioner who, I hope, properly balanced any theory he picked up from his own organizations (Gulf Reston and Rouse Co.), from accountants, and from tax attorneys. And I have helped him, financially, to overcome his costs of initially getting the program on GE, testing it, debugging it, and modifying it.

As his practitioner-advisor, I have convinced him that his program will be obsolescent as soon as he stops improving it. It presently needs modification and expansion, ie: delayed permanent mortgage amortization while operating on construction loans; future refinancing and amortization; delayed capital asset depreciation; and future capital asset additions and depreciation. He is already working on these modifications, but soon he will need cash - to pay GE for the experimental work on the master program.

As his advisor, and being aware of the normal tendencies among the educational hierarchies of both academic centers and appraisal organizations, I told him last week-end that I would hate to see him sell the fee title in his model to any person or institution. My reasons: program obsolescence, and the marketing angle superceding the quality of the product. Plus, unscrupulous use by brokers.

To date, the EDUCARE seminars, you, Bob and I have been the only effective marketing agents for the IMV program model. Considering that Tom has had time to send information letters only to about 50 selected appraisers east of the Mississippi, I think that he has done well, in competition with Graybeal, Sun and others. So far, after all administrative expenses, Tom has made about \$250 net profit, in ten months.

23 August 1971

Another point I expressed to Tom, against his willingness to accept it carte blanche, is that the average real estate operator likes to get everything for nothing, and make a lot of money on it. This includes a barrel full of appraisers. In actuality, though perhaps under a higher membership dues structure and an amalgamation of the several appraisal organizations with accompanying elimination of duplicity and dissipation of talents, we appraisers could easily afford a much greater kitty than the \$30,000 thus far advanced to EDUCARE.

Thus, I cannot become overly concerned about how long the \$30,000 will last, especially after I learned that EDUCARE's largest monthly usage bill for TAP was about one-half of my own largest monthly bill. And I am a one-man appraisal office!

When Tom left my house Saturday night, I think it was his intention to offer EDUCARE a further reduction in user cost for TAP, provided, however, that only EDUCARE students, while attending seminars, would get the use at the lower cost. Tom mentioned that the passwords for your six user numbers were not changed after the last two EDUCARE seminars. Thus, he does not know whether students are now using his program for personal profit when they return to their offices; and whether or not ordinary real estate brokers are possibly swinging deals thru the always possible "Garbage In, Gospel Out" doctrine.

The Caterpillar Tractor Company intentionally limits its sales to the U.S. Government, to 25% of its production, so that its quality standards will not be lowered. I think I have persuaded Tom to place his appraiser clients in the same category as Caterpillar does its private customers.

In summary, I think that it is relatively unimportant who owns the TAP model, and what the charges are for its use by an EDUCARE student during the one day the student has opportunity to use it. What is very important is that the model be continuously maintained, modified and improved to meet the demands of the practitioner users, limited, however, to qualified appraisers, assessment departments, and counselors in real estate. For this purpose I will see to it that Tom gets any needed cash, without interest. I think he is entitled to know that there is an entrepreneurial profit, in our real estate field, for persons other than real estate operators.

Sincerely,



M.B. Hedges, Jr.

cc: John S. Schneider
Roy R. Fisher
Robert Knitter ←



October 20, 1971

Mr. John S. Schneider, President
EDUCARE
515 Fulton Federal Building
Atlanta, Georgia 30303

Dear John:

As input to the Board of Directors meeting of EDUCARE in Miami at the November NAREB meeting we are providing the following items for consideration on the agenda:

- A. Extension of Course I to five day program
- B. Schedule for seven offerings of Course I
- C. Cost analysis of past programs and course budgets for 1972
- D. Structuring of EDUCARE network
- E. Development and expansion of EDUCARE network program library
- F. EDUCARE development budget summary
- G. EDUCARE program staff development

Each of the agenda items are defined and analyzed separately and ten copies of each are enclosed.

Respectively submitted,


James A. Graaskamp


H. Robert Knitter / m. v. o.

JAG/db

EDUCARE BOARD OF DIRECTORS AGENDA

Items Recommended by R. Knitter & J. Graaskamp
For Action November 1971, Miami Beach, Florida

A. Extension of Course I to Five Day Program

We recommend the present four day format of Course I be extended to cover a five day span, beginning with a Sunday evening session and concluding mid-Friday afternoon. Extension of the program has been a common recommendation of EDUCARE attendees. With the extended term it might be desirable to make Wednesday evening an unstructured study period. Those needing some social relief or a golf game for relaxation could be accommodated while those wishing additional terminal time could remain in the lab.

The additional class time thus made available could be used:

1. To provide a more thorough introduction to the expanded EDUCARE library. (see item E)
2. To increase exposure to commercial models such as Omnimetrics and Realmetrics.
3. To expand use of GE library programs on statistics and accounting.

The Board should provide an indication as to the weight to be placed on these three needed areas of increased classroom emphasis or recommend alternative subject area. Cost of development for new materials is estimated at \$600.

B. Schedule for Seven Offerings of Course I in 1972

The following dates for seven offerings of Course I were selected within the constraints imposed by the availability of Lowell Hall facilities, the need to avoid examination dates and semester breaks which evaporate supply of teaching assistants and the need to conform with a new University schedule which will permit completion of the first semester prior to Christmas vacation. Each program begins Sunday evening and closes Friday afternoon. (October experience suggests Saturday starting schedule is inconvenient for attendees while TA schedules are complicated by Monday-Friday format.)

February 20-25, 1972
March 12-17, 1972

April 30-May 5, 1972
May 14-19, 1972

July 16-21, 1972
July 23-28, 1972

September 24-29, 1972
(terminal costs will be shared with University of Wisconsin Real Estate Department)

It is recommended that a one page mailing sheet should be sent to all eligible members providing a basic course outline, schedule, and enrollment reservation form. The majority of our reservations to date have been in response to direct mail rather than notices in professional newsletters. In addition some attendees hear about the program while attending courses on income property appraisal or feasibility analysis so that it might be wise to furnish instructors of these courses for both SRA and MAI programs with a few brochures for interested students. The cost of an 8 1/2 x 11", 2-color brochure, printed both sides and perforated for the application form would be \$400 for 15,000 copies and this is included in proposed conference budget.

C. Cost Analysis of Past Programs & Course Budgets for 1972

1. Income and expense analysis for first two conferences is provided in Schedule A and B. Original capital budget provided \$5,000 for conference working capital and subsidy and later \$2,000 was placed in a separate conference checking account. Loss in first conference was offset by "profit" in second so that conference fund assets were increased to \$2131.43. Cancellation of the October meetings will produce a net loss not to exceed \$1,000 due to mailings, telephone calls, telegrams, and terminal charges all of which are not available at this time. This would suggest that total conference program has required a net subsidy of approximately \$900 to date.
2. A copy of all expenditures from the University of Wisconsin Foundation Development Fund is attached as an appendix. Some development costs have been paid by the conference fund as they were included in monthly GE time sharing charges so that conference fund will need to be reimbursed \$
3. Budgets for 1972 conferences are based on experience to date, adjustment for a five day program, some inflationary increase in board and room and computer time costs, and recognition of hidden economies at Lowell Hall location. Cost items with asterisks are eliminated on University of Wisconsin campus. Thus there are two figures for each division of budgeting cost estimates and the set with the asterisks are the most pertinent. (See Schedule C)

Assuming fixed costs per conference are pro rated for a break-even point of 20 students at Lowell Hall the expense budget can be summarized:

	<u>Single Meetings</u>	<u>Pair of Meetings</u>
Variable cost per student	\$369	\$259
Fixed cost per conference/20 students	102	75
Total expenses	<u>\$471</u>	<u>\$334</u>
Average expense for pair of conferences	\$805 ÷ 2 = \$402.50	

Board of Directors must determine loading for recovery of amortization costs. Assuming \$14,000 to be recovered in 1972 against 200 students of a potential 210, a \$70 loading would be required. Average cost plus loading might suggest tuition of \$475 at a minimum to cover the single meeting cost. Fixed cost per student of approximately \$90 would be gained as a profit for each enrollee above 40 in each pair of conferences. A tuition of \$500 per student would be the equivalent of \$100 per day which is well within typical charges of American Management Association computer seminars.

SCHEDULE A

Income & Expense Analysis
(13 registrants)
For Conference #1, July 18-22, 1971

Receipts

Conference Tuition Number Amount (Irregular amounts are adjusted
for room and meals actually taken)

	10	360	\$3,600.00	
	1	304	304.00	
	1	288	288.00	
	1	180	180.00	
			<hr/>	
Total	13			\$4,372.00

Expenditures

Variable

Copy			\$158.58	
GE		\$701.10		
Prince		485.60		

Computer Total			1,186.70	
Phones			157.11	
Mailing			27.70	
Supplies			87.07	
Wages			1,225.25	

Total

 2,842.41

Lodging			430.00	
Food			610.87	

Total

 1,040.87

Fixed

Teletype			650.00	
Instructor Fees			1,000.00	

Total

 1,650.00

Expense Total

 \$5,533.28

Net

 -1,161.28

Loss

SCHEDULE B

Income & Expense Analysis
(26 registrants)
For Conference #2, August 1-5, 1971

Receipts

Conference Tuition Number Amount (Irregular amounts are adjusted for room and meals actually taken)

21	360.00
2	270.00
1	279.40
1	219.40
1	296.85

Total	26	\$8,895.65
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Expenditures

Variable

Copy	\$327.06
GE	\$1,398.90
Prince	305.00

Computer Total	1,703.90
Phones	319.36
Mailing	320.00
Supplies	92.92
Wages	1,245.66

Total	\$4,008.90
-------	------------

Lodging	881.50
Food	1,063.00
Total	1,944.04

Fixed

Teletype	650.00
Instructor Fees	1,000.00

Total	1,650.00
-------	----------

Expenses Total	7,602.94
Net	<u>1,292.71</u>

Gain on Conference #2 - \$1,292.71
Loss on Conference #1 - \$1,161.28

Conference Fund Gross - \$131.43

SCHEDULE C

Proposed Expense Budget
1972 Conferences

	<u>Per Conference</u>		<u>Per Student</u>	
	<u>First Meeting</u> +	<u>Next Meeting</u>	<u>First Meeting</u> +	<u>Next Meeting</u>
Conference Preparation				
Admin	\$500.00	\$100.00		
Install			\$75.00	
Publicity			7.00	\$7.00
Staff Train		2.00	8.00*	
Travel	210.00			
Phone Calls	40.00			
Conference Production				
Admin	400.00	400.00		
Instr. Fees	1,200.00	1,200.00		
Assist.			25.00	25.00
Supplies				
Repro			15.00	15.00
Vis. Aids	70.00*	70.00*		
Teletypes				
Phones			\$12 18.00*	\$12 18.00*
Space			35.00	
Travel	650.00*	650.00*		
Computer			90.00	90.00
Follow Up				
Admin & Assist.	100.00			
Housing				
Staff	900.00*	900.00*		
Students			110 150.00*	110 150.00*
<hr/>				
Other than Madison	4,070.00	3,320.00	456.00	305.00
Lowell Hall location	\$2,450.00*	1,700.00*	\$369.00*	\$259.00*
Fixed pro-rated at 20			204.00 112.00*	166.00 85.00*
+ for each pair of meetings			660.00 481.00*	471.00 344.00*

* Indicates items incurred with class location other than in Madison.

D. Structuring of EDUCARE Network

1. Legal structure considerations refer to Chatterton-Knitter correspondence attached as an appendix. Recommendations on fee structure are presented here. It is proposed that subscribers to the EDUCARE Computer Network be billed at the rate of 50¢ per program accessed and run, against a monthly minimum charge as proposed in the next item.

Discussion: Programs made available to subscribers accrue storage charges; it seems reasonable that these storage charges be paid by those who use the programs. A per access fee seems a reasonably equitable yet simple way of making these charges. The rate of 50¢ is an estimated minimum to cover the storage cost associated with the average program. Some programs of course, are considerably larger and then are more costly to store than others but hopefully these will be used more frequently. A mechanism exists for the recording of program use with the system. Minimum charge in Item 2 will prevail unless library alternatives are expanded as recommended in Section E.

2. It is proposed that the minimum monthly charge to cover the cost of programs storage, user manuals and administration be set at \$10.

Discussion: This proposal serves 3 purposes. It first provides a minimum assured monthly income per subscriber, secondly it encourages the subscriber to make use of the services to which he has subscribed and also provides a modest stimulus to prevent the number of subscribers who do not use the services from getting unreasonably large. Third, it provides a basis for a monthly reminder in the form of a bill that the subscriber is paying for computer services and encourages him to use a limited number of programs per month without any additional library access charge. The charge is significantly below the \$100 minimum monthly charges that the user would incur if he were to subscribe directly with GE.

3. It is proposed that every subscriber be required to deposit a minimum of \$50 or 10% of his largest previous bill, whichever is greater.

Discussion: Since bills rendered by General Electric require payment by EDUCARE these charges can amount to a substantial requirement for working capital. Since the funds provided by EDUCARE are intended to support the educational efforts it seems reasonable that the subscribers to the services provide the necessary working capital in the form of a returnable deposit. This deposit will be included in the first monthly billing and will be increased as the users charges mount. It is intended that this be returnable when the user discontinues service. No interest will be paid on the deposit. Any interest accrued on this deposit will help cover clerical expenses associated with billing.

General Comments

The above provisions are intended to provide a minimum basis on which direct costs associated with operating the computer services may be recovered. They include no provision for funds to be used to increase the scope of the programs being stored within the general library. Previous indications from students attending the EDUCARE conferences indicate that the availability of a library of programs is fundamental to their intended use of computer services. There is considerable interest in increasing the scope and utility of this library. Funding for such additional effort should be considered either as a separate matter or as increments to the above rates for current and future subscribers. Estimates of direct administrative costs will be available at November Directors meeting after the most recent months of operating experience.

4. It is proposed that all subscriptions to the services of the EDUCARE Computer Network be in the name of and at the request of a properly designated individual who has attended an EDUCARE course. The individual who subscribes to such services assumes responsibility for their use and retains the right to discontinue such services, regardless of whether they are paid for directly by him or by another party, company or government agency. It should be stated in EDUCARE manuals that it is the individuals professional responsibility to notify EDUCARE if he should terminate employment with the organization to whom these services are billed.

Discussion: While the EDUCARE Computer Network Services are subscribed to by an individual the bills will often be sent to a government agency or corporation and therefore not directly associated with this individual. Since anyone employed by the organization would have access to the EDUCARE library it is necessary that the subscribing individual assume and retain responsibility for the appropriate use of the services of the EDUCARE Computer Network.

E. Development and Expansion of EDUCARE Network Program Library

The following is a list of programs which have been requested as basic to the appraisal office and which are recommended for consideration. The Directors should be primarily concerned with the relative priorities that might be given these alternative development programs and the funding of such work.

MINI-MOD is the present basic cash flow model, which should be expanded in several dimensions to provide greater utility and flexibility:

1. The option of conversational input as well as taped input for the beginner.
2. An option should be provided for preferential income tax above an input ceiling on capital gain and excess depreciation.
3. An option should be provided to make resale price either a multiple of net income or a variable index of purchase price.
4. Provision should be made for transaction cost as a percent of resale price.
5. Provision should be made to extend forecast periods up to 40 years with user selecting print-out for any four years.
6. Provision should be made for permitting starting dates (negative dates) prior to term of forecast for handling of depreciation of second user items or takeover of existing mortgages.
7. Provision should be made for switching accelerated depreciation to straight line depreciation automatically when it optimizes deductions and indicating year of changeover with an asterisk.

The above modification costs \$400 in programming and debugging time and are strongly recommended.

8. An optional extra would be to provide for a graphing of Mini-Mod elements, specifically effective gross, expenses and real estate tax, debt service and cash from operations after income tax. It can be argued that slope, and order of magnitude of relationships are more important than actual numbers which are assumptions under conditions of uncertainty.

It should be noted that Mr. Ronald Graybeal has inquired as to our specific plans for a program library on the EDUCARE computer network. He feels that our price on Mini-Mod is so low as to eliminate the market potential for his program among users of the EDUCARE network. His program is very comprehensive and flexible but considerably more costly to use than the basic Mini-Mod, even after the above features are added. His programs offer far more flexible and specific depreciation, tax, and financial assumptions. Mr. Graybeal contends that EDUCARE will put him out of business and that he would like to appear before the Board to plead "his case" that an educational agency should avoid discouraging commercial innovation.

RENT MOD is a program which will compute rents required per unit to support an equity yield as stated by the user given a capital cost, a specific financial plan, and operating costs. The program is currently written in basic language to run on the Service Bureau Corporation system. Conversion to GE basic would be a minor task but it is recommended the program be corrected for certain inefficient programming solutions. Cost to convert: \$25, and to correct: \$100.

LAND MOD to permit simple simulation of the development process to determine land residual values is a cash simulation model which would permit conversion of raw land acreage to sale units with staged capital outlays and staged absorption rates. Expenses would be in fixed dollars or percent of sales and financing options would be limited to basic loans and reduction of principal geared to sale as an additional payment option. Only one land use could be handled at a time so that a planned unit development would require a separate run for each land use type in its master plan and the master plan would provide the number of raw acres to be developed. A simple cost catalog which could work in physical quantities or per sale unit would be provided. Land not specifically used would fall into a residual "open space" account presumed dedicated at end of forecast period. The cost to develop this program would be \$750.

YIELD PROB CASH MOD is the title of a probability cash flow simulation model which would measure the probability and range of alternative outcomes that might result from variance of three basic parameters. Effective gross revenue, total expenses including real estate taxes, and resale price would be stated in terms of the estimated high and low and central tendency and the computer would then spin out 100 pro forma statements internally to determine a distribution curve of possible outcomes of cash from operations and therefore the prospective range of yields on net worth. This model would serve as a teaching model for the EDUCARE course and provide investment analytical techniques for handling statistical data on operating expenses and possible standard deviation, statistical revenue pattern and standard deviation, and statistical significance of variation in resale price on yield expectation. A far more complex model of similar context has been developed by the Harvard School of Business and is handed out with current EDUCARE materials. The cost to develop is \$1,000.

MARKET COMPARISON MOD would be an appraisal tool for evaluating a subject property in terms of a specific set of sales for which data on certain comparable features is available. Based on the program furnished by Ron Brown of Victoria, Texas, the program would be sufficiently flexible to allow the user to specify the parameters on which comparisons are to be made and the adjustment amount associated with the absence or presence of each feature. After adjustment of sales prices for selected comparables, the average price would be computed and a standard deviation provided to measure dispersion of the central tendency represented by the average. An additional output could be a weighted average with primary weight being given to the comparables with the fewest adjustments as a percent of raw price. EDUCARE now has a copy of Ron Brown's program and cost to develop and convert it to EDUCARE would be \$500.

SIMPLE REGRESSION MODEL would provide for stepwise regression analysis of a limited number of variables, say 30, for application to a given data bank with a design to provide a control on the number of degrees of freedom or the maximum colinearity that would be acceptable for a run in order to put some check on some of the garbage that passes for regression analysis. The advantage of a program would be its much lower cost than existing GE library programs involved where computer resource units are loaded to provide program royalties and to simplify data input and statistical output. The program could be used to construct adjustment factors for the market comparison model for coefficients for a direct regression formula appraisal. A sub-routine could be prepared to run the regression formula on a set of subject properties and the set of subject properties could be statistically compared to the statistical dimensions of the sample observation from which the coefficients were constructed. There is a great deal of appraisal interest in valuation by regression analysis and the model plus its manual would provide both a programmed learning device and an alert to the user of misleading applications for data he was processing. Since some of these sub-routines can utilize Fortran programs built by Bob Knitter for the School of Business, estimated costs of development are \$1500.

BASIC COMPUTER MAPPING would have its initial value for a demonstration of how to construct statistical maps of spatially related variables including maps of site characteristics for development suitability. The program which has been developed on the School of Business 1410 would be converted to the University 1108 time sharing system and would be used for teaching. For teaching purposes a data base is being generated for Madison by a civil engineering project department. The program enables the user to mix and match related variables and value judgments and choose the results of the analysis to be displayed. For example, it could be used to choose that part of a 160 acre farm which is not suited for residential development or choose that route for a road which would have the best soils, avoid the most trees, and avoid the major areas of high property value and improvement and the results could be displayed as a route map or as a density map showing relative desirabilities. The development costs of this program would require \$515 or 1108 computer time and materials and programming time at full cost not to exceed \$600. However, the programmer for this effort has volunteered to contribute 1/2 of his time because of his interest in this project. As a demonstration of land economic implications of the computer in the next 10 years this program is excellent although it has no immediate application in the library of programs for the EDUCARE network.

WANG SIMULATOR MODEL would permit appraiser familiar with Wang program to input that program and then use it on the terminal. Not only would that potential salvage his favorite programs from his investment in Wang calculators, but would expand the memory and possibly their alphanumeric power and he would use his written programs, of course, rather than his punched cards or cassettes. A capable student programmer is available with interest in doing such a project at a cost not to exceed \$1,000.

F. EDUCARE Development Budget Summary

Course development		\$600
Network development & subsidy		1,000
Library development		
Mini-mod	\$400	
Rent mod	125	
Land mod	750	
Yield pob cash mod	1,000	
Market comparison mod	500	
Simple correlation mod	1,500	
Basic computer mapping	915	
Wang simulator model	<u>1,000</u>	
		6,190
		<hr/>
		\$7,790
		<hr/> <hr/>

G. EDUCARE Program Staff Development

It is recommended that the EDUCARE faculty of Professors Knitter and Graaskamp be permitted to select and train alternates for their respective teaching functions, specifically Richard Mortenson who is a capable computer systems man with teaching experience presently enrolled in the real estate Ph. D. program and Professor Karel J. Clettenberg. In addition it should be possible to set up a project assistantship for a graduate student to handle a variety of accounting and personnel management chores presently handled by Alan Hayes and Fred Roberto. The latter have simply failed to charge for many hours of their busy work as they felt the skill level required didn't justify their hourly pay rates.

Some thought might be given to providing a margin for scholarship of professors selected by the Board who would return to their universities to use EDUCARE programs as part of their course instruction in real estate. Perhaps the Board could provide Mr. Roberto with a list of five (5) professors who would be invited to attend free of charge and one (1) at a time when enrollment for any particular session reached 27, a "stand-by" plan for meetings where break-even point had been substantially exceeded by registrations.

EDUCARE

educational foundation for computers applications in the real estate industry, inc.

February 1, 1972

Board of Directors
EDUCARE

Gentlemen:

The purpose of this letter is to communicate to you the following issues: (1) the fiscal and administrative state of affairs for the Educare Computer Network, Inc. (2) my role in behalf of EDUCARE, its development, conference and network efforts, and (3) my recommendations with regard to the previous issues.

With this letter are summaries of the financial records of Educare Computer Network operations from August through December, 1971. During this period the network was not separately incorporated but all financial operations have been maintained entirely separate and distinct from those of the Educare conference and development operations. These financial summaries are reported on an accrued basis and not a cash basis; that is, revenues and expenses have been associated with the month in which they occurred rather than with the period during which revenues were received or expenses paid. These summaries, while accurately reflecting the operations, will differ from the cash basis financial report made to I.R.S. It has been Mr. William Chatterton's recommendation that it would be wise to report the operations of the Educare Computer Network as a separate and distinct taxable entity within EDUCARE even though it was not yet separately incorporated. The purpose of doing this is to protect the tax exempt status of EDUCARE.

The monthly summary attached shows all major components of revenue and expense, but many of these receipts, expenditures, and reserves do not affect the gain or loss position of the network. Specifically, General Electric (G.E.) timesharing charges incurred in behalf of computer use by subscribers are directly payable by them and therefore show up both as a revenue and expense. Similarly, deposits are billed and produce revenue that is held in reserve in order to provide working capital for the network.

The following items which appear on this summary may not be self explanatory. Library revenues were separated into two categories; library useage and balance

of library charges on minimum. I have attempted to show, as distinct categories, revenue produced through actual useage of programs stored within the network library and that revenue produced by our \$10.00 minimum for all billable subscribers. Under expenses, no salaries have been charged against the Educare Computer Network. This will be discussed more extensively later. G.E. timesharing charges fall into two categories; those payable in behalf of subscriber billings and those associated with administration of the network, the primary component of the latter charge is the storage costs of programs within the EDUCARE catalog. The billing-cost category is as yet not completely reportable in that some of these charges have not yet been posted. This category of charges covers computer cost of generating the monthly statements for subscribers. The only billing cost presently available is the charge shown during September which includes the programming cost incurred for the billing program. Clerical costs shown are those payable for direct clerical effort in behalf of the monthly activity of mailing statements, receiving payments and banking revenues. No rents or other overhead categories are included in this charge. This office space is that within my study at home and the only clerical employee is my wife, Jean. The teletype charge shown is for the rental of one teletype in order to perform the administrative functions of the network.

Shown at the bottom of the monthly summary are the number of subscribers, the number of active and inactive subscribers, and for planning purposes the average G.E. billing per active subscriber per month.

The annual summary for 1971 shows that a gain from operations of \$545.00 was realized. It is important to note the following however. The only source of revenue to support the direct costs are those produced as a result of library charges. The bulk of these revenues (in excess of 60%) resulted from the \$10.00 per month minimum charge. This includes both the revenue produced by inactive users and that revenue generated by the difference between the charge for library useage and the balance of the \$10.00 minimum. During the start-up period, 1/3 of our subscribers were active. The remaining inactive subscribers produced 2/3 of the revenue. At the end of the year, 1/2 of our subscribers were active. (Inactive subscribers are defined as those which used none of the network services during a billing month.) Should any significant percentage of the inactive subscribers decide to discontinue their subscription to network services, a significant source of revenue would be lost.

In order to budget the fiscal affairs of the network during 1972 an analysis was made of potential subscribers'

revenues and expenses during that calendar year. The following reasoning determined the basis for this budget. During 1972 seven Educare conferences are scheduled. These conferences are limited to 30 attendees, but for planning purposes an average of 20 attendees was estimated. If 2/3 of the attendees decide to subscribe to network services then we may conservatively project an increase of approximately 100 subscribers during 1972. Our total number of subscribers would then increase from approximately 34 to approximately 140 and the average number of subscribers during 1972 is then estimated to be 90. (If all seven courses are held at capacity enrollment and if all attendees subscribe then the maximum number of new subscribers acquired during 1972 would be 210.) On this basis the 1972 operating year might produce in excess of \$28,000 in G.E. billing; slightly less than \$12,000 in revenue, expenses exceeding \$5,000, yielding an operating gain in excess of \$6,000.

At this point it is absolutely vital to note that this apparently viable operation has been as successful as indicated because of three essential ingredients. The operating capital for the corporation has been contributed by subscribers in the form of deposits. The computer resources being sold are priced at cost and are those of General Electric timesharing and the programs developed and used in support of the Educare Network are currently available without specific compensation to EDUCARE for their use. And, finally, the extensive organizational, administrative and managerial efforts required were contributed without cost to the network.

During this next year I will find it extremely difficult if not impossible to schedule seven full weeks for the instructional efforts required to teach all the announced EDUCARE courses. Primary emphasis will therefore be upon establishing additional instructors to teach the material being developed and formalized for this course. I am sure that Jim Graaskamp shares this problem and viewpoint. I would also like to clearly communicate to the Board that I now consider myself essentially independent of the administrative activities in support of these courses. Specifically, I would choose not to assume the responsibility of regularly reporting on their operation and financial results. I would however be completely willing to participate in the analysis and budgeting of these courses if such functions are found to be of use. This decision should not in any material way affect my association with the development of course content and materials.

I assure you that efforts in behalf of the Educare Computer Network have taken a considerable amount of time. The

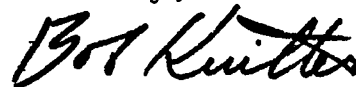
the intended scope of activities of the network.

Regardless of the decision above I would recommend that a meeting or colloquium be established at some convenient time and place where currently active subscribers could meet and discuss their recommendations with respect to the operation and evolution of the network. It must be remembered that the current subscribers are, in all but a contractual sense, the financial "owners" of the network and that they may therefore be legitimately given a voice in the network's operations.

I would suggest that it is not premature to give some consideration to the relative roles and importance of (1) the educational efforts of EDUCARE and (2) the services provided the network. While under the current charter the network is a wholly owned subsidiary of the Educare Foundation the Board must face the possibility that the network may in fact offer the more saleable service. In this regard the Board should address itself to the question of whether the restriction or subscribership to previous attendees of the EDUCARE course is in fact in the best interest of the professional community which it intends to serve. This is of course a difficult question and involves among other things the issue of which is the primary and secondary service. Also relevant is the question whether providing computer service can legitimately become a primary function in view of the specifically stated and originally "advertised" purposes of EDUCARE. Despite the fact that the network is a wholly owned entity within EDUCARE it is relevant to note that the network virtually formed itself and has received very little of significant value (except subscribers?) from EDUCARE. In fact, by virtue of its ownership of the network, the foundation stands to gain far more from the operations of the network than it has contributed to its formation. (Specifically of the three network products that produce any significant amount of revenue only the Elwood program was developed specifically for the EDUCARE course.)

If any of you have any questions concerning the financial statements I would be pleased to try to answer them. If you would choose to discuss or enlarge upon any of these issues either individually or collectively I would be pleased to discuss them.

Sincerely,



H. Robert Knitter

Enclosures

Network's increasing pace of activities taxes both my willingness and to a greater extent my ability to continue to contribute my support on a voluntary uncompensated basis. It is also unfair and somewhat irresponsible to provide a service to an ever increasing number of subscribers which, through volunteer effort, survives economically at the pleasure of one or a very small number of individuals. My role vis-a-vis the Network is further complicated by the fact that I have neither authority for independent action nor official responsibility to the newly formed corporation. Considered in their entirety these situations place me in a very unorthodox position with respect to Educare Computer Network, Inc.

In view of the above I would make the following recommendations:

I propose that I be hired as an employee of the Network and that as such I would have the authority to act in behalf of the network in its current operations and that with respect to such a position I remain responsible to the Board of Directors.

I would suggest that a reasonable salary be budgeted as part of a plan for a financially sound operation. I would further suggest this salary be paid to the extent possible and supportable by the operations of the network. In order to provide a basis for this planning budget I might suggest that my commitment to these efforts exceeded an average of five hours per week in the past and will probably average seven to nine hours per week during 1972.

I would recommend that specific policies be adopted which would provide the basis for payment to the Educare Foundation for the use of programs specifically developed in behalf of the EDUCARE courses. (I should point out that Minimod, the most popular analysis program, was not a development effort supported by EDUCARE but is the direct result of a conversion from existing programs in support of the real estate department at the University of Wisconsin School of Business.)

I would recommend that a specific policy be adopted with respect to the development of additional programs of primary interest to network subscribers. I have received strong and specific recommendations from several subscribers concerning library additions which would apparently be of great benefit. The selection, development and incorporation of these additional programs into the library could remain the operational responsibility of whoever assumes administrative and managerial control; the Board must however decide whether such additional efforts are within

EDUCARE

educational foundation for computer applications in the real estate industry, inc.

Reply to: 834, 15 Peachtree St., N. E., Atlanta, Ga. 30303
p.o. box 631 / madison, wisconsin 53701 / phone (608) 256-2355

August 31, 1972

TO: Board of Directors

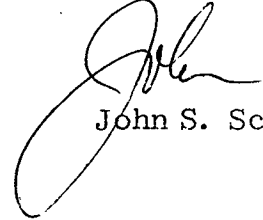
FROM: John S. Schneider

Enclosed herewith is a copy of the minutes of the May Meeting held in Miami.

Sorry that this has been delayed, but due to factors beyond my control, I was not able to obtain a completed draft until recently.

With best regards, I am

Very truly yours,



John S. Schneider

JSS/lr

Enclosure

cc: H. Robert Knitter
~~James A. Graaskamp~~
William A. Chatterton

Educare Committee
Real Estate Convention

In attendance

Norman Benedict	American Society of Real Estate Counselors 2 votes
William E. Coyle, Jr.	Society of Real Estate Appraisers
Robert Steele	American Institute of Real Estate Appraisers
John Schneider	

Also present

Dr. James Graaskamp) Professor Robert Knitter)	University of Wisconsin
William A. Chatterton	Foundation's attorney
James Hueser	Staff of Society of Real Estate Appraisers

The chairman of the meeting was John Schneider who called the meeting to order at 9:15 A. M. on Saturday, May 6, 1972.

1. The purpose of the meeting was to report on activities since the last meeting and to transact business.

Financial report given by Norman Benedict

One check has been written since December in the amount of \$231.00 for accounting services.

The balance until then had been	\$1319.44
	<u>231.00</u>

Current balance	\$1088.44
-----------------	-----------

This is what remains of the original \$30,000 used to set up the Educare course.

Financial structure is such that two board members must sign checks.

Bob Knitter reported that Educare has three separate accounts.

- 1) First Wisconsin National Bank is administered by treasurer of Educare and requires two signatures.
- 2) Administered by the University of Wisconsin Foundation -- funded from principal bank account administered by treasurer of Educare for the purpose of course development.
- 3) Conference fund administered by Conference Coordinator, Mr. Fred Roberto, as a working capital account.

Bob Knitter explained the financial picture

University of Wisconsin Educare fund has a balance of \$77.18 and charges of \$2,691.27 remain unpaid.

P. S-1

In the Education Conference Fund	\$3,013.24
Outstanding liabilities*	<u>6,138.71</u>

This indicates a deficit of \$3,125.47

*This is mainly for instructors' fees for conferences and Western Union charges.

We require immediate funding of \$4,700.00

Page 1/3 Report on Educare Courses that have been given in 1972

1st course had 11 registrants and lost	\$1439.52	
This loss should be increased to	1639.52	because of extension of the course by one day.

2nd course had 16 registrants and had a gain of \$167.90.

Several comments had been received that the course had an over-emphasis on mechanics. Mr. Knitter replied that after the course is over, nine out of ten of the telephone calls he receives have to do with mechanical questions. He said there is great emphasis on mechanics, but the post-conference questions indicate that this is a necessary emphasis.

It was asked if it would be advisable for registrants to enter the GE course and the answer was no.

Network

Report on Educare Computer Network financial picture

P. S-3

The assets are about \$5,700, much of which is in accounts receivable.

There was considerable discussion on how funds could be transferred between the Educare Foundation which is a non-profit organization and Educare Computer Network, Inc. which is a profit-making organization.

Mr. Knitter mentioned that his wife had served as secretary for the Network and she should be paid at the rate of \$5.00 per hour for a total of \$392.50, and that the attorney's fees for Mr. Chatterton should be reimbursed at \$50.00.

There was also considerable discussion on a program that had been purchased by The University of Wisconsin for \$2,000.00 and is now being made available to Educare and Educare Computer Network.

There are 47 total subscribers to network services. There have been 68 students who took the Educare course since February of 1971. Most of those who have gone through the course have continuing access to the terminal.

It was decided that since funds are so limited, no action will be taken at this time for the Foundation to purchase the program from the owners, but the Board registered its intent to purchase this program when sufficient money is available.

Total sales are about \$1700 a month and the first quarter showed a profit of \$275.00.

Future of Educare

Promotion of the course has not been effective and that is why the registration has been so limited.

It was asked if registration should be open to students who are not members of one of the three sponsoring organizations and noted that the objection to this is that they would be teaching their competition how to do a job that could be done by themselves.

At future seminars, demonstrations will be given which will include a strong pitch for the Educare course.

Each of the three sponsoring organizations should promote Educare through their Education Committees as their own vehicle for education.

A visitor was admitted to the meeting, Mr. Casey Hambleton. He wanted a one-day seminar to be given in Columbus, Ohio.

It was the consensus of the Board that Educare courses should be publicized by means of contacting regional vice presidents of the three organizations to request permission to give seminars in their areas.

They should also obtain permission to contact Chapter presidents to advise them of the availability of a Speaker's Bureau from Educare for their chapter programs.

The president emphasized that it is not his responsibility to do this, but rather the representatives from each organization to the Board are responsible for getting information to and approval of any necessary actions from their particular organization's membership.

It was decided not to open the course to outsiders unless it is absolutely economically necessary. This decision about the necessity cannot be made until the November meeting.

The Chairman requested that Professor Knitter send him estimated costs at the end of each pair of courses and the accurate costs as soon as possible. He needs the accurate costs before November. Professor Knitter agreed to send these costs to Chairman Schneider.

Periodic reports from the organization representatives should be made to the President.

The Chairman reported that the attitude of the Education Committees of the various organizations was enthusiastic. Additional grants had been received in the following amounts:

500 from Counselors
3500 from Institute of Real Estate Appraisers
3500 from Society

Professor ^{Kn}Mitter expressed a desire that a letter of thanks should be written to those people who are doing the work at the University of Wisconsin and it also could explain some of the problems of the Foundation. The letters should go to Al Hayes and Fred Roberto and another man who will be doing some of the work very soon.

These letters should come from these organizations. A motion was made and seconded that these letters would be sent and the motion carried.

The president expressed his appreciation to Jim Graaskamp and Bob ^{Kn}Mitter for all their work in putting on the excellent courses. Mr. Graaskamp asked that they also send letters expressing their appreciation to the Dean of the School of Business at the University of Wisconsin.

Bill Coyle made a motion that as soon as the \$7500 was available from the three sponsoring organizations, \$3100 of it will be sent to the University of Wisconsin Foundation specified for Fund D-31. An additional check in the amount of \$3500 will be sent to the Educare Conference Fund to cover outstanding obligations. Norman Benedict seconded the motion and it carried.

At this point Bob Steele had to leave the meeting and gave his proxy to John Schneider.

The expected registrations for the next three Educare courses are:

July 16 - 21	12
July 30 - August 4	7
September 24 - 29	15

Bob ^{Kn}Mitter is to let John Schneider know by the first of July if there are not a total of 30 registered for the two July courses. If there are not, one of them may be cancelled.

Annual Election of Directors and Officers

It was moved and seconded that there shall be no less than six directors and that these directors shall be serving in accordance with their terms as appointed by the presidents of their sponsoring organizations. Motion carried.

It was suggested that the presidents of the sponsoring organizations be asked to appoint people who have taken the Educare course when it is possible to do so.

Attorney amended the Articles of incorporation.

The following officers were elected unanimously for a one-year term.

John Schneider	President
Roy R. Fisher	First Vice President and Secretary
Norman Benedict	Second Vice President and Treasurer

The foundation resolved that the proxy of the foundation be given equally to the Board of Directors of the Foundation to vote the stock.

It was moved and seconded that the meeting of the Educare Foundation committee be adjourned. The motion carried and the meeting was adjourned at 12:30 P. M.

Educare

The first meeting of the ~~Education~~ Computer Network, Inc. was called to order at 12:35 P. M. on Saturday, May 6, 1972.

The group elected John Schneider as Chairman and Bill Coyle as secretary of the meeting.

~~The company was authorized to issue up to 500 shares.~~ A decision was made to issue 600 shares of capital stock to the Educare Foundation at a value of \$2.00 per share and that the consideration to be paid is the surplus at the time the corporation was set up plus the right to lease the Foundation's program library through November 30, 1972.

It was moved and seconded that the length and term of directors of Education Computer Network be for one year.

There shall be six directors. The following men were nominated to serve as directors:

Roy Fisher
Ron Brown
Norm Benedict
Bob Steele
Bill Coyle
John Schneider

There was a motion and second to elect these men unanimously and the motion carried.

There was a motion and second to elect John Schneider as Chairman of the Board of Directors and the motion carried.

The Board then appointed H. R. ^{Kn}itter as General Manager of Education Computer Network, Inc.

The Bylaws of the organization were adopted.

It was moved and seconded that the meeting be adjourned. The motion carried and the meeting closed at 1:00 P. M.

RESOLUTION TO AMEND ARTICLES OF INCORPORATION
AND THE BY-LAWS OF EDUCATIONAL FOUNDATION
FOR COMPUTER APPLICATIONS IN THE REAL ESTATE INDUSTRY, INC.

Resolved, that paragraph 1 of Article III of the Articles of Incorporation and paragraph 1 of Article I of the By-Laws of Educational Foundation for Computer Applications in the Real Estate Industry, Inc. be amended to provide as follows:

The corporation is organized exclusively for the improvement of business conditions in the real estate industry, including for such purposes the making of distributions to organizations that qualify as exempt organizations under Section 501 C 6 of the Internal Revenue Code of 1954 or for corresponding provisions of any future United States Internal Revenue Law, including, but not limited to, the improvement of the real estate profession through the study of and research in the application of modern developments and technology to real estate practice, the continuing education of the real estate profession in those developments and the publication and distribution of addresses, reports, treatises and other literary works on those subjects, and to carry out the foregoing, it may engage in any lawful activity within the purposes for which corporations may be organized under the Wisconsin without stock and not for profit law, Chapter 181 of the Wisconsin Statutes.

AGENDA - First meeting of Incorporators, Subscribers, the
Capital Stock and Shareholders of Educare Computer
Network, Inc.

Call meeting to order and state object.

Elect Chairman and Secretary of the meeting.

Determine number of shares to be issued.

Determine length and term of Directors.

Elect Directors.

Adopt By-Laws.

Other business.

Close meeting.

AGENDA - First Meeting of Directors

Call meeting to order and state object.

Elect officers.

 President

 Vice-President

 Secretary

 Treasurer

Authorize bank account, determine number of signers.

Set Salaries, if any.

Other business.

Close meeting.

The first meeting of the Directors of Education Computer Network, Inc. was called to order at 1:05 P. M. on Saturday, May 6, 1972.

The following officers were nominated and elected:

John Schneider, President
Roy R. Fisher, First Vice President and Secretary
Norman Benedict Second Vice President and Treasurer

H. R. Nitter was authorized as general manager and with authority to carry out all bank transactions.

Mr. Nitter's salary was set initially at \$15.00 per hour. To date he has put in 131 hours. This figure is recognized as being less than adequate for his services and will be adjusted at a future date.

The Directors will serve as a contribution to the organization and will not receive reimbursement.

Travel expense billing for Mr. Nitter and Dr. Graaskamp was discussed. It was decided to bill Mr. Nitter's expenses to Network and Dr. Graaskamp's expenses to the Foundation.

There was some discussion on a royalty fee and it was set at \$3.00 per execution.

It was decided to sell the full set of programs as they exist now for \$5.00 and to sell supplements as they come out for \$1.00 each.

Subscribers are to be informed that they don't need two terminals in their offices because one will do the job. This information is to come via courses and newsletters.

It was decided that an annual seminar could be tied in with the September course and that it could start on Friday afternoon and run through Saturday and Sunday.

It was moved and seconded that the meeting be adjourned. The motion carried and the meeting was adjourned at 1:30 P. M.

MINUTES OF DIRECTORS' MEETING
OF
EDUCATIONAL FOUNDATION FOR COMPUTER
APPLICATIONS IN THE REAL ESTATE INDUSTRY, INC.
EDUCARE

Minutes of a regular meeting of the Directors of Educational Foundation for Computer Applications in the Real Estate Industry, Inc., held in the City of Madison, State of Wisconsin, on September 30, 1972, at 4:00 p.m.

The following directors were present:

John S. Schneider
Norman Benedict
Roy R. Fisher, Jr.

A proxy was filed by Robert A. Steele authorizing John S. Schneider to act on his behalf. A proxy was also received from Ron Brown authorizing Norman Benedict to act on his behalf. A proxy was also filed authorizing Roy R. Fisher, Jr. to act on behalf of Mr. William E. Coyle, Jr.

The following were also present:

William A. Chatterton	Corporation Counsel
Professor James A. Graaskamp	
Mr. H. Robert Knitter	
Mr. Alan Hembel	Corporation Accountant

Upon motion duly made and seconded, it was resolved that the minutes of the 1972 annual meeting, as prepared by Mr. Chatterton, would be approved as published subject to notification of corrections, changes or additions received within 30 days.

Mr. Norman Benedict gave the treasurer's report, a copy of which is attached, showing a balance in the Foundation account of \$1,535.94.

Mr. Alan Hembel reported that there was a balance in the conference fund account of \$11,654.97, substantially all of which will be disbursed to cover expenses of the prior conference accrued but not billed and of the present conference.

It was resolved that a consolidated report showing the current status of the Educare accounts through September 30, 1972 and including course II be in the hands of Mr. John S. Schneider, President, on or before October 15, 1972.

Mr. Hembel further presented a pro forma income and expense analysis of Educare conferences to date, a copy of which is attached and incorporated herein indicating that the Educare conferences are self-sustaining.

The Board discussed requests for refund of \$80.00 deposited for those persons registering for the conference but who did not attend. It was pointed out that the published policy of the Foundation was that the deposit was nonrefundable. It was further pointed out that the reason for this policy is that additional expense for telephone lines, terminals, personnel, etc. have to be made based on registration. It was ultimately resolved that those registrants having made an \$80.00 deposit but who could not attend the current session would be offered the opportunity to apply the \$80.00 deposit on the February 4 to February 9, 1973 session only.

A discussion was had of the charges for the continued use of the T. A. Prince programs in the course. Professor Graaskamp advised the Board that the program was being offered to the Foundation at a discount of 50%, and that the programs do have an educational value. He further informed the Board that to his knowledge this had not resulted in any substantial sales of the program to persons taking the course. It was resolved that the problem would be discussed with Mr. Prince to see whether the cost could not be reduced substantially and if not the Board would reconsider the problem, taking into consideration the possibility of using funds now being spent on the Prince program to rewrite the Mini-Mod program to incorporate similar values.

A discussion followed of the criticisms being made by Mr. Ronald S. Graybeal Ph.D., President of Realmetrics, Inc. It was resolved that the corporation's attorney, Mr. Chatterton, review the situation and give the Board of Directors an opinion concerning the questions raised by Dr. Graybeal.

Professor Graaskamp reported on publicity and promotion and reported that a favorable reaction was being received on brochures that were being sent out for 1973. The speaker's package progress was reported, and it was resolved that no speaker's fee would be requested but that the sponsoring organization be requested to pay the expenses of the speaker.

The need for inclusion of a land development model in the

course was discussed. Mr. Benedict reported that the CAL Land Development Program could be used for the course without charge if it was put in the Foundation's library and a royalty was charged for its use. Mr. Knitter reported that such a program would be easy to write. Mr. Schneider advised that such a program would be very marketable.

There being no further business to come before the Board, it was moved, seconded and unanimously resolved that the meeting be adjourned.

Roy R. Fisher, Jr., Secretary

Approved:

John S. Schneider, President

12-3-71 Balance: \$1,589.00

Deposits:

6-8-72 Society of Real Estate Counselors \$ 500.00
6-12-72 Society of Real Estate Appraisers \$3,500.00
6-23-72 American Institute of Real Estate Appraisers \$3,500.00

Paid To:

1-28-72 William A. Chatterton
For: Preparation and Filing Articles of
Incorporation \$ 269.56
4-24-72 Ronald E. Carlson
For: Preparation of Financial Statements
and Accounting \$ 208.25
5-21-72 William A. Chatterton
For: Annual Meeting Expense \$ 311.99
5-13-72 EDUCARE Conference Fund \$1,250.00
6-13-72 William A. Chatterton
For: Binders \$ 13.26
6-28-72 University of Wisconsin Foundation
Attention: John Feldt \$3,000.00
6-28-72 EDUCARE Conference Fund
Attention: Fred Roberto \$2,500.00
\$7,553.06 \$ 9,089.00
-\$ 7,553.06
\$ 1,535.94

INCOME & EXPENSE ANALYSIS

EDUCARE CONFERENCES

1972

ITEM	(A)	(B)	(C)	(D)	(E)
Conferences →	FEB 20-25 (11)	MAR 12-17 (16)	JUL 16-21 (22)	JUL 30-AUG 4 (14)	SEPT 24- (26)
RECEIPTS:					
Tuition, Room & Board	\$ 5225 -	\$ 7600 -	\$ 10240 -	\$ 6630 -	\$ 12730 -
DISBURSEMENTS:					
G.E.	1265 -	1253 -	1922 -	1246 -	2000 -
T. A. Prince	225 -	355 -	345 -	356 -	350 -
BROCHURES (Publicity)	116 -	116 -	116 -	116 -	116 -
PRINTING	103 -	197 -	325 -	156 -	502 -
TELEPHONE	77 -	72 -	42 -	10 -	40 -
MAILING	20 -	20 -	10 -	10 -	25 -
SUPPLIES	24 -	21 -	45 -	30 -	70 -
WAGES (GROSS)	1563 -	1417 -	1692 -	1478 -	3020 -
FICA	76 -	67 -	83 -	77 -	157 -
LODGING	570 -	336 -	1045 -	735 -	1375 -
BOARD	748 -	949 -	1229 -	897 -	1375 -
TELETYPES	876 -	876 -	876 -	876 -	876 -
INSTRUCTORS	1200 -	1200 -	1200 -	1200 -	1350 -
MISC.	1 -	19 -	40 -	10 -	10 -
PARKING	- 0 -	35 -	15 -	15 -	20 -
	\$ 6864 -	\$ 7433 -	\$ 9990 -	\$ 7212 -	\$ 11260 -
GAIN OR (LOSS)	(\$ 1639 -)	167 -	1250 -	(\$ 582 -)	1444 -

NOTE: (E) IS A PROFORMA STATEMENT

(2) THE WAGES ITEM REFLECTS
START UP COSTS WHICH ARE
USUALLY PRORATED OVER A
DUAL SET OF CONFERENCES.

FEB 20-25	(\$ 1639 -)
MAR 12-17	167 -
JUL 16-21	1250 -
JUL 30-AUG 4	(\$ 582 -)
SEPT 24-29	1444 -
ESTIMATED NET	<u>\$ 640 -</u>

MINUTES OF DIRECTORS' MEETING
OF
EDUCARE COMPUTER NETWORK, INC.

Minutes of regular Directors' meeting of the Educare Computer Network, Inc., held in the City of Madison, State of Wisconsin, on September 30, 1972, at 5:30 p.m.

The following directors were present:

John S. Schneider
Norman Benedict
Roy R. Fisher, Jr.

A proxy was filed by Robert A. Steele authorizing John S. Schneider to act on his behalf. A proxy was also received from Ron Brown authorizing Norman Benedict to act on his behalf. A proxy was also filed authorizing Roy R. Fisher, Jr. to act on behalf of Mr. William E. Coyle, Jr.

The following were also present:

William A. Chatterton	Corporation Counsel
Professor James A. Graaskamp	
Mr. H. Robert Knitter	
Mr. Alan Hembel	Corporation Accountant

Upon motion duly made and seconded, it was resolved that the minutes of the 1972 annual meeting, as prepared by Mr. Chatterton, would be approved as published subject to notification of corrections, changes or additions received within 30 days.

Mr. H. Robert Knitter, General Manager of the Corporation, reported on the corporation's operation. He presented a profit

and loss statement for January through August, 1972, a copy of which is attached and incorporated herein. He further reported that the general manager's salary had not been paid but was accrued and that he was leaving it in the corporation for the time being as a working capital loan, for which he expected to receive interest.

Mr. Knitter reported that there was approximately 60 subscribers to the Network, of which 51 to 53 are billable. The other subscribers are the Educare courses, Mr. Knitter as general manager, etc. The subscribers represent 80 to 90% of the firms attending the courses.

It was resolved that the Corporation obtain workmen's compensation insurance immediately and authorized Mr. Chatterton to do so. He was further authorized to investigate the need and costs of liability insurance and if necessary to obtain the same. There followed a discussion as to ways of obtaining additional funding to develop new programs and expand services. Mr. Roy R. Fisher, Jr. moved and it was seconded and unanimously resolved that the monthly charge to subscribers of the Educare Network be raised by a sum of \$5.00 for the purpose of increasing Network Services.

It was further resolved that the general manager be authorized to negotiate for use of the CAL program, provided a royalty is reasonable, rather than write a new program at this time.

It was further resolved that a copy of the profit and loss statement for the Network be sent to subscribers to the Network to show that the Network was operating substantially at cost.

There being no further business to come before the Board, it was moved, seconded and unanimously resolved that the meeting be adjourned.

Roy R. Fisher, Jr., Secretary

Approved:

John S. Schneider, President

Educare Computer Network

Income/Expense Jan-Aug 72

Subg. Collections 1/1 - 8/30
 A.R. 8/30
 A.R. 1/1
 plus net A.R.
 Dep. 8/30
 Dep. 1/1
 less net Dep incr
Gross Revenue Earned

483014
 - 140180
 776000
 - 170000

2287268
 342834
 - 606000
2024102

Total G.E. Pmts
 less pmt on 1971 use
 less admin use
 less tot G.E. re-billed
Net Revenue Earned

1732474
 - 160357
 - 219649

- 1352468
671634

G.E. O-head
 Salaries: Gen'l Mgr
 Secy
 tot

411250
 51750

219649
 463000

Oper. exp. - office
 teletype
 int on sal
 tot

38625
 52000
 6101

96726

Non-Recurr
 Legal Fees
 Add Mach.

15000
 13468

289168

Total Expenses
Net Gain (Loss)

- 807843
(136209)

Prof. Hanskamp

Graduate School of Business



1155 Observatory Drive, The University of Wisconsin, Madison 53706

M E M O R A N D U M

January 12, 1973

TO: Dean Robert Bock
FROM: H. Robert Knitter *HRK*
SUBJECT: Educare Vic-A-Vis School of Business

As we discussed in our brief January 9th meeting I would like to work toward a more formal relationship between the Business School and the Educare conference operations. As a preliminary arrangement I expect to transfer the honorarium that I normally receive to the School of Business via a deposit account already established at the U.W. Foundation. My purpose in doing so is to more legitimately permit me to include certain of the Educare functions within my administrative duties here at the School. Educare in the past has taken a sufficiently small amount of time to treat it as an activity outside of business hours with the exception of those times that courses are actually held. At those times I felt obligated to return time to the University to compensate for the hours spent teaching. As the course is presently structured I spend approximately 8-12 hours teaching during the week Educare is holding a conference session (I have included the Educare brochure to give you the dates of the 1973 conferences). I foresee no difficulty in accommodating these Educare functions within the administrative duties in that they would constitute only a small percentage in increased effort. I expect that in 1973 revenues honorariums transferred will exceed \$3000 and that these funds may then be used in behalf of data processing expenses such as conference travel or phone calls and capital acquisitions for the School. I hope this informal arrangement meets with your approval until a more formal relationship can be defined and established.

HRK/mvo



March 6, 1973

Mr. Lloyd Wyngarden, Vice President
First Federal Savings and Loan Association
Dunedin Office
380 Main Street
Dunedin, Florida 33528

Dear Mr. Wyngarden:

Jim Graaskamp has apparently responded to your letter of January 26. He asked that I pursue the question of whether or not your TC-700 terminals are compatible with the facilities for General Electric Timesharing. Unfortunately I am unfamiliar with the TC-700 terminal and will need more information before I can give you any opinion as to whether that device offers any potential for interconnection with the G. E. Timesharing Network. If you would provide a more complete identification of the terminal (is it made by Burrough's) or if you could obtain some information from Burrough's which would answer such questions as: Is this device capable of interfacing to a telephone line using a standard modem and would it communicate using standard ASCII code? Your Burrough's equipment representative might possibly be able to provide this kind of information.

If it is impossible to use any of your current equipment in accessing the services of Educare Computer Network you would require at least the installation of a teletype in each office where services are required. Teletypes currently lease for approximately \$55-\$65 per month in metropolitan areas. Educare does not make any specific provisions for this equipment and each subscriber must individually arrange for the necessary terminal equipment. Hopefully we will find that the Educare course and the services of Educare Computer Network will be of potential use to you.

Sincerely,

H. Robert Knitter, Director
Data Processing Center

HRK/mvo

cc: J. A. Graaskamp



March 7, 1973

Mr. John S. Schneider
James D. Landauer Associates, Inc.
Suite 834
15 Peachtree Street N. E.
Atlanta, Georgia 30303

Dear John:

This is in response to the request you have made to extend the services of Educare Computer Network to Mr. John McGauley after a suitable period of instruction concerning the Educare programs at his office. There is no reason why someone could not travel to Atlanta and provide the necessary instructions so that an individual could become familiar with the use of the teletype and access of the G. E. Timesharing Network. Given sufficient time I believe its also quite possible that a user might become proficient in the use of most, possibly all, of our programs.

However, the course presumably offers more than simply instructions in the mechanics of teletype use and the basics of how to operate the programs offered. Specifically, it would be difficult to duplicate (1) the benefits of several different viewpoints concerning the underlying real estate and financial implications of certain program procedures, (2) the considerably extended scope of the discussions of the future of timesharing and its potential for the professional in general, and (3) the very useful opportunities for new insights which arise in the usual group discussions. These topics are handled by several individuals and could not be duplicated by any one of us should we attempt to put the course in the individual's office.

Furthermore, it is difficult to accomplish the similar level of intensive instruction in a potential user's home office in that regardless of the diligence with which the appraiser expect to ignore his day to day business there are always numerous interruptions which seriously detract from the concentration required. One of the significant benefits of having professionals come to Madison for instruction is that they are substantially inaccessible by telephone to most of their clients. The pedagogical value of this isolation should also not be minimized.

March 7, 1973

I would like you to consider the implications of setting a precedent in offering this kind of service under the indirect auspices of Educare. In a sense instruction of this kind competes with the course and does very little to further the overall mission of the Educare Foundation in general. The instruction, of course, is probably less costly than having a professional come to Madison in that it avoids the lost time associated with travelling here. But it is precisely that time which we hope to use as effectively as possible to teach not only terminal operations and use of the programs but many broader issues. So whether savings have resulted in the end is certainly not clear. As you are probably aware we have done this in the past; Dick Mortensen, who teaches the first day and a half of the course, has travelled to Roy Fisher's office for the primary purpose of reviewing material covered many months before and Dick recently returned from Dallas doing the same for Mr. Danham, who attended the November course. In both cases individuals who were not at an Educare course participated in the review/reorientation. Dick also brought up the question as to whether this was a legitimate function of Educare, since he was teaching this material to individuals who had not previously attended this course and therefore was competing with the course itself.

I would also suggest that when it comes to the basics of accessing timesharing services and creating and deleting files G. E. offers a local instruction which could be capitalized on should we choose to change the nature of the services we offer.

I have no doubt that we could find someone to travel to Atlanta who would be competent in teaching this material. I feel confident that some mutually acceptable cost reimbursement plus fee could be arranged. The more fundamental question is do you feel that this is a reasonable precedent and should such services be included within the scope of and functions of Educare? I look forward to hearing from you on this issue and if you feel that a favorable response to Mr. McGauley is in order please have him contact me directly.

The documentation on AIP I believe does cover the reserve for replacements issue that you suggested; Jim Graaskamp pointed it out. On page 10, line 430 includes the description that "the reserves for replacement are not considered expense items and are not tax deductible. If reserves are to be tax deductible enter a zero on this line and put reserves as an optionally titled expense item."

The second problem is one that I would like a little more information on. Was the difficulty with AIP edit when you had zero vacancy and expense or was the error condition encountered during running AIP itself?

Mr. John S. Schneider

- 3 -

March 7, 1973

I'm not yet prepared to answer the question you had on the mini-mod problems you had. To some extent you may have posed such an unusual case that a bug in the program was in fact encountered. I'm not so sure that this is a sufficiently common occurrence that major efforts should be made to correct such a problem, because at some point the cost of a correction out weights the possible benefits from making it. I'd like your reflection on that issue. The question of whether the working capital loan was properly processed is one I would like to defer to Dick Mortensen. Are you in a rush for a reply?

Sincerely,

H. Robert Knitter, Director
Data Processing Center

HRK/mvo

CC: J. A. Graaskamp



March 7, 1973

Mr. Ron Brown
The Ron Brown Company
2005 N. Navarro
Post Office Drawer B
Victoria, Texas 77901

Dear Ron:

Thanks for your January 29th letter. Several others have mentioned that the New Orleans presentation was affective and I'm pleased to hear that. I'm sure that I owe considerable thanks to you, John and Norman for whatever success we achieved in New Orleans; I know Jean and I had a good time there.

A number of suggestions came up concerning the Mktcomp Program and I would like your reaction to one in particular. Before I get to that I would like to assure you that we'll do something to enable one to exclude sales by number or identifier and will look into the possibility of selection to be made by variation of the T ratio. On that latter issue I wonder how many users are sufficiently sophisticated to understand the implications of changing the T ratio as a selection mechanism.

An interesting proposal arose out of the discussion as to whether Mktcomp could automatically select comparables which were "similar" to the subject property. This can be programmed only if a quantified measure of similarity can be calculated by the program. Since obviously it would be very unusual to find a subject and even one comparable which were identical in all of their factors. One of our students suggested that we might be able to compute a "comparability index" by measuring the sum of the absolute values of all of the adjustments made to a price in computing the adjusted price. The larger this total the more adjustment was made, either positive or negative, in reaching that adjusted price and there is some merit in viewing those comparables which required the least adjustment as being the most comparable ~~subject~~. This was further generalized to suggest that in place of taking the absolute value, squaring the adjustment and taking the square root of the total of these squared adjustments might be a more sound statistical basis on which to judge comparability. Under this latter method it would be assumed a property with two, \$200 adjustments was more comparable than a property with only one \$400 adjustment. Since the square root of the sum of the squares would be smaller in the

Mr. Ron Brown

- 2 -

March 7, 1973

former case. Given either of these measurers as an index of comparability the program could be written to select the 5, 10 or 20 most comparable properties in the comparable file and use these as a basis for succeeding calculations.

If you have the time to give this proposal some thought I would appreciate your reactions. In the interim I will definitely let you know when the changes you requested to the Mktcomp Program are effective.

Sincerely,

H. Robert Knitter, Director
Data Processing Center

HRK/mvo

CC: J. A. Graaskamp

EDUCARE

educational foundation for computer applications in the real estate industry, inc.

Reply to: Suite 834, 15 Peachtree St., N. E., Atlanta, Ga. 30303

p.o. box 631 / madison, wisconsin 53701 / phone (608) 256-2355

May 7, 1973

TO: EDUCARE Board of Directors

FROM: John S. Schneider

SUBJECT: EDUCARE Board Meeting - May 3, 1973

1. 1973 Course Results

<u>Course</u>	<u>No. Students</u>	<u>Profit (Loss)</u>
2/4 - 2/9	23	+ \$ 618.15
2/25 - 3/2	11	- 1,598.00
3/25 - 3/30	13	+ 58.15
4/8 - 4/13	<u>17</u>	+ <u>776.75</u>
	64	- \$ 145.45

The "break-even" point is 15 - 17 students. To date only three have registered for the 9/16 - 9/21 and 10/7 - 10/12 course. Therefore, unless at least 30 have registered by August 16th, it will be necessary to cancel these courses.

2. Financial Condition

Cash on Deposit - \$5,487.87

3. Actions Taken by the Board

- A. Removed the course eligibility requirement that a student must be a member of one of the sponsoring organizations.
- B. Revised course fee from \$475 to \$425 plus \$100 room and board, plus a \$50 surcharge if the student is not a member of one of the sponsoring organizations. (Hopefully in this way we can start repayment of the loans.)

- C. Requested Dr. Graaskamp to investigate the feasibility of putting the course on at locations other than Wisconsin.
- D. Requested Professor Knitter to develop a "capsule" EDUCARE seminar "road show" similar to the ASREC statistics seminar.
- E. Requested Dr. Graaskamp to develop an elective examination so that the course can receive AIREA and SREA credit.
- F. Reviewed a 20-minute slide presentation describing the EDUCARE course that we would like to present to the general membership at the next meeting (either November or May).
- G. Reviewed a report on operation of the EDUCARE Computer Network which now has 71 subscribers throughout North America (U. S. and Canada). Subscribers "on-line" have increased from 28 last year to 71. The Network is beginning to show a small profit which will permit payment of approximately \$5,750 back salary to Professor Knitter who has given a large amount of time for the past one and one-half years without payment. He and Mrs. Knitter operate and manage the Network.
- H. Elected the following officers:
 - President: Roy R. Fisher
 - 1st Vice President & Secretary: Norman Benedict
 - 2nd Vice President & Treasurer: Robert R. Steele.

Respectfully submitted,

John S. Schneider

JSS/lr

cc: James A. Graaskamp ✓
H. Robert Knitter
William A. Chatterton



February 6, 1974

Mr. Mark I. Roth
Jos. J. Blake and Associates Inc.
1065 Old Country Road
Westbury, Long Island, New York 11590

Dear Mark:

I've discussed your potential role in the next Educare conference with Jim Graaskamp and we mutually agree that you might serve a very effective role if you could; first, provide a rather complete description of your use of a cash flow model in any specific circumstance as a case study. Most useful in this regard would be a description of a specific problem, the necessity for a computer oriented cash flow, and the client's receptiveness to this modelling approach. Second, I would suggest that you could also describe the capabilities of Decision-X. If you could bring the necessary materials and give us a master copy for reproduction of the necessary handout materials we'd be glad to have that system described. We don't necessarily support any particular service, not even our own, to the exclusion of other valuable and interesting software products in support of real estate analysis. As a third function we would welcome you as a staff assistant who might work with the people who come to our conferences who are extremely naive in the operation of any mechanical equipment and in the utilization of a computer for any purposes whatsoever. If, after we get to know each other better in a face to face meeting, we find that it would be mutually agreeable to have you participate in other facets of the program I'm sure that we could work this out during the time that you're here.

While we can remain somewhat flexible on the nature of any financial arrangement between yourself and Educare. I would suggest as a starting point that both Educare and yourself cover direct out of pocket expenses. We certainly welcome you here and would waive any tuition fee but at the same time we are not prepared to fund your travel, housing or meal expenses during your trip here. Its not that there's any policy that precludes us from doing this, but the present financial reality of conducting this seminar that prevent us from bringing professionals in the area of real estate in to give

Mr. Mark I. Roth

- 2 -

February 6, 1974

our presentations a more "real" emphasis. We've wanted to do this for a long time. Why don't you take a day or two to think this over and we can discuss it further by telephone.

Sincerely,

H. Robert Knitter, Director
Data Processing Center

HRK/mvo

cc: J. Graaskamp

EDUCARE: INQUIRY AND RESPONSE

Professor H. R. Knitter
Professor J. A. Graaskamp

What is EDUCARE?

EDUCARE is a nonprofit corporation created to be an educational joint venture of the American Society of Real Estate Counselors, the Society of Real Estate Appraisers, and the American Institute of Real Estate Appraisers. The Board of Directors of EDUCARE consists of two representatives from each of the professional groups and is structured as follows:

John Schneider, President, 2nd 1-year term, Atlanta, Georgia

Roy R. Fisher, Jr., Vice President, 2nd 1-year term, Davenport, Ia.

Norman Benedict, Treasurer, 1st term, Hamden, Connecticut

William E. Coyle, Jr., Pawtucket, Rhode Island

Robert A. Steele, Los Angeles, California

Norbert Stefaniak, Milwaukee, Wisconsin

For the present EDUCARE has contracted with Professors Robert Knitter and James Graaskamp to develop and operate EDUCARE Course I with the cooperation of the University of Wisconsin Extension program. In addition the EDUCARE Corporation wholly owns a subsidiary corporation EDUCARE Computer Network, Inc. to supply continuing program services and assistance for the ongoing education of professionals who have taken Course I. Each of the sponsoring organizations initially advanced \$10,000 as a loan to EDUCARE. EDUCARE is a nonprofit, tax exempt, educational foundation eligible to receive tax deductible gifts.

Where did you find the name?

The name is an acronym for the Educational Foundation for Computer Applications to the Real Estate Industry, Incorporated. The title seemed like a good idea to somebody at the time but it soon became apparent when answering the telephone, that there were more efficient logos. Thus the abbreviation EDUCARE appeared. As an alternative we thought of CANDU.

Who needs it?

Certainly not the national CPA firms which all offer their clients real estate investment valuation models. Nor do investment bankers who operate in real estate finance using computerized cash flow models and statistical systems which have been used in capital budgeting for industry for many years. Civil Engineering firms have been using sophisticated models for economic cost-benefit studies for a long time. Today it is the former client of the appraiser who wants these services and who are discovering which professions offer contemporary methods. Only the appraisal fraternity may lose out as others supply the needs of the market.

So what does EDUCARE Course I do for the appraiser?

Computer power simply places comprehensive information and data processing methods in the appraisal office with a quality and at a cost which is overwhelmingly in favor of the appraiser. On the first day Course I teaches the student to sign on and off the system via telephone handy time-sharing system, and to access the library of programs freely available on the General Electric Mark-II System

virtually anywhere in the United States. On the second day the program proceeds to teach both statistics and terminal use of statistical programming, not to mention the process of building property sales files for use of networks automated market comparison system. The terminal makes it possible for the appraiser to use techniques he has always understood but has feared to try lest his mathematics betray him in the process. EDUCARE presumes everyone had high school algebra and forgot it. On the third day EDUCARE teaches both modern capital budget theory and the use of internal rate of return programs, cash flow investment programs, and a valuation program designed for appraisers by Mack Hodges and Thomas Prince. On the fourth day EDUCARE introduces several sophisticated services for real estate analysis such as Realmetrics and Omnometrics. In the afternoon the student is introduced to current developments in cost estimating, property management accounting, aerial photography, and model building which will revolutionize the information base and forecasting techniques of real estate decision making. On the fifth and last day of the program the dollar costs of terminal rental and usage are presented together with discussion of equipment choices, the appropriate application of electronic calculators, the services of Network, and new developments in hardware which will further reduce the cost and expand the applications of time-sharing techniques in the next few years.

Must one be a "programmer" to attend or appreciate EDUCARE?

Good Lord, no! It is unnecessary to know programming to use a terminal to advantage, just as you needn't understand circuitry to use a television set, or even build a television set with a kit, for that matter. It would be impossible to learn programming and systems design in five days and if you did you would then have a technical trade which pays far less per hour than you probably earn as an appraiser. Thus there is no motivation and no intent that Course I will in any way prepare its attendees to become programmers.

Will I be taught nothing but computer stuff?

Most of the quantitative analysis which appraisers currently use could be done on an old envelope or table cloth. Within thirty minutes of the start of class on Sunday night, the course student will be doing Ellwood complete with the J factor and more points for the Ellwood chart than he may be prepared to graph. Thus Course I finds it necessary to introduce modern theory of capital finance before introducing cash flow models. It is equally necessary to demonstrate statistical theory, information processing, and other subjects before demonstrating quick and easy ways of executing these techniques. Since the computer time-sharing terminal removes the computational constraint under which appraisers labor, it also expands the number of techniques appropriate to processing real estate and valuation questions.

Why is Course I so expensive?

\$475 for a one week course is higher than any other course normally offered by real estate societies. First, it should be remembered that

this includes room and board, but the real problem is the cost of technical support. First there is at least one teletype and one telephone link for every two students and computer time for each student will cost EDUCARE approximately \$100 despite the educational discounts provided by the General Electric Company for the program. In addition to Knitter and Graaskamp, who have been contributing their services at a fraction of their usual consulting rate, there is an additional staff of graduate students in computer science and real estate to serve as instructors for all lab periods. The cash breakeven point approaches twenty five students for each of the three remaining courses for 1972. These costs compare to charges averaging \$100 per day per student for courses offered by other management associations exclusive of room and board and generally providing no real "hands-on" time. In order to evaluate the cost of attending such a course any professional must add to tuition cost the opportunity cost of his lost income during his week away from the office and transportation. Using the capital budgeting viewpoint this must then be compared to the present value of the expected incremental income attributed to his increase in capabilities as a result of the education. At the very least take the present value of the income retained from encroachment by your competitors.

Why is it offered only in Madison, Wisconsin and not in other locations?

There are significant set up costs with a program such as this, particularly the use of multiple rented terminals on terms which makes it extremely desirable to offer repeated courses in one location.

Remote computer access requires telephone facilities and these can usually be obtained most inexpensively under the educational facilities available through major universities such as the University of Wisconsin. In addition the extensive use of trained lab assistants requires an abundant supply of individuals with unique capabilities, who work cheap, such as graduate students. Furthermore, it is difficult to find comparable costs for the physical facilities and board available at UW Lowell Hall. There is a hope that the future courses will be taught by former students of this course in their home territory as they become increasingly familiar with the use of the techniques and the devices involved and are willing to serve as an expanding teaching cadre. However, one disadvantage of a road show which offers its instructional resources to individuals in their own town is that it is extremely difficult for a professional to stay out of the office and away from the telephone all day for an entire week.

What do I do for help after Course I?

Computer time-sharing services are available throughout the country and anyone who has the necessary interest can become a customer of General Electric Time-Sharing, Service Bureau Corporation, Tyme-Sharing, Inc, or a host of other computer time-sharing vendors. Furthermore, several program authors are making real estate investment analysis programs available through one or more of these time-sharing services. Most significantly we feel the programs which are unique to real estate and form a substantial part of the instructional

material of the EDUCARE course are available through a newly formed subsidiary of the EDUCARE Foundation called the EDUCARE Computer Network, Inc. An attendee at an EDUCARE course can sign up for the services of EDUCARE Computer Network and obtain access to all of these programs plus all of those currently available under G.E. Mark II. These services are currently available only to Course I attendees. Direct cost of using G.E. services through the EDUCARE Computer Network is exactly the same as the charges of G.E. Individual customers of General Electric, however, are required to accrue charges in excess of \$100 per month or pay a monthly minimum of \$100 per month. Since EDUCARE Computer Network is the customer of General Electric it is exposed to \$100 minimum but does not require any specific minimum for computer services from its customers. There is a charge for access to the EDUCARE Library programs and there is currently a minimum library charge of \$10 per month. The Network system offers a number of programs which are typically used by appraisal offices but not always available from other vendors. For example there is the complete Ellwood model. There are several cash flow models, a market comparison model, some basic statistical and linear regression models and others that will be developed as people from EDUCARE go back to their offices and find out what best fits their purposes and how best it might be designed and formatted. The most significant contribution of an on-line time-sharing system to the real estate industry may be the fact that it is a continuously changing and dynamic entity. As new concepts are implemented in terms of models they will become available on this network and offer new

potential for use to all the subscribers of the network. It should also be noted that programs are often prepared in conversational format so that the user need only have the most limited previous experience in the use of either the terminal or time-sharing network. Such programs guide him through the need for data and provide him with an interactive programmed learning tool to become familiar with not only the device and the program but also the mathematical concepts and minimum procedural requirements to pursue sophisticated computational or mathematical analysis. A good example is the Ellwood program available under the EDUCARE Computer Network which require little previous training in either the use of Ellwood tables or in the equations which underlie the Ellwood method of evaluation. Instead the user may call for explanation of confusing terms by pressing a question mark on the keyboard. The program provides options for use of the J factor, for proof of the valuation, or for all the points required in executing an Ellwood graph of yield assuming alternative resale prices. Note that the terminal solves the problem of interfacing for the appraiser who is uncertain of his mathematical ability with a process which represents a progressive technique for his art. This potential is equally true for statistics, investment analysis, or economic forecasting.

When are Course I seminars scheduled at Wisconsin for 1972?

July 16-21, 1972

July 30-August 4, 1972

September 24-29, 1972

How do I apply?

To be eligible a registrant must have either an SRA, MAI, or CRE professional designation or be sponsored by an employer who is certified.

Write for application forms to:

Mr. Frederico Roberto
School of Business
University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

October 30, 1970

The Board of Directors of EDUCARE invite you to participate as a student and critic in the first pilot offering of a new course:

COMPUTER APPLICATIONS IN REAL ESTATE ANALYSIS

Date: Sunday Evening, November 29
through Friday noon, December 4

Place: Lowell Center, University of Wisconsin Campus
Madison, Wisconsin.

WHAT IS EDUCARE?

On March 15, 1970 the American Institute of Real Estate Appraisers (MAI), and the Society of Real Estate Appraisers (SRA) together with the Society of Real Estate Counselors (CRE) initiated their first joint educational program under the name of Educational Foundation for Computer Applications in the Real Estate Industry, Inc., which thankfully is known as EDUCARE. The Board of Directors consists of Mr. John Schneider of Atlanta, Georgia, President, Mr. Howard Benedict of New Haven, Connecticut, Vice President and Treasurer, and Mr. Roy Fisher of Davenport, Iowa, Secretary.

WHAT IS THE SEMINAR ALL ABOUT?

The first project undertaken by the Foundation was to commission the development of a basic concepts course which in four days would accomplish the following:

1. Prepare leaders in the real estate industry to make decisions in matters of professional policy and business practice which will anticipate and utilize computer technology.
2. Dispel the awe and mystery of hardware, software, and programming concepts which divert discussion from the useful purposes of the computer for the industry today and from the ease and economy with which computers can be used by the layman.
3. Provide each participant with an introduction to available computer services with ample opportunity to apply alternatives to controlled problem situations under the guidance of the teaching faculty.

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educational foundation for computer applications in the real estate industry, inc.

November 6, 1970

Dear Friend:

Relative to your recent invitation to EDUCARE we absent-minded professors omitted a few items which might be of interest to you or might further your opportunities while on campus.

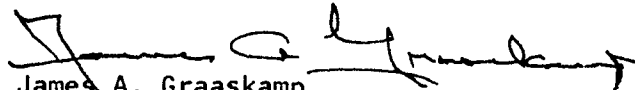
First we should point out that the Advisory Board of EDUCARE includes several key men from your industry, specifically Pete Ellwood and Jim Gibbons and their names were inadvertently omitted on the information sheet.

Then we want to urge you to bring a current problem from your office with all the relevant details as you will have an opportunity to work on that problem via the computer terminal.

Third you might drop us a note in care of Room 101, School of Business, University of Wisconsin, Madison, Wisconsin 53706 indicating your flight and time of arrival on November 28 or 29 so that we can meet your plane and arrange for a Sunday supper and talk session.

We at the University are looking forward to hosting such a distinguished assembly and again these matters are being expedited by Fred Roberto, a former army colonel whom many of you met when you were on campus last year. If you have any special requirements, please let us know. You will not need a car on campus but we will be happy to schedule special transportation needs you might have.

Sincerely yours,



James A. Graaskamp
Associate Professor in Business

December 9, 1970

IMPORTANT NOTICE:

The Board of Directors of EDUCARE has rescheduled the first pilot offering of EDUCARE to avoid schedule conflicts for several key professionals and therefore once again invite selected members of the participating organizations to serve as student and critic of:

COMPUTER APPLICATIONS IN REAL ESTATE ANALYSIS

Date: Sunday evening, February 21
through Friday noon, February 26

Place: Lowell Center, University of Wisconsin Campus
Madison, Wisconsin

INSTRUCTIONS:

The course program is the same as that reported to you in the letter of October 30, 1970. Those who previously registered will be receiving a refund check and their reservations have not been automatically rescheduled. Therefore, please indicate your registration by returning the enclosed reservation card to Lowell Center and the enclosed stamped envelope to Professor Graaskamp with your tuition check and information as to your flight number and time of arrival on Sunday, February 21. Parking spaces can be reserved if you are driving.

INFORMATION:

On Sunday evening we will have an informal smorgasboard supper at one of Madison's better supper clubs but thereafter you will be located at Lowell Center with class sessions all day and into the evening. Thus you will not need a car on campus but any special transportation needs you may have will be provided for by Fred Roberto, our seminar coordinator. Please discourage your office from paging you during class. Your room will have its own extension which will indicate telephone messages at the desk and the switchboard operator will note your incoming calls. The number of Lowell Center is 608-256-2621.

TUITION REMINDER:

For the pilot offering of this basic course, the officers of the American Institute of Real Estate Appraisers, the Society of Real Estate Appraisers, and the Society of Real Estate Counselors named those professionals with responsibility for education and a demonstrated curiosity about the potential role of computers to be asked to assist in the testing and refinement of a rich and unique adult education effort. Therefore, while tuition for future offerings is anticipated to be \$325 including room and board, you are invited to participate for room and board costs of \$100, covering a private single room and 3 meals a day at Lowell Center from Sunday evening, the 21st, through Friday noon, February 26, 1970. Make \$100 check payable to EDUCARE, Inc. and include with your reservation form. Only the first 30 reservations can be accepted and everyone in EDUCARE is looking forward to having your participation and critical evaluation.

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educational foundation for computer applications
in the real estate industry, inc.

Volume 1, Number 1

Hello again to all those of you who took part in EDUCARE, Course 1. As promised at the end of that course this is the first of a possible series of communications with those who have gone through the "experience." We still maintain that those of us who planned and presented the course learned much more than those of you nominally designated as students.

At the end of your week with us, several of you expressed an interest in becoming users of a time-sharing system. In order to accommodate this interest we are negotiating to make EDUCARE (Educational Foundation for Computer Applications to the Real Estate Industry, Inc.) a customer of the General Electric time-sharing network. When all the preliminary work is complete, EDUCARE will provide for you a very convenient way of accessing time-sharing services with a minimum fixed cost. In the future this request will be anticipated and we will be able to provide for such plans on the part of students immediately. In the interim those of you who are interested in becoming G.E. time-sharing users can arrange for temporary access to the network system via the authorizations already being used by EDUCARE.

Those of you interested in such access may contact Bob Knitter (608-262-3816) who will provide you with the user number and password required. We're told that by summer all G.E. time-sharing services will be on a nationwide basis and that several other technical changes are being made in their system which will make it all the more convenient and useful for EDUCARE users.

Several items are enclosed:

1. A manual for the MDS Management System.
2. A reprint on time-sharing applications.
3. A roster.
4. Invitations to summer sessions of EDUCARE (Yes, you are welcome back at full tuition fees)

An interesting article on time-sharing services appeared in a recent data processing news magazine. For those of you interested, it will provide some further insight into the problems and potential of time-sharing networks.

At long last you will also find enclosed a reasonably complete roster of the attendees at the recent EDUCARE conference. We've found that it's wise to use the phone numbers with care; some were incorrect and have been corrected; in some cases the phone numbers are for home phones.

If any of you would choose to send corrections to this list, I would be pleased to record them and make them available to those who request a revised copy.

As before, we continue to solicit any comments you would choose to send us concerning future courses and ways in which we might assist you with your problems in dealing with computers in general. No formal mechanism has been set up to provide you with a complete catalog of programs ready to run on a time-sharing service. However, we would appreciate it if you would direct to us your inquiries or needs regarding problems within your business which you feel are amenable to computer solutions. We have several reasons for making this request. First, if computer programs are available to solve these problems, we would like to make you aware of them. Second, we can incorporate instructional material based on these problems into future offerings of our course, and third, we will continue to consider developing programs for the use of the real estate industry via this or other cooperative time-sharing based efforts.

In closing we'd appreciate your comments on the desirability of continuing publication of an informal newsletter.

H. Robert Knitter

James A. Graaskamp

April 1, 1971

In recognition of your continuing interest in professional education the Board of Directors of EDUCARE invite you to participate as a student in a new education program, a full four day course:

COMPUTER APPLICATIONS FOR REAL ESTATE ANALYSIS

EDUCARE COURSE #1:

Sunday Evening, July 18 through Thursday Afternoon, July 22, 1971

EDUCARE COURSE #1: (REPEAT)

Sunday Evening, August 1 through Thursday Afternoon, August 5, 1971

LOCATION:

Lowell Center, University of Wisconsin Campus, 610 Langdon Street
Madison, Wisconsin 53706

STAFF:

Professor H. Robert Knitter, U.W. School of Business Computer Center
Professor James A. Graaskamp, U.W. School of Business

WHAT IS EDUCARE?

On March 15, 1970 the American Institute of Real Estate Appraisers (MAI) and the Society of Real Estate Appraisers (SRA) together with the Society of Real Estate Counselors (CRE) initiated their first joint educational program under the name of Educational Foundation for Computer Applications in the Real Estate Industry, Inc., which thankfully is known as EDUCARE. (See enclosed information sheets)

WHAT IS THE SEMINAR ALL ABOUT?

The first project undertaken by the Foundation was to commission the development of a basic course which in four days would accomplish the following:

1. Prepare leaders in the real estate industry to make decisions in matters of professional policy and business practice which will anticipate and utilize computer technology.
2. Dispel the awe and mystery of hardware, software, and programming concepts which divert discussion from the useful purposes of the computer for the industry today and from the ease and economy with which computers can be used by the layman.
3. Provide each participant with an introduction to available computer services with ample opportunity to apply alternatives to controlled problem situations under the guidance of the teaching faculty.
4. Intensify the educational opportunity by providing computer terminal equipment for each two-three students, a large staff of teaching assistants, and a minimum of conventional lecture.

5. Send the student home with the ability and means to experiment in his own office with time-sharing computer services at minimum probationary costs through a special sub-user account with EDUCARE.
6. Initiate a pooling of techniques, programs and supporting assistance and information exchange systems by means of the network facilities of EDUCARE.

GENERAL INFORMATION:

Lowell Center is a luxurious new adult education center, air-conditioned with its own indoor swimming pool, recreation room, and dining facilities operated by the University of Wisconsin. Parking spaces can be reserved if you are driving to Madison. Each room has its own phone extension which will indicate telephone messages at the desk and the switch board operator will note your incoming calls. The number at Lowell Center is 608-256-2621.

Supper will be served on Sunday at 5:30 and the first class will be scheduled to begin promptly at 7 p.m. Sunday evening in the Library at Lowell Center. Only the first 30 registrations can be accepted for each course session.

TUITION AND FEES:

Course tuition -----	\$150.00
Charge for Computer Terminal Time-----	95.00
Workbook and Materials-----	25.00
Room and Board-----	90.00

There are no other fees.

A \$60 non-refundable deposit is required with your reservation.

INSTRUCTIONS:

Indicate your registration by mailing the enclosed reservation card to Lowell Center. Send the enclosed addressed envelope to Mr. Fred Roberto, our seminar administrator with a check for the full charge above or a non-refundable \$60 reservation deposit, made payable to EDUCARE, Inc.

For an "appraisal" of this program, why not ask the original guinea pigs?

Norman R. Benedict	Robert L. Garrett	John Shanahan
E. Nelson Bowes	M. B. Hodges, Jr.	John S. Schneider
Roy R. Fisher	Arnold Kaufman	J. W. Thorington
	Joseph A. Lo Pinto	

Draft
Date unknown

similar to that of

Dear _____

We ~~were~~ ~~delighted~~ ~~to~~ look forward to your visit on campus for EDUCARE. ~~-----~~
All of us are undergoing ~~the~~ psychological conditioning of Mohammed Ali for the big match. We offer the following suggestion to maximize the value of your time on campus.

First, bring along a couple of investment problems from your office that you would like to work on while you are here and we will try to assist in the application of some of the seminar tools to your case facts.

Be prepared for a Spartan session of lecture, discussion, and many hours of exercise from 8:30 until 10:00 p.m. each evening. The only possible relief is the indoor swimming pool at Lowell Hall for which you will require a swim suit, despite what you have heard about the Madison campus.

On Sunday evening we will host a casual somrgasboard dinner at ~~the~~ Top Hat restaurant but after that point the Lowell Hall cafeteria will be your banquet circuit. If you have any special dietary problems, please let us know and we will try to provide accordingly. Otherwise you need no textbooks slide rules, papers or pencils.

Best Regards

James A. Graaskamp
Associate Professee in Business

July 22, 1971

Dear Registrant:

We recognize that before you arrive in Madison for a five day retreat with EDUCARE, there will be little time to study or to read much advanced material. Still you may find it useful to read a few lines and to sense the thrust of the seminar as you travel to Madison. Thus we have enclosed a brief outline of topics and lab sessions and a READING ASSIGNMENT! It is most important you read the enclosed article from the Harvard Business Review on investment analysis which was written in 1959 but has yet to reach the real estate world. Equally interesting is the article on the past and present of computer time sharing potentials.

First a comment on the schedule of topics and lab problems. On Sunday and Monday we intend to provide you with sufficient understanding of the elements of computer hardware and software that you grasp the simple minded and relentless logic of the monster and lose your sense of awe as you lead it around by a "do-loop" in its nose. On Tuesday we will direct your new found ability to use a computer terminal to a series of elaborations on traditional appraisal methods of investment income analysis with three objectives. First we want you to gain confidence on the terminal in doing the familiar; secondly we wish to illustrate that the computer makes it possible to remove all the limiting assumptions imposed on traditional appraisal analysis by the limits on a man's time or his mathematical ability; and third we wish to plant the seed of suspicion that the tool in your hands far exceeds the capacity of current appraisal theory to use it properly.

On Wednesday we will use the subject of statistics to teach more about the techniques and powers of a computer terminal. Existing appraisal theory has always implied statistical probability in its structuring of data and analytical inferences in the valuation process but professional education has never provided the would-be appraiser with the necessary statistical tools. By Wednesday afternoon you will be in a position to better compare the potential of time sharing computer techniques to programable calculators and the professional growth which is possible with each. On Wednesday evening we will explore the host of programs and services available on GE Time Sharing and thus to EDUCARE graduates who choose to try time sharing in their office.

Note that throughout the first three days of the program, 30 minutes of lecture is alternated with equal amounts of lab time so that it is not a lecture course. It is a workshop program to give you the confidence to try terminals in your own shop.

Only on Thursday morning will we lecture briefly and provide a great variety of sample outputs which bear directly on real estate problems. Most of these samples represent operational programs by other professional groups - the certified public accountants, the planners

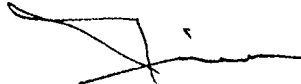
and architects, the engineers and government technocrats who are moving into the field of real estate analysis.

We will conclude by mid-Thursday afternoon but the equipment remains available for your use as will Prof. Knitter and myself for the balance of the day.

Our first educational objective is to place a new tool in your hands which is within your economic means; our second objective is to stimulate imaginative and innovative practical use of this tool in real estate; but our essential objective is to confront the real estate profession with the implications of twentieth century tools for modernizing appraisal theories and educational programs. On this point you have a reading assignment on the meaning of professional societies by Ralph Nader!

Sunday supper will be served at Lowell Hall at 6:00 P.M. and we look forward to breaking bread with you.

Cordially,



James A. Graaskamp



H. Robert Knitter

J. Graaskamp

EDUCARE NEWSLETTER
AUGUST 1971

NEWS ITEM FOR ALL OF YOU WHO ATTENDED THE VERY FIRST
EDUCARE CONFERENCE IN FEBRUARY, 1971.

The Educare Computer Network is available and there is a small but growing library of programs currently being stored for all who find them useful. As a result of our most recent two conferences in August and July we have more than 25 subscribers within the Educare network. You will find enclosed a summary description, of the first few programs available in the Educare library. The number in the library will increase and future announcements will be sent to all subscribers. If you choose to sign up for the service the associated application form may be used or you may contact Bob Knitter (608/262-3816) directly for immediate access to the G. E. system.

NEW ADDITIONS TO THE EDUCARE LIBRARY.

The responses from current students in the Educare course lead us to believe that the most interest in new but yet unavailable programs for the Educare library is associated with a land development model and appraisal model. The latter program would accept a subset of comparables and will then make the necessary adjustment calculations so that these comparables may be compared with one or more subject properties. Availability of this program will be announced in subsequent issues of this irregular newsletter. Also planned is a program which will allow the user to make projections using either straight line or growth functions

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which are based on the best fit for data previously entered. This program is intended to be used for short term predictions of population growth and similar growth phenomena.

WHERE TO GET WHAT

In order to become a user of the Educare Computer Network you need a terminal. Which terminal? The most common and least expensive computer terminal device is a teletype and in order to simplify your ordering such a device and its associated supplies we have enclosed a sheet of a few national vendors of this piece of equipment on a lease basis. Also for your convenience we have included the description of supply items that you will need with the teletype and the sources we have currently been using for these items. We make no specific recommendations as to quality of the products or competitiveness of the prices from these sources. Names and addresses are provided as a convenience only. The costs are suggested costs which were given us at the time of our most recent inquiry. If you can negotiate a better deal, by all means do so.

EDUCARE COURSES

For the next series of Educare courses we are trying a new experiment and will offer the courses over weekends. The first course will begin on the evening of Friday, October 15th and finish the afternoon of Tuesday, October 19th. The second course will begin on the evening of October 29th and finish in the afternoon of November 2nd.

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EDUCARE COMPUTER NETWORK

Application for Service

Date _____

Subscriber Name _____

Business Phone _____ Home Phone (opt.) _____

Requested Password _____
(1 to 10 letters and digits)

Billing Address:

I assume responsibility for all charges accrued to my assigned user number on the G. E. Timesharing Network.

Applicant Signature

Return to: Educare
Attention: H. R. Knitter
533 S. Segoe Road
Madison, Wisconsin 53711

Abstract of Programs Currently in the Educare Library

ELLWOOD

This program will provide the normal computations associated with Ellwood calculations. It is designed to allow maximum flexibility of data entry from the terminal and will prompt the user both with brief and more extensive titles of the data items being requested. It will use either mortgages stated as a percent of value or as a dollar amount and will provide for the statement of either the term of the mortgage or the annual payment constant. At the option of the user it provides either a brief summary output or an extended proof of the value and the associated rates of return. (This program will soon be extended to provide a sensitivity analysis.)

RATES

This program is intended to calculate the internal rate of return for an arbitrary series of cash inflows and outflows. It will also provide a basis for comparing the values of these inflows and outflows to various investors who may be exposed to a different cost of capital. It will also provide the present value of any series of flows at a given rate of return.

CIT

This program will accept a period and rate. It will then calculate the 6 factors normally tabulated in compound interest tables for the stated period and rate. The factors which will be calculated and printed are: (1) the amount

at compound interest, (2) the accumulated amount at compound interest, (3) the sinking fund factor, (4) the present value, (5) the present value of an annuity, (6) amount required to amortize over the period.

MAILBOX

The "Mailbox" program was written to facilitate exchange of messages between users on the same user catalog of the G. E. Timesharing system. The Mailbox program itself provides procedure which allows the user to check the status of messages which concern him. It further will provide a mechanism through which he may notify another user that he has created a message for his attention. In order to communicate with another user the person entering the message must merely provide the subscriber suffix (last 2 digits of user number) under which the addressee will normally log on, his name and the name of the file which contains the message. The actual message is created as a normal file; the only restriction on that file is that the sixth character of the filename must be an asterisk (this notation will make the file accessible to all users within the same catalog). Upon running the Mailbox program the user will be required to provide a name. This should normally be his last name but must correspond exactly with the name to which a message was posted. He will then be required to respond to the inquiries.

MINIMOD

This is the most comprehensive program currently in the Educare library. The program provides for a complete cash flow analysis for before and after tax investment values. It features provisions for multiple assets using individualized depreciation methods and multiple mortgages with options for stayed refinancing. It is designed to permit the user to select from very brief (a few lines) output to a very extensive (multiple pages) analysis. It has been designed to minimize computer costs and therefore encourage experimentation. The cost of running this program is negligably greater than the cost of printing the output.

LEASE/PURCHASE SOURCES

Teletype Leasing

The following teletype was used at the Educare Conference:

Model 33 ASR, friction feed, originate only, teletype with an acoustic coupler

Teletypes may be leased from:

A. Western Union Data Services

1. Mr. Joe Steele
Western Union Data Services
600 Enterprise Drive
Oakbrook, Illinois 60521
Phone 312/654-0560

or

2. Western Union Data Services
Corporate Sales Office
16 McKee Drive
Mahwah, New Jersey 07430
Phone 800/631-7050 (toll free watts number)

These teletypes have a minimum 30 day lease at \$65/month plus one time handling charge of \$65. Maintenance is included in the lease.

B.

1. Mr. H. J. Benham
RCA Service Company
7620 Gross Point
Skokie, Illinois 60076
Phone 312/965-7550
2. Mr. B. Grossman
RCA Service Company
Building 204-2
Cherry Hill Offices
Camden, New Jersey 08101
Phone 609/963-800 Ext. PY4129

These teletypes have a minimum 60 day lease at \$65/month plus a one time handling charge of \$74. Maintenance is included in the lease.

On all items, check the Yellow Pages under Data Processing Supplies/ Equipment for alternate sources and competitive prices.

August 1971

Teletype Purchase

If you would like to purchase a teletype:

Mr. John Klupar
Teletype Corporation
5555 W. Touky Avenue
Skokie, Illinois 60076
Phone 312/982-2543

The teletype like we used in the Educare Conference will cost around \$890. The sale terms are FOB Skokie, Illinois - Net 30 day. An acoustic coupler for your teletype could be purchased from:

Albert Brooks
Anderson Jacobson, Inc.
1441 Sherman Road
Northbrook, Illinois 60062
Phone 312/498-4220

Their ADAC 242 acoustic coupler sells for \$345 and has a one year warrenty. The sale terms are FOB Sunnyvale.

California - Net 30 days.

Remember, purchased teletypes will require you to pay for all maintenance at a rate of about \$16/hr. Under favorable conditions you should allow for two to five hours of maintenance per year depending on the age of the machine. Teletypes are normally expected to last about three to four years with normal usage.

Teletype Wheels

If you would like your teletype to be mobile we suggest you purchase a hand cart designed especially for the model 33 teletype. The carts are \$5/month if you rent them and \$39.00 (plus frieght) if you purchase. Contact TTS if you wish to purchase a cart.

TTS
2928 Nebraska Avenue
Santa Monica, California 90404
Phone 213/829-2611

August 1971

Teletype Supplies

Teletype supplies are available from:

Mr. Robert Cummings
McGregor & Werner, Inc.
6411 Chillum Place, N. W.
Washington, D. C. 20012
Phone 202/882-9688

Describe the teletype supplies for a model 33 teletype as follows:

- 1) Teletype paper (normally packed 12 rolls per carton)
Order 8 1/2", friction feed, one ply, white or yellow
paper. The price will be \$10.92 per carton. Stock No.
MWTR84.5 (specify white or yellow)
- 2) Teletype ribbons (normally packed 1 doz. per box) Order
nylon ribbons with a small hole in the center of the reel.
The price will be about \$11.00 per box. Stock No. TR1
- 3) Paper tape (normally packed 28 rolls/carton)
Order 1" by 100', 8 track, unoiled, paper tape.
The price will be \$17.92/carton Stock No. MWPT18.

White Bond Teletype paper is available from:

Hewlett Packard Corp.
5500 Howard Avenue
Skokie, Illinois
Phone 312/677-0400

Stock No HP 9280-0046
\$2.50 per roll quan 1-11
\$2.00 " " quan 12-999
12 rolls per case

August 1971

Miscellaneous Items

For tape storage we recommend

Tape Filing Boxes (4" x 4" x 1")
\$6.50 per case of 50 plus shipping
Stock # 1052469
Singer, Friden Division
P. O. Box 2138
San Leandro, California 94577

For tape winding the best device yet is a home-made gadget available in limited quantities from the garage workshop of

William J. Alexander
121 South Eighth Avenue
La Grange, Illinois 60525

\$8.00 per winder; 90 day warranty

February 14, 1972

Dear Registrant,

The staff of EDUCARE looks forward to hosting you on campus for the EDUCARE seminar beginning February 20.

Enclosed you will find a number of reading assignments with which you should be familiar before you reach Madison.

"How to Assess Investment Proposals", Robert H. Baldwin, Harvard Business Review, May-June 1959.

"More Glitter than Gold: Time Sharing", Edward J. Menkhaus, Business Automation, November 1970.

"Professional Responsibilities in a Professional Society", Ralph Nader, AIP Newsletter, November 1970.

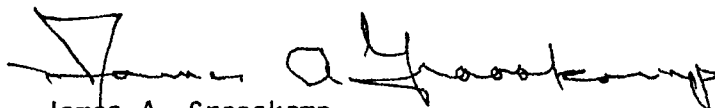
We expect to serve supper at 5:30pm Sunday evening February 20 in the Lowell Hall dining room in order that we may begin classes at 6:30 Sunday evening. You shall do an Ellwood problem on terminal before GE signs off the air at 8:00pm!

You may schedule return flights any time after 1:00pm on Friday the 25th as the afternoon is scheduled for problems on the terminal as your time permits.

We urge you to BRING SOME HOMEWORK from your office. You may bring all the details on an investment case, a 236 feasibility study, or a buy-lease problem which you may wish to analyze. In addition we have a market comparison model so you might wish to bring 20-30 sales of appropriate comparability and test the system on what you know about your market.

You will not need a car on campus and we would be happy to schedule some special transportation problem you might have. Lowell Hall has a fine indoor swimming pool so you may wish to bring swimming gear. Professor Chuck Clettenberg is a patie at handball if you need to restore your self confidence in our beautiful Nielson Indoor Tennis Stadium.

Cordially,



James A. Graaskamp,
Associate Professor of Real Estate

JAG/hw

April 7, 1972

Robert A. Steele
Shattuck Company
5405 Wilshire Blvd.
Los Angeles, California 90036

Dear Bob:

Bob Knitter was called to Milwaukee due to the death of his father-in-law and asked me to equip you for the Southwestern Appraisal Conference relative to EDUCARE.

Enclosed are the following:

1. A written piece describing the nature cost and technical constraints in Course I which we wrote for consumption for the various appraisal magazines. Note that the only remaining meetings are the two in July and the one in September and each is half filled.
2. The manual for our brand new AIP program which is a very flexible cash flow investment analysis system which we purchased in a liquidation sale of Land Dynamics in Dallas, Texas.
3. Our popular Mini-Mod with an edit program to check for mistakes before the data file is run. We are building a similar edit plan for AIP.
4. A complete Ellwood model which will compute all the points required with a graph with or without the J factor.
5. Our super market comparison model with statistical controls on the selection of comparables and the estimated value conclusion.
6. Rates - our internal rate of return model which we use for everything from stock share analysis to land development feasibilities.

We are using some of GE's stuff as well, such as lease or buy programs, step-wise regression and cash budgeting. EDUCARE has come a long way and is the best buy around when using network. We have 47 on network and should have 60 by the end of July. That means it has cost the industry less than \$500 per man to bring 60 of its top professionals into the Twentieth Century.

We'd like to see you in Madison so you can see what else we're doing. Regrettably I only have 12 EDUCARE applications left and won't be able to retrieve my reserve supply until Monday.

We all appreciate your help in promoting EDUCARE.

James A. Graaskamp
Associate Professor in Business

April 7, 1972

James A. Hueser
Society of Real Estate Appraisers
7 S. Dearborn Street
Chicago, Illinois 60603

Dear Mr. Hueser:

All of us at EDUCARE will be delighted in working with you and Dan Swango in preparing a demonstration for the appraisal conference in San Francisco. In fact, I would be delighted to be in San Francisco to answer questions myself although Knitter may let the air out of my tires and beat me to the airport.

Will prepare a CARE package of alternative EDUCARE cash flow programs and mail them directly to Dan. Will also try to convince Dan to attend EDUCARE in July.

Who pays my restaurant bill in San Francisco?

Best regards,

James A. Graaskamp

IMPORTANT READING FOR ASREC MEMBERS

on

EDUCARE

1972

EDUCARE is a non-profit, tax-exempt, educational foundation eligible to receive tax deductible gifts. The name is an acronym for the Educational Foundation for Computer Applications to the Real Estate Industry, Incorporated. For the present, EDUCARE has contracted with Professors Robert Knitter and James A. Graaskamp, CRE, to develop and conduct EDUCARE Course I with the cooperation of the University of Wisconsin Extension program. In addition, the EDUCARE Corporation wholly owns a subsidiary corporation, EDUCARE Computer Network, Inc., to supply continuing computer program services and computer operation assistance for the ongoing education of real estate professionals who have taken Course I and joined the network. Each of the sponsoring organizations initially advanced a total of \$37,500 partially as a loan and a grant to EDUCARE. Course attendance is limited to members of the sponsoring groups and their employees.

Who needs it?

Certainly not the national CPA firms which all offer their clients real estate investment valuation models; nor do investment bankers who operate in real estate financing using computerized cash flow models and statistical systems which have been used in capital budgeting for industry for many years. Civil Engineering firms have been using sophisticated models for economic cost-benefit studies for a long time. Today it is the former client of the appraiser who seeks these services and who is discovering which professions offer contemporary methods. Only the counseling and appraisal fraternity may lose out as others supply the needs of the market.

What does EDUCARE Course I do for the appraiser and the counselor?

Computer power simply places comprehensive information and data processing methods in the counseling and appraisal office in an amount and at a cost which is overwhelmingly in favor of the user and client. On the first day, Course I teaches the student to sign on and off the system via telephone and to access the library of programs freely available on the General Electric Mark II System virtually anywhere in the United States. On the second day, the program proceeds to teach both statistics and terminal use of statistical programming; not to mention the process of building property sales files and use an automated market comparison system. The terminal makes it possible for the counselor and appraiser to use techniques he has always understood but has feared to try lest his mathematics fail him in the process. EDUCARE presumes everyone had high school algebra and forgot it.

On the third day, EDUCARE teaches both modern capital budget theory and the use of internal rate of return programs, cash flow investment programs and a valuation program designed for counselors and appraisers by Mack Hodges and Thomas Prince. On the fourth day, EDUCARE introduces several sophisticated services for real estate analysis such as realmetrics and ommimetrics. That afternoon the student is introduced to current developments in cost estimating, property management accounting, aerial photography, and model building which would revolutionize the information base and forecasting techniques of real estate decision making.

On the fifth and last day of the program, the dollar costs of terminal rental and usage are presented together. They include equipment choices, the appropriate application of electronic calculators, the services of EDUCARE Computer Network,

Inc., and new developments in hardware which will further reduce the cost and expand the applications of time-sharing techniques in the next few years.

Must one be a "Programmer" to attend or appreciate EDUCARE?

NO! It is unnecessary to know programming to use a terminal to advantage. You needn't understand circuitry to use a television set, or even build a television set with a kit. The same as a programmer doesn't need to be a counselor or appraiser to buy his real estate. It would be impossible to learn programming and systems design in five days.

Will I be taught nothing but the computer?

Most of the quantitative analysis that you currently use could be done on an old envelope or tablecloth. The Course I student will be doing Ellwood complete with the J factor and more points for the Ellwood chart than he may be prepared to graph within 30 minutes of the start of class on Sunday night. Course I introduces modern theory of capital finance before introducing cash flow models.

The course isn't expensive!

\$475 for a one very full week course is not higher than any other course normally offered by real estate societies; it includes room and board and the cost of technical support. There is at least one teletype and one telephone line for each two students and each student will cost EDUCARE a minimum of \$100 for computer time despite the educational discounts provided by the General Electric Company for the program. Professors Knitter and Graaskamp have been contributing their services at a fraction of their usual consulting rate. There is an additional staff of graduate students in computer science and real estate who serve as instructors for all lab periods. The cash break-even point approaches 25 students for each of the three remaining courses for 1972. These costs compare to charges averaging \$100 per day for courses offered by other management associations.

Why is Course I offered only in Madison, Wisconsin?

There are significant set-up costs with a program such as this: The use of multiple rented terminals on terms which make it extremely desirable to offer repeated courses in one location; remote computer access requires telephone facilities which can usually be obtained most inexpensively under the educational facilities available through major universities such as the University of Wisconsin. The extensive use of trained lab assistants requires an abundant supply of individuals with unique capabilities, who work inexpensively, such as graduate students. Furthermore, it is difficult to find comparable costs for the physical facilities and room and board.

What do I do for help after Course I?

Computer time-sharing services are available throughout the country. Anyone who has the necessary interest can become a customer of General Electric Time-Sharing, Service Bureau Corporation, Time-Sharing, Inc., or a host of other computer time-sharing vendors. Furthermore, several program authors are making real estate investment analysis programs available through one or more of these time-sharing services. Most significantly, it is felt that the programs which are unique to real estate and form a substantial part of the instructional material of EDUCARE Course I are available through a newly-formed subsidiary of the EDUCARE Foundation called the EDUCARE Computer Network, Inc. You are now a part owner of it. An attendee at an EDUCARE course can sign up for the services of EDUCARE Computer Network and obtain access to all of these programs plus all of those currently available under G.E. Mark II. Direct cost of using G.E. services through the EDUCARE Computer Network is exactly the same as the charges of G.E.

Individual customers of General Electric are required to accrue charges in excess of \$100 per month or pay a monthly minimum of \$100 per month. EDUCARE Computer Network is the customer of General Electric that is exposed to the \$100 minimum. It does not require any specific minimum for computer services from its customers. There is a charge for access to the EDUCARE Library program -- currently a minimum library charge of \$10 per month. The Network system offers a number of programs which are typically used by consulting and appraisal offices but not always available from other vendors. For example, there is the complete Ellwood model. There are several cash flow models, a market comparison model, some basic statistical and linear regression models and others that will be developed as people from EDUCARE go back to their offices and find out what best fits their purposes and how best it might be designed and formatted. The most significant contribution of an on-line time-sharing system to the real estate industry may be the fact that it is a continuously changing and dynamic entity. As new concepts are implemented in terms of models they will become available on this Network and offer new potential for use to all the subscribers of the Network.

It should also be noted that programs are often prepared in conversational form so that the user need only have the most limited previous experience in the use of either the terminal or time-sharing network. This type of program guides him through the need of data and provides him with an interactive programmed learning tool. This helps him to become familiar with not only the device and the program but also the mathematical concepts and minimum procedural requirements to pursue sophisticated computational or mathematical analysis.

What is the 1972 Course I schedule and how do I apply?

July 16-21

July 30-August 4

September 24-29

To be eligible, a registrant must have either a C.R.E., S.R.A. or M.A.I. professional designation or be sponsored by an employer who is certified. Write for application forms to:

Norman R. Benedict, C.R.E.
2830 Whitney Avenue
Hamden, Connecticut 06518

or

Ron Brown, C.R.E.
2005 N. Navarro Street
Victoria, Texas 77901

What is the future of EDUCARE Network, Inc.?

A new Network two-day seminar was authorized to serve over 80 percent of past Course I students who have joined the Network. They will annually or semi-annually meet in Madison, Wisconsin, after a regular Course I. This will be timed so that full computer service will be available to them.

One day they will be taught new computer techniques. They will be fully trained to operate all of the new computer programs put on-line with the Network. The second day will be an open discussion of what new programs they want to be developed for their use to better serve their clients, their paychecks, vacations and new car.

Why should I attend EDUCARE?

It's more fun and personally satisfying to be a leader rather than a follower. Don't play catch-up counseling!

September 4, 1972

Mr. David W. Smith
55 Almeida Terrace
Apt. 17
Portsmouth, R.I. 02871

Dear Mr. Smith:

Unfortunately I cannot provide you with information on seminars in the Boston area in that Educare currently has no plans to provide instructional services outside of the Madison, Wisconsin, area. As the attached writeup of our educational program points out, the support required for our seminars depends upon access to a large number of assistants, teletypes, and telephone lines. This makes the course rather "unportable".

Educare Computer Network uses services of G.E. timesharing and provides to users all the features available as subscribers of G.E. timesharing and in addition makes available to them access to a library of programs specifically designed for real estate professionals. These are described on the attached program list summary. Most of the programs are of the cash flow type and there appears to be a rather significant shift in the real estate industry toward more sophisticated financial analysis using cash flow techniques. I will confer with Professor James Graaskamp of the School of Business, University of Wisconsin, and together we hope to prepare a small package of literature which you may find interesting and descriptive of the current procedures and practices associated with computers in real estate.

Most of the programs on the Educare Computer Network are written in either the Fortran language or in Basic which on the G.E. system is a language of significant flexibility.

If we can be of any additional assistance, you may correspond with me at the Computer Network address or with Professor Graaskamp or myself at the University of Wis., School of Business, 1155 Observatory Drive, Madison, Wis. 53706.

Sincerely,

H. Robert Knitter
General Manager

cc: James Graaskamp

September 4, 1972

Mr. James Thomas
Coldwell Banker Management Corp.
533 Fremont Avenue
Los Angeles, California 90017

Dear Mr. Thomas:

Thanks for your letter of August 25th. I spoke to Jim Graaskamp and he also pointed out that you discussed our programs with him. I have arranged to have the following sent to you: the available documentation on the MINIMOD program which should show not only input formats but also sample output, the documentation available for the AIP program, and the current documentation available for the Market Comparison program. The market comparison program is currently being extended to provide for more flexible adjustment procedures and also selection mechanisms prior to the computations associated with market comparison. Also included is a writeup on the rates program. These constitute probably the most significant and useful parts of the small set of programs available on the Educare Computer Network.

I should point out that current policies permit access to Educare Network services only to those individuals or associations who have previously attended an Educare course. Should you be interested in our programs I would encourage that someone from your office attend one of the 1973 courses. If we can be of any more assistance to you, please don't hesitate to write again.

Sincerely,

H. Robert Knitter
General Manager

cc: James Graaskamp
Alan Hembel

September 4, 1972

Mr. Roger Christianson
John Crosland Company
P.O. Box 11231
Charlotte, North Carolina

Dear Roger:

Jim gave me your letter of August 25th. You're right, there is a problem with the Ellwood program. The problem has been corrected and the revised version should be available after the weekend of September 2nd. Thanks for pointing it out to us; that's about the only way we learn about difficulties users encounter. Don't hesitate to point out additional problems as they arise.

Sincerely,

H. Robert Knitter
General Manager

cc: James Graaskamp

Michael E. Jakes
Manager, New York Operations
529 Fifth Ave. Suite 1901
New York, N. Y. 10017

Draft

LDear Mr. Jakes:

Here at the U. of Wis. we teach a program for the professional real estate societies on the use of computer terminals by the real estate professional. The objective in one week is to train them on the use of the standard teletype terminal or selectric typewriter modification and introduce them to the variety of services available on GEMark III. We emphasize that other time sharing services will be providing more and more services for the real estate profession in the next few years. During 1974 the seminar will be presented not only in Wisconsin but in Texas and California as well.

Thus we were interested to learn of your SITE demographic system and its time sharing capabilities. It prompts the following questions:

1. Would it be feasible or desirable for EDUCARE faculty to demonstrate the use of your system during our program, and if so, what would be the cost of acquiring the password or account number for these purposes? EDUCARE is purely an educational organization on a non-profit basis and does no commercial work for anybody.
2. Would it be possible to obtain 80 brochures describing your program which we could mail to the 80 firms which have taken the seminar and are presently using time sharing terminals in their office? Does your service provide any population projection factors for adjustment of 1970 census information. ^{data} ~~of~~ your brochure speaks of the adaptability of your program to small inhouse computers. The Sch. of Bus. operates a 1410 and in our real estate program all of our students are required to do census data ~~and~~ analysis and community growth modeling. What would it cost the Sch. of Bus. to acquire ~~and use~~ or use the SITE system as an educational device for real estate and marketing students?

The Board of Directors of EDUCARE is meeting during the third week of October and so we would appreciate your thoughts in terms of input to our seminar program in time for review by our board. I have enclosed our EDUCARE brochure for this year which describes the origin and nature of that program.

Yours truly,

JAG
APB

COMPUTER APPLICATIONS IN REAL ESTATE ANALYSIS
(Pilot Presentation)

November 30 to December 4, 1970

Lowell Hall
Madison, Wisconsin

EDUCARE

educational foundation for computer applications in the real estate industry, inc.

The enclosed material has been
assembled for the EDUCARE FOUNDATION by

J.A. Graaskamp; H. R. Knitter, and A. B. Kahn

This is a working document to be distributed
only to the participants of the pilot presentation
in order to gain feedback and critique to guide further
developments.

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and reproduction in part or in whole by any means are
reserved.

30 November 1970

OUTLINE

- MOD 0: Introduction of personnel and handling of registration
- MOD I: Introduction to investment analysis
 - IA. Fundamentals: illustrative investment decision - crude evaluation - time v. flow of funds
 - IB. Teletype: procedure and demonstration
 - IC. Problem solving
- MOD II. Functional fundamentals of hardware and software - algorithm, flow chart, manual calculation, etc.
- MOD III. "Basic" Basic using PAYBACK1, editing, debugging sequence, exercise
- MOD IV. Second round of basic - loops for next statements, I/O verbs, exercise
- MOD V. Staged Investments - scenario for Snoopy's staged investment - introduction of Basic III: table handling and character handling
- MOD VI. ELLWOOD analysis
- MOD VII. Modelling - examine extensively a limited real estate model, Mini Model
- MOD VIII. Computer Milieu - hardware, software, remote devices
- MOD IX. Miscellaneous applications - accounting, office services, etc.
- MOD X. Computational techniques - sorting, etc.
- MOD XI. Technological evaluation - observation, etc.
- MOD XII. Other appraisal Approaches - cost of building, market comparison
- MOD XIII. Evaluation checklist. Application program - life history of a routine, documentation; Vendor - equipment, etc.
- MOD XIV. Introduction to commercial model 1
- MOD XV. Introduction to commercial model 2
- MOD XVI. Student use of terminals with representative problem data - 4 vendors represented

MOD XVII. Debriefing of vendor contacts

MOD XVIII. Economics of timesharing in real estate

MOD XIX. The computer and decision making - social values, etc.

MOD XX. Exam and course critique

MOD 0 INTRODUCTION

Purpose: To set the scene

Introduce personnel and participants; purpose;
scope; approach

Handle mechanics of registration and facilities

MOD I INTRODUCTION TO INVESTMENT ANALYSIS VIA TELETYPE

PURPOSE: This module is divided into 3 submodules. The purpose of each is given below. The contents are described on separate sheets.

- IA. Review fundamental investment analysis, procedures and principals, and introduce scenario.
- IB. Develop skills in TTY (Teletype) access using existing routine
- IC. Develop skills in critique and evaluation of a routine

MOD IA FUNDAMENTALS OF INVESTMENT ANALYSIS

1. Illustrative investment decision. A simple build and lease offer. A second offer to utilize the same resources. Decision-making requirements and the investor's goals.
2. Crude evaluation/payback analysis/average rate of return
3. Time vs. flow of funds/discount factors/present value

MOD IB TELETYPE ACCESS TO COMPUTER SYSTEM

1. Sign-on procedure
2. Commands to load and run programs
3. Entry of data to programs
4. Demonstration: (Using File 3 sample data), demonstrate and plot relation between present value and interest rate.

PAYBACKN - Payback analysis

PRTFILEN - to print data used

AVERATEN - Average rate return analysis

PRESVALN - Present Value Analysis

MOD IC WORK SESSION: USE OF TTY AND TS SYSTEM TO SOLVE PREVIOUS PROBLEMS

1. On TTY: Retrieve and print both offers/evaluate offers with PAYBACKN/evaluate offers with AVERATEN/load and run PRESVALN/use PRESVALN to find rate which equates present value to initial investment for both offers
2. Discussion Session
 - a. Plot your successive guesses on PRESVALN and summarize the results by all methods for both offers
 - b. Make an investment decision based upon your results
 - c. Discuss which results you weighed heavily in your discussion and why
 - d. Criticize and evaluate the tools you were given from the viewpoint of the investment principles
 - e. Criticize and evaluate the tools you were given from the viewpoint of convenience and utility of the mechanization

MOD II FUNCTIONAL FUNDAMENTALS OF HARDWARE AND SOFTWARE

Purpose: To treat the fundamentals of Hardware and Software to the extent necessary to support discussions of computer application programming

A. Algorithm

- 1) Definition: Specific well-defined procedures
- 2) Example of an external algorithm: "Black Box" use of PAYBACKN
- 3) Example of an internal algorithm: PAYBACKI

B. Flow chart (PAYBACKI)

- C. Manual Calculation: Input sheet
Work sheet
Calculator
Controller
Output

D. Shorthand Notation and Trace

E. Exercise: Flow chart and trace average rate of return

- F. Computer Organization: I/O
Storage
Arithmetic
Control

- G. Hierarchy of languages: Machine Language
Compilers(Fortran, Cobol, Basic)

MOD III "BASIC" BASIC

Purpose: To develop a minimal level of BASIC necessary to "OPEN" (to the participants) a simple program. Also to illustrate debugging problems and methodology

A. Example PAYBACK1

B. "BASIC" BASIC

1. General

- a. Statements: line number; verb; specifics
- b. Numeric Data: Variables, Constants
- c. Arithmetic Operations
- d. Logical Operations

2. Statement verbs (A minimal subset)

```
FILES (OPEN)
READ #1
LET
IF
PRINT
END
```

C. Composing and editing

D. Debugging sequence: Syntax errors
Logical errors
Intermediate Print out
Trace Procedures

E. Exercise: Debug a program for average rate of return

MOD IV A SECOND ROUND OF BASIC

Purpose: Introduce dynamic nature of investment return problem. Present second round of BASIC

- A. Change in tax laws (or other device to require greater flexibility)
- B. Basic II
 - 1. Loops for next statements
 - 2. I/O verbs

<u>GE</u>	<u>SBC</u>
INPUT	INPUT
READ #N	GET
WRITE #N	PUT
FILES	OPEN
SCRATCH	CLOSE
RESTORE	

- C. Exercise: Modify average rate of return

MOD V STAGED INVESTMENTS

Purpose: Establish forerunner for concepts of a model

Set basis for financial implications of flows
as alternate opportunity streams

Extend participant contact with a realistic
problem.

Introduce final round of BASIC

A. Scenario for Snoopy's Staged Investment

B. BASIC III

1. TABLE HANDLING

Dimensions
Arrays
Indices

2. CHARACTER HANDLING

Variables A\$
Constants A\$
Formatted Output

MOD VI ELLWOOD ANALYSIS

- A. Review of Ellwood
- B. Advantages
- C. Underlying Assumptions
- D. Limitations (demonstration)

MOD VII MODELING

- Purpose: A. Introduce concept of a Module
- B. Examine extensively a limited real estate model, Mini Model

Basic Assumption
How to Use
Demonstration
Problems
Critique Discussion
Financial Strength and Shortcoming
Mechanical Advantages and Disadvantages

- C. Develop skills in criticizing a routine

MOD VIII COMPUTER MILIEU

Purpose: To set basis for later discussion on economics

- A. General Hardware Survey
 - Changes in technology
 - Changes in scope of application
 - Changes in cost
- B. Software
 - Changes in technology
 - Changes in scope of application
 - Changes in cost
- C. Remote devices
 - Changes in technology
 - Changes in scope of application
 - Changes in cost
- D. Present and probable future impact of above

MOD XIX THE COMPUTER AND DECISION MAKING

Purpose: To set perspective for the role of the machine
and the role of man

- A. Social values
- B. What is delegated to computer
- C. What is reserved for man
- D. What is man-machine interface

MOD XX EXAM AND COURSE CRITIQUE

Purpose: The primary purpose of this presentation is to serve as a pilot to gather feedback which will serve to direct the development effort. In keeping with this goal there will be an extensive critique and no exam. In the future there will be an exam and a feedback critique questionnaire.

MOD XVIII ECONOMICS OF TIMESHARING IN REAL ESTATE

Purpose: To provide the quantitative knowledge required
to evaluate vendor contracts

- A. Hardware
- B. Software
- C. Communication in the real estate environment

MOD XVII DEBRIEFING OF VENDOR CONTACTS

Purpose: A major purpose of the entire course is to place participants in a position to negotiate intelligently with vendors. This module represents a practical field test.

A secondary purpose is to provide vendors with the courtesy of feedback on needs of a group of representative users.

MOD XVI STUDENT USE OF TERMINALS WITH REPRESENTATIVE
PROBLEM DATA

For this presentation there will be four
vendors represented:

1. SUNN Enterprises
2. Hodges - Prince
3. SBC
4. Realtron
5. (Realmetrics will probably participate in
the future).

MOD XV INTRODUCTION TO COMMERCIAL MODEL 2*

*For this presentation the two commercially available models to be presented are by Sunn and Hodges.

MOD XIV INTRODUCTION TO COMMERCIAL MODEL 1*

*For this presentation the two commercially available models to be presented are by Sunn and Hodges.

MOD XIII EVALUATION CHECKLIST

A. Application Program

1. Life istory of a routine:

Need
Design
Implementation
Field Test
Operation
Modification
Retirement

2. Design trade-offs

Efficiency
Flexibility development
Generality vs
Accuracy operating
Convenience

3. Documentation

Flow charts
Three levels: a) Black Box user
 b) Operating Manual
 c) Detailed

Need for constant documentation

B. Vendor:

Equipment
Services
Software

MOD IX MISCELLANEOUS APPLICATION

Purpose: To expand perspective with survey of other
real estate applications and to motivate
discussion of computational techniques

- A. Accounting
- B. Office Services
- C. Scheduling
- D. Survey
- E. Information Retrieval
- F. Land Record Access
- G. Legal Services

MOD X COMPUTATIONAL TECHNIQUES

Purpose: To lay foundation of computational techniques to support data gathering and handling for return on investment analysis

- A. Sorting
- B. Information Retrieval
- C. Statistics
- D. Iteration

MOD XI TECHNOLOGICAL EVALUATION

Purpose: To provide perspective of long term (3-20 years)
evaluation of sophisticated application

- A. Observation
- B. Modeling
- C. Inversion (Appraisal Model is really inverse of
Financial Model)
- D. Optimization

MOD XII OTHER APPRAISAL APPROACHES

Purpose: To provide comprehensive survey of appraisal
methods vis a vis the computer

A. Cost of Building

Obtaining data
Managing data

B. Market Comparison

Data gathering
Statistical Analysis
Decision Theory

EDUCARE Course 1 Schedule
Pilot Course - February 21-26, 1971

SUNDAY

6:00 P.M. Cocktails and dinner - Top Hat Restaurant
(piano, violin and harp by graduate real
estate students).

MONDAY

8:30 A.M. Registration, introduction on personnel
and preliminary administrative matters.

9:00 A.M. Section 1A Introduction to investment analysis fund-
amentals. Illustrative investment decision;
traditional approaches to income amortiza-
tion; crude evaluations of time versus flow
of funds.

9:45 A.M. Section 1B Introduction to the use of a teletype.

10:00 A.M. Break and student use of teletype devices.

10:30 A.M. Section 1C Use of the teletype as a computer time
sharing terminal. Description of procedures
and demonstration using sample problems.

11:00 A.M. Student use of teletypes for the solution of
several investment problems.

12:00 Lunch

1:00 P.M. Section 2 Functional fundamentals of computers, computer
hardware and software. Algorithms, procedures,
flow charts, manual calculations, etc.

3:00 P.M. Break

3:30 P.M. Section 3 "Basic" BASIC using PAYBACK editing, debugging
sequence and assignment of problem for evening
session.

5:00 P.M. Dinner

7:00 P.M. Student use of teletype terminals for solutions
of assigned problems.

10:00 P.M. Free time (don't forget to set your alarm).

9

TUESDAY

8:30 A.M. Brief quiz on previous material covered and review of previous day's assignment.

9:00 A.M. Section 4 Second round of basic - loops, for-next statements I/O verbs, exercises.

10:00 A.M. Break

10:30 A.M. Section 5 Ellwood analysis; brief review and comparison with previous analysis methods.

11:00 A.M. Section 6 Staged investments and the use of the computer for managing data. A staged investment problem. Introduction of BASIC III, table handling and character handling.

12:00 Lunch

1:00 P.M. Section 7 Modeling; examine extensively a limited real estate model.

2:30 P.M. Section 8 Check list for the evaluation of vendor equipment and programs.

3:00 P.M. Break

3:30 P.M. Section 9 Introduction to system and programs of Service Bureau Corporation followed by demonstration and use of this system.

5:30 P.M. Dinner

7:00 P.M. Section 10 Introduction to Sunn Real Estate Programs.

8:00 P.M. Use of terminals by students to evaluate Sunn programs and to complete assignments for Tuesday.

10:00 P.M. Free time (don't forget to set your alarm).

WEDNESDAY

8:30 A.M. Brief quiz on previous material and review of previous day's assignments.

9:00 A.M. Section 11 Computer milieu; the current state of the art of hardware, software and remote devices as it concerns the real estate profession.

9:45 A.M. Section 12 Miscellaneous application of a time sharing terminal in a real estate office - part 1.

10:00 A.M. Break

10:30 A.M. Miscellaneous applications - part 2.

11:00 A.M. Section 13 Computational techniques and approaches to using the computer's capabilities.

12:00 Lunch

1:00 P.M. Section 14 Technical evolution, observation, modeling, inversion and optimization.

2:00 P.M. Section 15 Other appraisal approaches and the potential of a time sharing terminal to support them.

3:00 P.M. Break

3:30 P.M. Section 16 Introduction to Realmetrics Real Estate Model followed by demonstration and student use of these programs.

5:30 P.M. Dinner

7:00 P.M. Section 17 Introduction to Hodges Model and programs.

8:00 P.M. Student use of Hodges programs and completion of current assignments.

8

THURSDAY

8:30 A.M. Brief quiz of previous day's material and review of previous assignments.

9:00 A.M. Section 18 Criteria for evaluating application programs.

10:00 A.M. Break

10:30 A.M. Section 19 Vendor debriefing - part 2

11:00 A.M. Section 20 Economics of time sharing systems in the real estate profession.

12:00 Lunch

1:00 P.M. Section 21 The role of electronic calculators as a tool of the Real Estate Professional. Functions; Features; Applications; Limitations; Economics

3:00 P.M. Break

3:30 P.M. Section 22 Computer and decision making procedures; social implications of computer use.

5:00 P.M. Dinner

7:00 P.M. Exam

FRIDAY

8:30 A.M. Critical review of contents and format of Pilot Course.

Educare Computer Network (ECN)
Library
July, 1972

Program Name

- Real Estate Programs -

CIT Compound Interest Tables provides 6 factors associated with compound interest tables. Output is formatted to conform the "Ellwood Tables" book.

RATES Rate of return calculations. Program will provide present value, internal rate of return, and adjusted rate for an arbitrary set of net receipts and investments.

ELLWOOD Provides analysis "ala Ellwood" text, ed. IV.

MKTCOMP Market Comparison Program will adjust a set of comparables on the basis of a subject property. User provides selection of factors, a comparable file and a subject file.

MINIMOD A basic cash flow analysis model with file input.

MEDIT An edit program for MINIMOD data files.

AIP Analysis of Investment Potential. An advanced cash flow analysis model with data file input.

- General -

MAILBOX A program to provide intercommunication among ECN subscribers. Sender prepares a message in a file. Addressee is notified of message upon signing in.

HELP A program to provide intercommunication to ECN personnel in order to get assistance or answers to questions (self documenting)

USERS Program produces a list of user numbers and user names for ECN subscribers (User numbers are required by MAILBOX).

PCHTAPE Will punch a file to paper tape in a re-loadable format. Printout will be divided into 8½ x 11" pages.

NEWS** A Listable file (not a program itself) which provides recent news of ECN developments

- Billing Information Programs -
(These programs, for the most part, require little or no user input)

COST Will show dollar cost of current terminal session since sign-in.

GECOST Will show total computer charges for last month and current month to date (yesterday).

GEBILL Will provide computer charges by Project ID for last month.

LIBBILL Will provide library usage log by date, time, project ID and will show total usage and royalty charges for last month.

Educare Computer Network (ECN)
Library
December, 1974

Program Name

Real Estate Programs -

CIT	Compound Interest Tables provides 6 factors associated with compound interest tables. Output is formatted to conform the "Ellwood Tables" book.
RATES	Rate of return calculations. Program will provide present value, internal rate of return, and adjusted rate for an arbitrary set of net receipts and investments.
ELLWOOD	Provides analysis "ala Ellwood" text, ed. IB.
MKTCOMP	Market Comparison Program will adjust a set of comparables on the basis of a subject property. User provides selection of factors, a comparable file and a subject file.
MINIMOD	A basic cash flow analysis model with file input.
MEDIT	An edit program for MINIMOD data files.
AIP	Analysis of Investment Potential. An advanced cash flow analysis model with data file input.
AIPEDIT	An edit program for AIP data files.
DAP	Design Analysis Program writeup available for \$10 from John Nabors, John H. Nabors & Associates, Suite 210, Empire Gardens Building, 1165 Empire Central Place, Dallas, Texas 75247.
BFCF	Cash flow program - summary input, one page output.
ELWPLOT	Produces the "Ellwood" plot of appr/depr versus time and rate of return.
CONVERSE	Conversational input preprocessor for (1) Minimod, (2) Preliminary land development model.
LDM1	Preliminary land development model (accessed thru converse)
RENTBUY	Oriented toward brokers, this program will show short and long term advantages of purchase over rental.
MAILBOX	A program to provide intercommunication among ECN subscribers. Send prepares a message in a file. Addressee is notified of message upon signing in.

HELP A program to provide intercommunication to ECN personnel in order to get assistance or answers to questions (self documenting)

USERS Program produces a list of user numbers and user names for ECN subscribers (User numbers are required by MAILBOX).

PCHTAPE Will punch a file to paper tape in a re-loadable format. Printout will be divided into 8 1/2 x 11" pages.

NEWS** A Listable file (not a program itself) which provides recent news of ECN developments

- Billing Information Programs -
(These programs, for the most part, require little or no user input)

COST Will show dollar cost of current terminal session since sign-in.

GECOST Will show total computer charges for last month and current month to date (yesterday).

GEBILL Will provide computer charges by Project ID for last month.

LIBBILL Will provide library usage log by date, time, project ID and will show total usage and royalty charges for last month.

FILELIST Will provide a list of files stored, size, date of last access and modif.

Educare Computer Network (ECN)
Library
May, 1976

Program Name

- Real Estate Programs -

CIT Compound Interest Tables provides 6 factors associated with compound interest tables. Output is formatted to conform the "Ellwood Tables" book.

RATES Rate of return calculations. Program will provide present value, internal rate of return, and adjusted rate for an arbitrary set of net receipts and investments.

ELLWOOD Provides analysis "ala Ellwood" text, 3rd edition.

ELWPLOT Produces the "Ellwood" plot of appr/depr versus time and rate of return.

MKTCOMP Market Comparison Program will adjust a set of comparables on the basis of a subject property. User provides selection of factors, a comparable file and a subject file.

MKTSTAT A program to reformat existing MKTCOMP comparable files for a statistical (STATSYST***) run. The program is self documenting and initiates the run for deferred or overnite processing. The user must be familiar with statistical terminology to interpret output.

MINIMOD A basic cash flow analysis model with file input.

MEDIT An edit program for MINIMOD data files.*

IMV The IMV program is actually two programs in one. The First program will calculate the market value (market value is unknown) of a project based on either a specific after-tax yield or a specific before tax yield. The Second program is the reverse of the first type in which case the program will calculate both the after tax and before tax yield (rate of return is unknown) for a given project.

AIP Analysis of Investment Potential. An advanced cash flow analysis model with data file input.

AIPEDIT An edit program for AIP data files.*

MRCAP This program is an advanced cash flow analysis model with data file input. Available summer 1976 this program will evaluate an income stream generated by known capital components in a fashion very much like either MINIMOD or AIP. Alternatively the program can first develop the Capital Budget in a fashion similar to IMV and there evaluate the income stream.

Regardless of which option above is selected the program can also provide individual cash flow statements for as many as 15 unique partnerships.

A detailed users manual is in production and will be available.

DAP Design Analysis Program writeup available for \$10 from John Nabors, John H. Nabors & Associates, Suite 210, Empire Gardens Building, 1165 Empire Central Place, Dallas, Texas 75247.

BFCF Cash flow program - summary input, one page output.

CONVERSE Conversational input preprocessor for (1) Minimod, (2) Preliminary land development model.

LDML Preliminary land development model (accessed thru converse)

WRAPMTG (In development-est. avail. July 76; on-line msg. will notify users) Program to provide calculations for wrap-around mortgage combinations.

RENTBUY Oriented toward brokers, this program will show short and long term advantages of purchase over rental.

MAILBOX A program to provide intercommunication among ECN subscribers. Addressee is notified of message upon signing in. Self documenting.*

READTAPE A procedure to help you enter a tape file, even it contains errors which prevent use of the TAPE command. Self documenting.*

HELP A program to provide intercommunication to ECN personnel in order to get assistance or answers to questions (self documenting)*

USERS Program produces a list of user numbers and user names for ECN subscribers (User numbers are required by MAILBOX).

NEWS** A Listable file (not a program itself) which provides recent news of ECN developments*

- Billing Information Programs -

(These programs, for the most part, require little or no user input)

COST Will show dollar cost of current terminal session since sign-in.

GECOST Will show total computer charges for last month and current month to date (yesterday).

GEBILL Will provide computer charges by Project ID for last month.

LIBBILL Will provide library usage log by date, time project ID and will show total usage and royalty charges for last month.

FILELIST Will provide a list of files stored, size, date of last access and modification.

CHGPASS Program will allow user to change own password. Self documenting.*

* No library access charge applied at this time.

REGPLOT

The dependent or plotted variable is the resale price expressed as a percentage of original price. The net income pattern is known and entered in the input as one of the independent variables. The cap rate may vary with respect to time. There is no assumption that there will always be the same relationship between net income at time of sale and selling price.

JAYPLOT

The dependent or plotted variable is the resale price and net income level at time of resale expressed as a percentage of the original price and income level. The net income pattern is not entered as a part of the input. It is assumed that the cap rate will be fixed with respect to time. In other words, there will be a constant relationship between net income at time of sale and resale price.

STARTING THE PROGRAM

The user calls up the desired program by typing OLD REGPLOT or OLD JAYPLOT. When the computer says READY, the user starts the program with the command RUN. The computer will type the title, explanation and then ask for the input with a series of questions. The input is entered in the same manner for each program. If the user specifies REGPLOT the computer will ask four questions. If the user specifies JAYPLOT the computer will omit the third question but the other questions will be identical. In order to illustrate the proper format, the sample printout for REGPLOT will serve as a model. The format for JAYPLOT is the same except for the omission of the third question.

INPUT

The user is required to specify the scale dimensions, the overall rate, the interest rate on the mortgage loan, the annual constant on the mortgage loan, the loan to value ratio, the rate of change in net income, and 5 equity yield rates to be analyzed. All input is entered by the user in response to 4 questions. Note that the accompanying sample REGPLOT printout shows 4 questions under "INPUT", namely

SCALE?

R,I,F,M?

ANNUAL RATE OF GROWTH (OR LOSS) IN NET INCOME?

EQUITY YIELD RATES B,C,D,E,F?

ELLWOOD CASE #2
FILE #
3/1/77

INTRODUCTORY ELLWOOD CASE #2

The Old Dog Appraisal Company has been asked to provide a value based on the income approach, specifically using the Ellwood approach, complete with an Ellwood graph of alternative yields and a proof, to support a real estate tax appeal. Analysis of the property has provided the following elements of information:

- Net operating income is \$100,000 per year before deduction of real estate taxes
- Leases in the neighborhood center roll over every five years with an expected net increase of 15%
- The real estate tax mill rate is .03 and the equalization rate is .67 so that taxes are effectively .02 of value
- The investor wants a five year projection
- Market indicates investors expect 13% equity return

	<u>1st Mortgage</u>	<u>2nd Mortgage</u>
Interest Rate	.105	.12
Term	30	
Debt Service Constant		.143
M (Mortgage Ratio)	.75	
M\$ (Mortgage Amount)		120,000
Payment Periods/Year	4	12

Instructions:

- Step 1 - With your terminal team, log-on by dialing the telephone and establishing contact with the computer.
- Step 2 - When the computer indicates ready, call for old Ellwood and follow the drill exactly as found on the opposite page. As the terminal asks questions, make all the entries indicated on the example in hand.
- Step 3 - When you have completed the entire run, read back through the program to see if you can crack the code or cryptic notations:
 - a. For example: What is the purpose of entering a question mark (?)?
 - b. What is "mode"?
 - c. Did you enter any percentages as 9 instead of .09? Did it work? Why?
 - d. Does typing 0 (zero) mean the same thing as entering nothing?
 - e. How do you indicate the number of mortgages to the program?
 - f. How do you specify a mortgage as a % of valuation vs. a particular dollar amount?
- Step 4 - When the first team member has finished the initial run, type HELLO. This will maintain telephone contact but will require the next team member to log-in and repeat the exercise with some variation of his own choosing. All exercises on the example run should be done at least once by various members on the team so that each has the practice of logging-in and directing a form of output.

UN=UCE97035,
PASSWORD

ID:JAG
EDUCARE COMPUTER NETWORK 09/30/80 17:16CDT

(Terminal inputs are underlined)

USED 1.23 UNITS
SPEED 30
READY
OLD E=LWOOD
WHAT?
OLD ELLWOOD

READY
RUN -10

ELLWOOD 17:18CDT 09/30/80

REVISED 6/17/75

1 EQ YLD? ?
EQUITY YIELD RATE DESIRED

1 EQ YLD? .13

2 PROJ PD? 5

MORTGAGE 1 DATA

4 MTG INTR? .105

5 MTG PD? 30

7 PNT PDS/YR? 4

10 M? ?

MORTGAGE AMT AS A % OF VALUE, IF UNKNOWN PRESS RETURN

10 M? .75

MORTGAGE 2 DATA

14 MTG INTR? .12

15 MTG PD?

16 MTG CON? .143

17 PNT PDS/YR? 12

20 M?

21 M\$? 120000

MORTGAGE 3 DATA

24 MTG INTR?

52 XDEPR(-APPR)? -.15

55 INC? 100000

53 % INCR INCOME? 0

58 EF.R.E.TX.R.? .02

.0249901 = MTG 1 C

.0111554 = MTG 2 C

.1100936 = BASIC RATE

.1069464 = OVERALL RATE

935048 = VALUATION

MODE? P

You may enter a "?" to get a more complete description of any of these questions.

indicates that only "return" was entered

MORTGAGE1	75%	701286	AT .1099	77074
MORTGAGE2	13%	120000	AT .1430	17160
EQUITY	12%	113762	AT *-.1137	-12935
			R.E.TAXES	18700
TOTAL		935048		100000 INCOME

935048 ORIGINAL PRICE
-140257 LESS -15.% DEPRECIATION

1075305 PROPERTY REVERSION, DEFERRED 5 YEARS
701286 MORTGAGE 1
679040 22246 LESS 5 YEAR AMORTIZATION; (3.17211E-2)
120000 MORTGAGE 2
101216 18784 LESS 5 YEAR AMORTIZATION; (0.156534)

295049 EQUITY REVERSION, DEFERRED 5 YEARS

PRESENT VALUE OF EQUITY INCOME AND REVERSION AT 13.%

-45498 INCOME, -12935.8 X 3.51723
160140 REVERSION, 295049. X 0.54276

114642 TOTAL

MODE? T
IS INCOME CONSTANT? YES
ENTER OVERALL RATE FOR ANAL.? .138396
ENTER 1 TO 4 PROJ. PDS? 2,5,8,10
ENTER 1 TO 6 EQ. YLDS? 8,10,13,15,18,21

YIELD ANALYSIS WITH
CONSTANT INCOME, .138396 = R

YRS	2	5	8	10
YIELD				
.0800	-.0802	-.2153	-.3896	-.5331
.1000	-.0716	-.2026	-.3789	-.5292
.1300	-.0592	-.1834	-.3612	-.5207
.1500	-.0514	-.1705	-.3481	-.5127
.1800	-.0401	-.1509	-.3259	-.4962
.2100	-.0294	-.1310	-.3001	-.4728

MODE? I
 IS INCOME CONSTANT? NO
 ENTER OVERALL RATE FOR ANAL.? .138396
 ENTER 1 TO 4 PROJ. PDS? 2,5,8,10,15
 ENTER 1 TO 6 EQ. YLDS? 8,10,13,15,18,21

YIELD ANALYSIS WITH
 VARIABLE INCOME, .1383960 = R

YRS	2	5	8	10	15
YIELD					
.0800	-.0663	-.1499	-.2321	-.2885	-.4437
.1000	-.0591	-.1405	-.2240	-.2832	-.4543
.1300	-.0489	-.1266	-.2112	-.2744	-.4715
.1500	-.0424	-.1173	-.2021	-.2676	-.4830
.1800	-.0331	-.1034	-.1873	-.2555	-.4987
.2100	-.0243	-.0893	-.1709	-.2404	-.5094

MODE? C
 #,NEWVAL? 53,.025
 #,NEWVAL?
 .0249901 = MTG 1 C
 .0111554 = MTG 2 C
 .1100936 = BASIC RATE
 .1060150 = OVERALL RATE
 943263 = VALUATION
 MODE? Q

USED 6.80 UNITS
RUN COST

COST 17:23CDT 09/30/80

ACCRUED CHARGES SINCE SIGNIN
 \$ 1.41 COMPUTER
 1.52 CONNECT
 0.42 CHARACTERS
 \$ 3.35 TOTAL
 EFFICIENCY = 28.0

USED .47 UNITS
 BYE
 00008.87 CRU 0000.12 TCH 0003.25 KC

OFF AT 17:23CDT 09/30/80

Class Exercise #1 - Rates Problem 2/74

Good Deal Development Company has an opportunity to purchase land for a shopping center, sell off two 20-acre pads to major department stores, and then develop the remaining sandwich land as a total regional shopping center. Following the development phase which is done partly on its own money and partly on construction loan, it will be able to refinance the whole deal on the strength of its net income from leases. GD Developers will sell the project when it reaches peak value 7 1/2 years after it initially exercised the option.

While most of the action will occur through a specially created joint venture entity, the schedule of net outlays and receipts to the parent corporation (after all financing and income taxes have been paid) has been estimated for two alternative plans: one will sell the pads to the major department stores; the other plan would build and lease the facilities to the two department stores. As a result of previous Good Deals the company has made, their cost of capital is 20%.

OUTLAYS

Date	Case #1		Case #2
1/1/71	-5,000	Option and Land Search	- 5,000
6/1/71	- 15,000	Engineering Studies	- 15,000
9/1/71	- 600,000	Closing - 120 acres	- 600,000
9/1/72	- 300,000	Working drawings, fees, etc.	- 400,000
1/1/73	- 100,000	Lease Commissions	- 200,000

RECEIPTS

Date	Case #1		Case #2
4/30/72	200,000	Sell 2-20 acre department store	0
6/30/73	40,000	Monthly for 5 years	65,000
8/30/73	400,000	Net balance on refinancing	0
6/30/78	400,000	Sale	800,000

Which of the two plans offers the best of internal rate of return, compounding monthly? annually?

Which alternative is the better investment when recognizing cost of capital at 20%? 40%?

Class Exercise #2 - Rates Problem

The S-M Development Company can purchase forty acres which can be subdivided into eighty fully improved single-family lots. These lots will sell for \$6000 each net of all sales and administrative costs. Two different financing plans are available. One will provide a \$200,000 blanket loan at 8% add-on interest to be advanced when development construction is complete. The other alternative financing plan will provide \$240,000 for both the purchase price of the land and construction of improvements at 10% add on per annum. Both loans have installments each six months geared to lot sales closings. Opportunity cost of equity money is 12%.

Under financing option #1, the schedule of outlays and receipts is as follows:

Outlays

1-30-67	\$1,000	Option on 40 acres
5-1-67	\$5,000	Preliminary engineering and legal expense
6-3-67	\$30,000	Closing land purchase
5-31-68	\$160,000	All development costs
8-1-68	\$35,000	Loan payment, 1st of 8 payments to be made each 6 months

Receipts

6-15-68	\$200,000	Blanket loan proceeds
7-31-68	\$60,000	Net cash receipts on lot closing, each 6 months for 4 years

Under financing option #2, the schedule of outlays and receipts for the equity investor is as follows:

Outlays

1-3-67	\$1,000	Option on 40 acres
5-1-67	\$5,000	Preliminary engineering and legal expense
8-1-68	\$42,000	Loan payment, 1st of 8 payments to be made each 6 months on \$240,000 credit line for land and construction

Receipts

7-31-68	\$60,000	Net cash receipts on lot closing, each 6 months for 6 years
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Page #	
	<i>AIP PROGRAM</i>
1	INTRODUCTION TO INCOME PROPERTY ANALYSIS
3	PROGRAM EXECUTION
4	INPUT DATA FILE PREPARATION
6	INPUT DATA FILE INSTRUCTIONS
12	SAMPLE INPUT DATA WORKSHEET
15	CASH FLOW ANALYSIS (INCOME PROPERTY ANALYSIS-OPTION 1)
16	CONVERSATIONAL QUESTIONS
18	FIRST APARTMENT SAMPLE
23	SECOND APARTMENT SAMPLE
26	OFFICE BUILDING SAMPLE
29	INVESTMENT AND TAX CALCULATIONS
30	LOAN SUMMARIES (INCOME PROPERTY ANALYSIS-OPTION 2)
31	CONVERSATIONAL QUESTIONS
32	SAMPLE LOAN SUMMARY
33	DEPRECIATION SUMMARIES (INCOME PROPERTY ANALYSIS-OPTION 3)
34	CONVERSATIONAL QUESTIONS
36	SAMPLE LOAN SUMMARY
39	LOAN AMORTIZATION (INCOME PROPERTY ANALYSIS-OPTION 4)
41	CONVERSATIONAL QUESTIONS
42	SAMPLE LOAN AMORTIZATION
43	CASH FLOW & FINANCIAL ANALYSIS (INCOME ANALYSIS-OPTION 5)
44	CONVERSATIONAL QUESTIONS
46	FIRST APARTMENT SAMPLE
50	OFFICE BUILDING SAMPLE
54	KEY RATIOS
55	DEFINITION OF TERMS
57	TAX REFORM ACT OF 1969
60	ERROR MESSAGES - INCOME PROPERTY ANALYSIS
61	MASTER INPUT DATA WORKSHEET

EDUCARE has made available a versatile computer program which can be used to provide a thorough and accurate financial analysis of any income producing property.

This program is useful to:

Appraisers
Real Estate Brokers
Real Estate Developers
Estate Planners
Property Managers
Financial Advisors

Mortgage Companies
Savings & Loans Companies
Banks
Investors
Accounting Firms
Market Research Firms

The EDUCARE AIP Income Property Analysis program has easy-to-use options which allow the customer to select the information that he needs for a specific purpose. These options are:

- 1) **CASH FLOW ANALYSIS**
Projections of fixed or variable incomes, expenses, cash flows and returns on equity.
- 2) **LOAN SUMMARY**
Annual loan status analysis. Provides Beginning Balance, Principal and Interest amounts paid and annual payment amounts for various loan types. Allows you to begin the Loan Summary at any time in the loan life.
- 3) **DEPRECIATION SUMMARY**
Annual depreciation analysis. Provides the Straight Line Depreciation amount, accelerated depreciation amount and the excess depreciation amount for each depreciable item for each year.
- 4) **LOAN AMORTIZATION SCHEDULE**
Amortization schedules. Provides Loan Balance, Principal and Interest payments for any payment frequency that you desire. Any type of loan may be amortized, including FHA insured, interest-only, etc.
- 5) **CASH FLOW AND FINANCIAL ANALYSIS**
Provides an abbreviated version of option 1 and also provides an annual equity position and tax analysis. The tax analysis assumes a sale at the end of each year and computes the tax on capital gains and ordinary income.

The EDUCARE AIP Income Property Analysis offers the following advantages:

- * The printout is easily readable and designed for customer or management presentations without having to retype in a more convenient format.
- * The 1969 Tax Reform Act changes are accurately computed. The program does not average or take other shortcuts which can result in sizeable inaccuracies in the tax computations.
- * The customer has a choice as to the type of information he receives. You pay only for what you need.
- * The printout generally follows NIREB Form B for the presentation of information.
- * The Users Manual is designed for the customer's convenience. It does not assume that you are already a time-sharing specialist.
- * Custom modifications can be made easily and inexpensively.

M K T C O M P

Market Comparison Program
September 1972

INTRODUCTION

The market comparison approach to real estate evaluation permits the appraiser to combine his insight, experience, and judgment with a semi-automatic, mathematical technique in order to arrive at market value from a set of comparable sales. The purpose of MKTCOMP is to implement this mathematical procedure without placing any constraints upon the manner in which the appraiser wishes to express his judgment.

There are five functional steps to processing a market comparison appraisal of a single subject or of several subject properties in a batch. The user must begin by preparing three separate data files. First, the user would create a comparable sale file as the data set from which the market comparison value of a subject property is to be determined and this file becomes a permanent resource with appropriate updating. It is designed to adapt to the factor file which allows the user to express the basis or items on which a subset of comparables are selected and adjusted for comparison. Third, there is a subject file which provides for the identification and description of one or more subject property. The fourth step in the process is specification of decision Rule 5 by which a subset of comparables will be selected from all the properties in the comparable file. Finally, the user can control the output of MKTCOMP by selecting eight different "report" components. These five elements of the system are described below with examples and demonstrations of flexibility and options for the user.

THE FACTOR FILE

It is best to begin design of your MKTCOMP system by defining a factor file, this establishes items for which you will wish to collect information to be included in the comparable file. The comparable file describes each property sale according to attributes which might play a part in the appraisers adjustments. The factor file has the following structure, in this case named FACIFAM (abbreviation for "factors for one family residences; you may use up to 8 characters to name files of factors for different types of buildings, different towns, etc.

FACIFAM	02/15	20:15CST
100 PRICE, 0, 1		
110 SALE DATE, 2, .04		
120 LOCATION, 1, 500		
130 ADJ. AGE, 2, -.02		
140 CONST QUAL, 2, .05		
150 CURB APPL, 2, .05		
160 LOT SQFT, 3, 11		
170 BLDG SQFT, 1, 11		
180 #PD STALLS, 1, 1200		
190 MISC., 1, 1		
200 PR/LSQFT, 5, 0		

There is a numbered line for each factor or item on which adjustments for comparison may be made. Price is always in the first line and the user may list up to 25 different factors. (e.g. increasing the line number by 10 to a maximum of 340 as the highest line number).

Each of these lines contains 3 entries - (1) the name of the factor, (2) a type code, and (3) the rate at which adjustments for comparison are to be made.

PRICE is always the first factor (line 100 and its type code is unique and always in "0". The third entry for the price line is always "1". (Remember this file is structuring information about a comparable sale and about adjustments to be made when compared to a subject property. There will be another file which gives the actual price, sales date, and other information about each comparable).

Factor Name

The factor name may have as many letters and spaces as you wish not to exceed 10 spaces and must be followed by a comma. Since these names can be included in the report output they should be self evident or written out in full. The order of these factors will determine the order of data items which describe an actual comparable sale property so the user should follow a logical sequence which is useful and convenient when coding information. For example, following sales date, there might be 3 components to a location, such as the postal zone number, a neighborhood code number related to the users map of his market area, and a street number with a numeric code for each street in the neighborhood or community. Each of these would require one line and a factor name.

Type Code

A type code follows the name of each factor and there are presently 5 code types.

- Type Code 1 designates factors for which the adjustment to be made is specified in number of dollars. (In the example above each additional parking stall in a garage is assumed to be worth an additional \$1200 and each additional square foot of building is assumed to be worth \$11)
- Type Code 2 designates factors which compare on a proportion or percentage of the sales price. (In the example adjusted age provide for an adjustment for the difference between the age of a comparable and a subject property is associated with a 2% decline in price, thus a -.02). Similarly each increment in a construction quality code number describing a comparable would be associated with a 3% adjustment in price. The construction quality code number assigned to each comparable by the user is optional and subjective.
- Type Code 3 adjustments to be made using data associated with each comparable. In order to provide this capability an additional variable or factor must be added to the comparable file. The third entry in the factor is then the number of the position of the variable which contains the variable to be used at the rate of adjustment. In the example, variable 11 indicated that either the \$ amount in the

comparable file in position 11 will be used if given or the adjustment will be used from line 200 as the price per square foot of lot.

Type Code 4 operates in the same way as #3 with the exception being that the adjustment is made on the basis of percentage of price as in a Type Code 2.

Type Code 5 is the coding required for an entry such as line 200 which is referred to by a Code 3 or Code 4 factor. The Type Code 5 designates factors which do not play a role in the adjustment process unless referred to by another factor with a type code of 3 or 5. A factor line with a Type Code 5 must also contain a third entry to conform to the format of 3 entries per line - specifically an "0" as in line 200 above.

Not all factors must be used for any particular set of comparables as there is a great variety of selection rules with which the basic data bank and adjustment factor file can be focused selectively for a particular subject property or group of properties and these will be discussed under SELECTION RULES. A worksheet is provided for developing a factor file prior to data entry on the terminal.

THE COMPARABLE FILE

The comparable file is the data bank which gives sales prices and property attributes for each transaction validated by the user as a market sale. This file contains nine fictitious comparables and each contains data items which correspond in sequence with those described in the factor file. A sample file called COMPIFAM - East Madison is illustrated below:

COMPIFAM	02/15	20:15CST
100 111 1ST ST		
110 31000, 71.00,3, 5, 5, 3, 11160, 1500, 2, 0, .40		
120 222 2ND ST		
130 24000, 71.25, 3, 8, 1, 4, 15000, 1150, 0, 0, .40		
140 333 3RD ST		
150 26000, 71.75,4, 6, 3, 2, 10060, 1200, 1, 0, .60		
160 444 4TH ST		
170 35000, 72.00, 5, 3, 4, 3, 8800, 1800, 2, -750, .50		
180 555 5TH ST		
190 29000, 71.50, 3, 8, 3, 3, 17640, 1300, 1, 0, .55		
200 666 6TH ST		
210 26000, 71.00, 2, 5, 3, 2, 14380, 1300, 1, 0, .50		
220 777 7TH ST		
230 23000, 69.50, 4, 5, 2, 2, 14480, 110, 0, 0, .50		
240 888 8TH ST		
250 32000, 70.75, 2, 2, 4, 4, 10340, 1600, 0, 0, .40		
260 999 9TH ST		
270 26000, 71.75, 4, 6, 2, 3, 20820, 1300, 1, 0, .60		

Identifier Line

The first line of entry for each comparable must be an identifier. This can be any series of alphabetic and numeric characters and the address and street name is only a suggestion (since the comma character is used as punctuation, a comma is not permitted as part of the identifier unless the entire identifier is also enclosed in quotation marks, the upper case of the digit 2 on the basic teletype.

Factor Quantities

The second line of entry for each comparable will be the numeric variables which describe the transaction and property.

- (1) The first of these numeric variables must be price; subsequent variables provide values or quantities for the factors named in the factor file. Qualitative items such as curb appeal or location or construction quality might be coded 1 - 3 or 1 - 5 on criteria selected by the user.
- (2) In the sample shown above the second factor is the sale data measured in years with months as decimals. The quantity 61.75 is associated with September of 1971.
- (3) In the sample shown above the fourth comparable shows -750 as the entry for miscellaneous (MISC). This deduction of \$750 (relating to a Type Code 1, a \$1 adjustment x 750) from this property was one determined by the user as being associated with some condition relative to the comparable sales price (such as terms or non-market bargaining power) not specifically described in the factor file. It might have been a wet basement discovered after the sale as chronic to 444 Fourth Street, which shows the flexibility of data management sensitive to the experience of the appraiser using MKTCOMP.
- (4) It is not necessary that the identifier and numeric data appear on separate lines. They may appear on one line provided that the identifier is followed by a comma. The user will probably find that it is far easier to check the validity of his data after it is prepared if some relatively uniform format is followed for the entire comparable file. Any departure from the required sequence of values, in this case one identifier followed by eleven numeric entries, will produce file reading problems.
- (5) A worksheet is provided for developing a comparable file prior to data entry at the terminal.

THE SUBJECT FILE

The subject file provides a description of the property or multiple properties to be appraised.

SUBJ

02/15

20:17CST

100 1234 E. MAIN ST

110 0000, 72.50, 4, 6, 3, 4, 10000, 1350, 1, 0, 55

The format of this file example above is identical to the format of the comparable file. It must contain an identifier, a price entry of "zero", and sufficient additional variables to complete the list specified in the factor file. In this case eleven numeric entries appear in the line following the identifier and even though the price is not known, the entry must NOT be omitted, thus the "000".

Multiple subjects may be processed by including them in sequence in the same subject file. They must each conform to the required format and each will be processed in turn using the market comparison program.

Sample output is shown on the following pages. In running the program the user is required to enter the names for the factor, comparable, and subject files.

REPORT SECTION CHOICES

The user may control execution of the program by entering the report "sections" desired as part of the output. In addition to the list of eight report sections, if no report sections are selected a brief adjustment summary will be shown using ALL comparables in the comparable file. Report sections also identify optional commands to create a selective subset of comparables from the total comparable file. When operating the model the computer will ask for the report section selected as follows and the user can supply a number or ask for a listing of options:

SPECIFY REPORT SECTIONS SELECTED (0 FOR LIST)

? 0

LIST OF REPORT SECTIONS

1-LIST OF FACTORS READ

2-LIST OF COMPS READ (NAMES ONLY)

(USE 1, 2 AND 5 TO LOCATE FILE READ PROBLEMS)

3-ADJUSTMENTS MADE FOR COMPS

4-ADJUST. SUMMARY (ALWAYS PRINTED)

5-LIST OF VALUES READ FOR EACH COMP

6-ENTER SELECTION RULES

7-READ NEXT SUBJ

8-READ ALL SUBJ

9-CHANGE FACTOR ENTRY

1 - A list of the factors by name only

2 - a list of the comparable identifiers

3 - a detailed presentation of the adjustments made for each comparable

4 - a summary report showing the average and standard deviation of the price before and after adjustment together with the averages and standard deviations of the adjustments made for each of the factors.

5 - a list of each of the numeric items read from the comparable file. This list will be printed following the associated comparable identifier. (This output may be very lengthy for large COMP files).

- 6 - an optional selection operation with which to refine and reduce the number of comparables to focus on the problem. These rules are discussed in the following sections.
- 7 - a command to the system to move on to the next property listed on the subject file when multiple properties are being appraised. With this option it will be possible to change the selection rules for each subject property to be appraised in contrast to:
- 8 - a command to proceed with the market comparison valuation of all the remaining properties in the subject file according to the selection rules finally established for the first subject property, thus permitting batch processing of a group of properties on a consistent set of rules for the selection of comparables as might be desirable for tax assessment valuation.
- 9 - a command to allow the user to change the type or rate of factors currently being used.

The way in which the market comparison program operates depends upon the sequence of report section selections and selection rules and this relationship is shown in the flow chart at the end of this description.

SELECTION RULES

The market comparison approach is really the application of set theory and the total comparable file is the total set. The appraiser searches the file to create progressively smaller subsets that are more and more comparable to the subject property by creating smaller and smaller divisions with selection rules to define a subset. For example, in appraisal practice the appraiser typically defines the neighborhood in which he is seeking comparable sales, perhaps certain streets, then a structure type such as one story ranch, then a price range, then a number of rooms, a lot size, etc. If he creates too many specifications none of the sales data may qualify or only one which may not represent competitive market choices consistent with the spirit of the principle of substitution. In that case he removes one or more requirements until he has five or more sales and then begins a process of adjusting prices for the differences between the features of the subject property and those of the remaining comparables. This is the process provided for by the selection rules feature of MKTCOMP. The user may create a subset of comparables by screening and searching the comparable file with a sequence of up to 10 selection rules. This search and adjustment process may be applied repeatedly by reviewing the adjustment summary and deciding if one has too many or too few comparables or when one has reduced the standard of the average to an acceptable level. Selection rules may be added, deleted, or changed by control from the terminal.

The format for entering selection rules is as follows:

(RULE#), (TYPE), (FACTOR), (VAL1), (VAL2), ETC.

The rule number must be a number between 1 and 10. If a previous selection rule is to be changed that change is made by starting a new line and reentering another rule with the same rule number.

The rule type is either 0, 1 or 2. Rule type 0 is used to eliminate a previously entered rule. A Type 1 rule specifies a range within which comparable quantities would qualify for selection. A Type 2 selection rule provides for specific values which must match entries in the comparable file.

The factor to be entered is the name of the factor in the factor file. For a Type 1 selection rule, two values follow the factor name which are the lower and upper limit for selection. Only comparables which have factor values falling within this range will be used in the adjustment process. For Type 2 selection rules at least one of the values following the factor name must match the factor value or the comparable to be selected. Terminate entries by pressing "Return".

FACTOR CHANGES

The user may change the current factors by entering:

(FACTOR), (TYPE), (RATE)

The factor name must match a previous factor, the new type and rate will apply for subsequent adjustments. (Note that any factor may be "eliminated" by changing it to Type 5). The original named factor file is unchanged. Terminate entries by pressing "Return".

A SAMPLE RUN

The process of using the files above and controlling the program using report sections and selection rules is best illustrated by the following facsimile terminal output based on some simple data files.

Market Comparison Program
-Enhancements-
April 1973

HIGHLIGHTS OF CHANGES

A number of important changes have been made to the Market Comparison Program MKTCOMP. These changes are in the nature of extensions and do not effect the previous operation of the program in any way. The most significant new feature is that the program will select from a large set of comparables, a "best set" based on an index of comparability calculated within the program. This feature of the program isn't intended to replace a careful selection of comparables and doesn't eliminate the need for entering selection rules so that a proper subset of the comparable file is assessed by the program. It does provide the user with the capability of locating from among a larger set of selected comparables, those which require the least adjustment in order to come up with an adjusted price. This method is particularly useful in dealing with data bases which contain many comparables.

The program has also been extended to allow the user to specify a T-ratio limit other than 2 which has been the only value permitted to date. This will allow the users to calculate an average of only those comparables which fall into a very narrow range. Two additional alternatives are provided for the presentation of individual comparables after selection. In addition to providing a list of comparables which shows each individual adjustment to that comparable in reaching the average, an option is offered whereby only the comparable identifier, the original price, and the adjusted price are printed. A further abbreviation is offered whereby only the identifiers are printed. The program also has been expended to provide an optional 1 line printout indicating the cost of the calculations made since the start of the program. Some of the new features provided, specifically those associated with calculating a "best set" of comparables involved slightly more costly computer operations than in the past.

DESCRIPTION OF NEW PROGRAM FUNCTIONS

The control of the program was previously exercised through the entry of numeric "report sections" since that title is somewhat misleading the term "report section" has in all cases been changed to "program function". This more clearly identifies the nature of the entry to be made by the user. The list below is a complete list of program functions available within the extended MKTCOMP program. New options 10-14 are further described below.

LIST OF PROGRAM FUNCTIONS

- | | |
|--|---|
| 1-LIST OF FACTORS READ | |
| 2-LIST OF COMPS READ (NAMES ONLY) | |
| (USE 1,2 & 5 TO LOCATE FILE READ PROBLEMS) | |
| 3-ADJUSTMENTS MADE FOR COMPS | |
| 4-ADJUSTMENT SUMMARY | |
| 5-LIST OF VALUES READ FOR EACH COMP | |
| 6-ENTER SELECTION RULES | |
| 7-READ NEXT SUBJ | 10-ABBREVIATED ADJUST. BY COMP.(IF 3 ALSO SELECTED) |
| 8-READ ALL SUBJ | 11-LIST SELECTED COMP ID'S |
| 9-CHANGE FACTORS | 12-ENTER NEW T-RATIO LIMIT |
| | 13-ENTER MAX NUM OF COMPS |
| | 14-PRINT COST INFO |

10-ABBREVIATED ADJUSTMENTS BY COMPARABLE

If function 3 is selected a complete list of all adjustments for each selected comparable is presented. In order to eliminate the printout of the individual adjustments and thereby reduce the volume of output function 10 can be selected in addition to function 3 and the printout of adjustments by comparable will be abbreviated to include only the comparable identifier, the original price, the adjusted price, the T-ratio and the comparability index (explained below).

11-SELECTED COMP ID'S

If program function 11 is specified, the list of all selected comparable identifiers will be printed.

12-ENTER NEW T-RATIO LIMIT

If program function 12 is selected the user will be asked to enter a new limit for the T-ratio. Unless this program function is used 2 will be used as the T-ratio limit. After the selection of comparables, an average adjusted price is calculated together with the standard deviation of the prices about that average. The adjusted prices are then re-examined and each of them which is more than 2 standard deviations away from the previous average is eliminated. This limit of 2 can now be changed to some other value at the user's option. All adjusted prices which exceed the limit are then again averaged and this second average is then printed in the adjustment summary.

13-ENTER MAXIMUM NUMBER OF COMPARABLES

This program function provides for the automatic selection of comparables based on a comparability index. The user is asked to enter the maximum number of comparables that he wishes to examine. This can be any value smaller than the number of comparables in the set but greater than 2. If for example the user should enter the number 6 then, if after the selection rules were applied, there remained more than 6 comparables only the best 6 of the remaining selected comparables would be used in the remainder of the calculation. This program function of course depends quite heavily on the definition of "best" or the index of comparability. The underlying assumption that has been made is that the "quality" of a comparable is based, in large measure, on the amount of adjustment necessary to change the original price to an adjusted price. Those comparables which require extensive adjustment are, by implication "poorer" comparables, than those which require fewer dollar adjustments in comparison with a subject property. The index of comparability calculated is portional to the amount of adjustment necessary and those comparables with the smallest index of comparability are considered "best". Specifically, the index of comparability is closely associated with the standard deviation of the adjustments and is the square root of the average of the squares of each of the adjustments made to a particular comparable. The more adjustments that are necessary and in particular the larger these adjustments the larger the index and the less likely that that particular comparable will be selected as one of the best. The comparability index is defined below in algebraic terms.

14-PRINT COST INFO

Program function 14, when selected, will cause a single line print-out prior to the adjustment summary which indicates the dollar value of computer usage since the beginning of the MKTCOMP program.

AN EXAMPLE

The operation of the MKTCOMP program can best be described and understood by the use of an example. A sample run using factor, comparable and subject files defined in the former write up is shown on the following pages.

OLD MKTCOMP

READY
RUN

MKTCOMP 11:12CDT 05/28/

SPECIFY FACTOR, COMPERABLE, SUBJECT FILENAMES
 ? FAC2, COMP2, SUBJ2 <
 SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
 ? 0
 LIST OF PROGRAM FUNCTIONS
 1-LIST OF FACTORS READ
 2-LIST OF COMPS READ (NAMES ONLY)
 (USE 1, 2 & 5 TO LOCATE FILE READ PROBLEMS)
 3-ADJUSTMENTS MADE FOR COMPS
 4-ADJUSTMENT SUMMARY
 5-LIST OF VALUES READ FOR EACH COMP
 6-ENTER SELECTION RULES
 7-READ NEXT SUBJ
 8-READ ALL SUBJ
 9-CHANGE FACTORS
 10-ABBREVIATED ADJUST. BY COMP. (IF 3 ALSO SELECTED)
 11-LIST SELECTED COMP ID'S
 12-ENTER NEW T-RATIO LIMIT
 13-ENTER MAX NUM OF COMPS
 14-PRINT COST INFO
 SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
 ?

*On-line demo files
are requested*

ADJUSTMENT SUMMARY

FACTOR	AVE	STD DEV	SUBJECT. P101
PRICE	38526	16213	.00
ADJUSTED			
PRICE	25716	6624	99 COMPARABLES
PRICE	24693	4932	94 COMPARABLES BETWEEN 14030.9 AND 36549.2

SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
 ? 14,6,4

SELECTION RULES

NEW RULES, FORMAT:
 (RULE#), (TYPE), (FACTOR), (VAL1), (VAL2), ETC
 ? 1,2,NBR,3
 ? 2,1,PRICE,20000,30000
 ?

*3 Bedroom properties
between \$20,000 and
\$30,000 are selected*

ADJUSTMENT SUMMARY

FACTOR	AVE	STD DEV	SUBJECT
PRICE	23674	2603	P101 .00
ADJUSTMENTS			
SQFT	-2475	3008	1490.00
GNDA	575	559	1240.00
QUAL	-708	1144	2.00
VIEW	400	1264	.00
RAV	-225	711	.00
ADJUSTED			
PRICE	21240	2666	10 COMPARABLES
PRICE	21872	1875	9 COMPARABLES BETWEEN 19803 AND 24975

Result of cost (14) request

3.10783 UNITS \$ 1.02558
 SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
 ? 14,13,3,4
 ENTER MAX # OF COMPS? 5
 10 COMPS SELECTED BY RULES
 BEST 5 USED

Program function 13 allows the limit of 5 comps to be entered. Message indicates further selection

ADJUSTMENTS BY COMPARABLE

COMP ID:	P24	P93	P66	P97	P89
PRICE	20935	23150	23307	21565	25351
SQFT	-330	880	1870	-330	-2860
GNDA	1053	944	-648	864	216
QUAL	0	0	0	-2156	0
VIEW	0	0	0	0	0
RAV	0	0	0	0	0
ADJUSTED					
PRICE	21658	24975	24529	19942	22707
T RATIO	-.53	1.07	.85	-1.36	-.03
C INDEX	450	527	807	957	1170

Comps printed in order of C-index. Best 5 of 10 selected by rules are printed

ADJUSTMENT SUMMARY

FACTOR	AVE	STD DEV	SUBJECT
PRICE	22861	1722	P101 .00
ADJUSTMENTS			
SQFT	-154	1771	1490.00
GNDA	486	713	1240.00
QUAL	-431	964	2.00
VIEW	0	0	.00
RAV	0	0	.00
ADJUSTED			
PRICE	22762	2073	5 COMPARABLES
PRICE	22762	2073	5 COMPARABLES BETWEEN 19942.5 AND 24975

3.82823 UNITS \$ 1.26332
SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
? 14,6,3

SELECTION RULES

1, 2, NBR, 3
2, 1, PRICE, 20000, 30000
NEW RULES, FORMAT:

(RULE#), (TYPE), (FACTOR), (VAL1), (VAL2), ETC

? 1,0
? 2,1,PRICE,15000,30000
?

32 COMPS SELECTED BY RULES
'BEST' 5 USED

Selection bedrooms (rule 1) eliminated and price range is increased

ADJUSTMENTS BY COMPARABLE

COMP ID:	P06	P24	P93	P80	P08
PRICE	23818	20935	23150	21228	19470
SQFT	220	-330	880	-220	-880
GND	378	1053	944	1701	1512
QUAL	0	0	0	0	0
VIEW	0	0	0	0	0
RAV	0	0	0	0	0
ADJUSTED					
PRICE	24416	21658	24975	22709	20102
T RATIO	.82	-.56	1.10	-.03	-1.34
C INDEX	178	450	527	700	714

Note that P06 is now the 'best' of the 32 originally selected. Also note the similarity of characteristics of P06 and subject; this is indicated by the small adjustments made

ADJUSTMENT SUMMARY

FACTOR	AVE	STD DEV	SUBJECT P101
PRICE	21720	1758	.00
ADJUSTED			
PRICE	22772	1995	5 COMPARABLES
PRICE	22772	1995	5 COMPARABLES BETWEEN 20102 AND 24975

4.89381 UNITS \$ 1.61496
SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
? 14,6,3

SELECTION RULES

2, 1, PRICE, 15000, 30000

NEW RULES, FORMAT:

(RULE#), (TYPE), (FACTOR), (VAL1), (VAL2), ETC

? 2,0

?

99 COMPS SELECTED BY RULES

'BEST' 5 USED

All selection rules now eliminated

Since the same set of comps remain 'best' output was terminated with break key

ADJUSTMENTS BY COMPARABLE

COMP ID:	P06	P24	P93	P80	P08
PRICE	23818	20935	23150	21228	19470
SQFT	220	-330			

8SPECIFY PROGRAM FUNCTIONS SELECTED (O F
0

R LIST)

? STOP

PROGRAM HALTED

Entering 'STOP' will terminate program.

OLD STATSYST***

READY

CREATE RFILE,,

THE FOLLOWING IS AN EXAMPLE OF THE USE OF MULTIPLE REGRESSION TO CREATE A REASONABLE FACTOR FILE

READY

RUN

A file must be created, or available for use by STATSYST

STATSYST 14:46CDT 05/28/

VERSION 19 FEB 73-LIST STATINFO*** FOR UPDATES

ENTER NAME OF RESTART FILE?RFILE

Comperable file is read into STATSYST. Note that prop ID must be included

READY

?READ(PROPID,PRICE,NBR,SQFT,GNDA,QUAL,VIEW,RAV)FROM,COMP2 BY CASE

All data is now saved (in RFILE) for later restart using RESTORE command if necessary

READY

?DUMP

Dependent followed by 6 indep. var. named

READY

?RUN MUL-CORRELATION(PRICE,NBR,SQFT,GNDA,QUAL,VIEW,RAV)6,3,0,0,1

VERSION 31 JAN 72 STEPWISE REGRESSION

PROBLEM: 1

VARIABLE	MEAN	STD. DEVIATION
NBR	3.474747E+00	1.380206E+00
SQFT	2.019394E+03	4.910398E+02
GNDA	1.529596E+03	6.997374E+02
QUAL	3.131313E+00	8.648046E-01
VIEW	1.414141E-01	4.950799E-01
RAV	1.919192E-01	4.443929E-01
PRICE	3.852605E+04	1.621317E+04

CORRELATION MATRIX:

VARIABLE:

NBR	1.0000000 0.0828466	0.3116391 0.2920372	-0.1669475	0.0754724	-0.0245871
SQFT	0.3116391 0.2871876	1.0000000 0.8059244	0.4997514	0.4231032	0.1951162
GNDA	-0.1669475 0.1908067	0.4997514 0.5855536	1.0000000	0.3386867	0.1250571
QUAL	0.0754724 0.4116821	0.4231032 0.6113030	0.3386867	1.0000000	0.3375153
VIEW	-0.0245871 0.2464234	0.1951162 0.4516027	0.1250571	0.3375153	1.0000000
RAV	0.0828466 1.0000000	0.2871876 0.4957996	0.1909067	0.4116821	0.2464234
PRICE	0.2920372 0.4957996	0.8059244 1.0000000	0.5855536	0.6113030	0.4516027

STEP 1	VARIABLE SQFT	ENTERED :	R= 8.059243E-01
STEP 2	VARIABLE VIEW	ENTERED :	R= 8.599926E-01
STEP 3	VARIABLE QUAL	ENTERED :	R= 8.880696E-01
STEP 4	VARIABLE GNDA	ENTERED :	R= 9.038585E-01
STEP 5	VARIABLE RAV	ENTERED :	R= 9.180547E-01
STEP 6	VARIABLE NBR	ENTERED :	R= 9.307895E-01

Coefficients on Rates to be used in factor file

VARIABLE	COEFFICIENT	STD. ERROR	PARTIAL F
NBR	2.071123E+03	5.144213E+02	1.620966E+01
SQFT	1.483982E+01	1.721933E+00	7.427194E+01
GNDA	6.300684E+00	1.122140E+00	3.152692E+01
QUAL	3.080995E+03	8.714780E+02	1.249882E+01
VIEW	7.721535E+03	1.343618E+03	3.302596E+01
RAV	6.364493E+03	1.551798E+03	1.682121E+01
CONSTANT	-2.023648E+04	6.117028E+03 (RESIDUAL)	

Note that E+03 means move dec. pt. 3 places right

86.64 % VARIATION EXPLAINED: 6 STEPS

NEW FAC2RGR

READY
TAPE
READY

100 PRICE,0,1
110 NBR,1,2071
120 SQFT,1,14.84
130 GNDA, 1, 6.3
140 QUAL, 1, 3081
150 VIEW, 1, 7725
160 RAV, 1, 6364
SAVE

Factor file named FAC2RGR previously punched on tape uses regression coefficients and used in place of FAC2 below

READY
OLD MKTCOMP

READY
RUN

MKTCOMP 15:03CDT 05/28/

SPECIFY FACTOR, COMPERABLE, SUBJECT FILENAMES
? FAC2RGR, COMP2, SUBJ2
SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
? 14,13,3,4
ENTER MAX # OF COMPS? 5
99 COMPS SELECTED BY RULES
'BEST' 5 USED

Note some similarity of comps in 'best' 5

ADJUSTMENTS BY COMPARABLE

COMP ID:	P06	P24	P93	P66	P59
PRICE	23818	20935	23150	23307	19645
NBR	-2071	0	0	0	0
SQFT	296	-445	1187	2522	2226
GNDA	882	2457	2205	-1512	2142
QUAL	0	0	0	0	0
VIEW	0	0	0	0	0
RAV	0	0	0	0	0
ADJUSTED					
PRICE	22925	22946	26542	24317	24013
T RATIO	-.83	-.81	1.62	.11	-.09
C INDEX	926	1019	1022	1200	1261

ADJUSTMENT SUMMARY

FACTOR	AVE	STD DEV	SUBJECT
PRICE	22171	1793	P101 .00
ADJUSTMENTS			
NBR	-414	926	3.00
SQFT	1157	1256	1490.00
GND	1234	1652	1240.00
QUAL	0	0	2.00
VIEW	0	0	.00
RAV	0	0	.00

Note slightly higher indicated value and lower STD DEV from prev run

ADJUSTED
 PRICE 24149 1476 5 COMPARABLES
 PRICE 24149 1476 5 COMPARABLES BETWEEN 22925.8 AND 26542.2

4.55992 UNITS \$ 1.50477
 SPECIFY PROGRAM FUNCTIONS SELECTED (0 FOR LIST)
 ? STOP
 PROGRAM HALTED

USED 4.59 UNITS
 OLD COST

READY
 RUN

COST 15:06CDT 05/28/

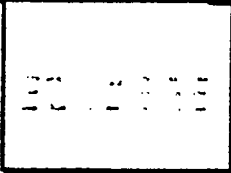
ACCRUED CHARGES SINCE SIGNIN
 \$ 1.61 COMPUTER
 \$ 0.59 CONNECT
 \$ 0.45 CHARACTERS
 \$ 2.65 TOTAL(93.24)

Cost of last MKTCOMP run only



USED .10 UNITS
 BYE
 0004.90 CRU 0000.09 TCH 0001.96 KC

OFF AT 15:07CDT 05/28/



DESIGN ANALYSIS PROGRAM

NEWSLETTER

February, 1975

Several program modifications have been made recently to the Design Analysis Program "DAP." These modifications will not effect the operation of the program as described in the USER MANUAL.

New Cash Flow Data File Entries

- 260 _____ Number of Units in Project (1-9999)
- 270 _____ Number of Land Lease Expenses (0-5)
- (271) _____
Land Lease Expenses (0, \$, or \$ per unit)
- (280) _____ Land Cost Variable (omit, 0 or \$)

In effect all of the above entries are optional--you may enter a value as instructed or leave entirely out of the data file and allow the default options to apply.

Default Values if 260-280 are not used:

- 260 1
- 270 0
- (280) (Same value entered on line 250)

Analysis on a Per Unit Basis

The entry of any value greater than 1 on line 260 will result in the nomenclature of the Cash Flow Analysis to be presented in dollars per unit and in some cases, in total dollars for the project.

When the number of units is equal to 1, all instructions in the USER MANUAL apply. When the number of units is greater than 1, the following variables will be input on an annual \$/unit basis:

- Line 201 Rental Rates**
- Line 204 Annual Parking Income
- Line 205 Other Income
- Line 207 Operating Expenses**
- Line 270 Land Lease Expenses

**Note that the entries for rental income and operating expenses can be \$/unit/year if more than \$50 is entered or \$/sq ft/year if \$50 or less is entered.

HOW TO USE

On the Pro Forma Cash Flow Table, the rental rates, expense rates, and land lease rates are output on a per unit basis along with the resulting Annual Cash Flows. On the Sensitivity Table, the appropriate sensitivity variables are shown in dollars per unit. On the Cash Flow Pro Forma Using Parameter Norms table, the values are all output on a Project basis and on a Per Unit basis.

Land Lease Expense

Up to five land lease values can be input to the cash flow portion of the program. If the land is to be purchased, no land lease entries will be entered. Lines 270 and 271 are used to enter the lease amounts in annual dollars for the building or per unit if line 260 is greater than 1. The land lease is the seventh type of parameter (variable) that can be output using lines 215-224.

Land Cost Variable

A value may be entered on line 280 to display the effect on cash flow of a given decrease in the cost of the land for the building. Generally this value is 10% to 20% of the estimated land cost. If no value is entered, the value on line 250 is used.

Sample Output

In order to illustrate the per unit output, the following data lines were added to the data file CASHX that was used in the USER MANUAL as an example:

260 100

270 0

The resulting Sensitivity Table and Cash Flow Pro Forma for the 150,000 square foot building are attached

Newsletters

Keep these Newsletters in the front of your USER MANUAL for handy reference of updates and helpful hints.

PROGRAM SUMMARY
DESIGN ANALYSIS PROGRAM

The Design Analysis Program is basically a method of determining a number of possible annual cash flows from a proposed income property based upon up to five different values of six different cash flow parameters:

- 1 = Rental Rates e.g. \$6.50/sq ft/yr
- 2 = Vacancy Rates e.g. 10% of potential rental revenue
- 3 = Expense Rates e.g. \$2.50/sq ft/yr
- 4 = Financing Conditions e.g. 9½% 30 yrs paid monthly
- 5 = Building Efficiency e.g. 85% of gross space
- 6 = Loan Ratios e.g. 90% of construction and land costs.

The basic format used is that of a planning format of an annual cash flow proforma: Rental Revenue adjusted for a Vacancy Allowance less Operating Expenses and Debt Service, yielding Annual Cash Flow.

This basic format reflects a single set of conditions that result in a single cash flow quantity. Actual practice reveals that parameter 1, 2, and 3 will constantly vary between years and within the year. Parameters 4 and 6 will be negotiated prior to construction by the developer, while parameter 5 will be established in the design phase and adjusted somewhat with the initial leasing strategy.

During the planning phase of an income property, best estimates of the values of these six parameters are utilized to prepare a cash flow pro forma. The DESIGN ANALYSIS PROGRAM allows the financial analyst to vary each parameter throughout a range of values to study the effect upon the pro forma annual cash flow. With five different values for six parameters, there are exactly 361 different annual cash flows.

The program allows the analyst to produce a 5 by 5 table of annual cash flows by varying one or two of the parameters over a range of values while using a primary or basic value for each of the other parameters. In addition, the breakeven rental rates or the rates of return on initial equity are given for the corresponding cash flows.

The total cost of construction and land can be input to the program or can be calculated through the use of the Construction Cost Estimate subprogram. The total cost of the structure can be computed from per square foot costs, component structure costs, professional fees, and land costs. Interim interest costs for land and construction are both computed.

FORWARD

The MRCAP program is an advanced cash flow program designed to provide for the simulation of a wide array of investment strategies associated with real estate ownership. The program can simulate ownership strategies for individuals, corporations or partnerships (both general and limited), for any holding period up to 25 years.

The program allows for the identification of fifteen capital assets financed with up to eight mortgages and distributed to a maximum of fifteen partnerships. The program also provides for modification of any or all of the input data and for the development of a sensitivity table to assist in strategy analysis.

The major objective of the MRCAP program is to develop a Pro-Forma Cash Flow Statement based on user supplied information. The program allows for two distinctly different approaches in the establishment of the Pro-Forma Statement.

The first approach is called the "FRONT DOOR" approach and represents the Capital Allocation form of real estate valuation. In this form the user supplies detailed information concerning income, expenses and capital costs. The program then develops the income statement and provides a ratio analysis which identifies the value of these elements to the investor or investors.

The second approach is called the "BACK DOOR" approach and represents the Revenue Justified (RJV) form of real estate valuation. In this form the user may supply market information (in the form of percentages) for all data categories except Gross Income and Before Tax Return. With this information the program will solve for the justified capital allocation costs and then proceed with the development of the Pro-Forma income statement.

ACKNOWLEDGEMENTS

The author wishes to express his sincere appreciation to the many individuals who have contributed to this program. Specifically, thanks are due to Professor James A. Graaskamp and H. Robert Knitter, of the University of Wisconsin School of Business, whose thorough review and constructive criticism of the computational logic of the program aided greatly in its overall success; to the Real Estate students who for the last three years have been supplying every test in the book to force the logic to fail.

And finally, special recognition is due to the author's wife, Linda, and daughter, Michele, who endured untold amounts of neglect while this program was in preparation.

Michael L. Robbins
1978

SELECTED PORTIONS OF

USER'S
GUIDE

Statistical Analysis System

STATSYSTEM

December 1971

The contents of this user's guide are sold on an "as is" basis. Buyer hereby waives all warranties, express or implied or statutory, including but not limited to any warranty of merchantability or fitness for use for a particular purpose.

GENERAL  ELECTRIC

INFORMATION SERVICES MARKETING DEPARTMENT

PREFACE

- This user's guide presents a system and a series of related programs which perform a wide range of statistical analyses. These programs are a part of an ever-expanding library of time-sharing programs for use by subscribers to the time-sharing service.
- Users need not be programmers. However, familiarity with the system is required. The MARK II Command System reference manual, publication number 711223, provides such information and should be used in conjunction with this user's guide.
- Listings of programs and routines available in the library are published in the Program Library Indexes for MARK I and MARK II, publication numbers 800000 and 900000, respectively. The terms under which library programs are made available to subscribers may vary between programs or they may vary with a given program from time to time. General Electric reserves the right to change these terms at its discretion. Any questions regarding use of the library programs should be directed to the General Electric representative.

TABLE OF CONTENTS

	<u>Page</u>
PREFACE	
INTRODUCTION	
Section 1.	1
A GENERAL CHARACTERIZATION OF STATSYSTEM	
Data Base Concept	1
STATSYSTEM Data Base	1
Section 2.	3
DATA INPUT USING ASCII FILES	
STATSYSTEM Data	3
Creating an ASCII File of Data	4
Section 3.	6
USING STATSYSTEM AND COMMANDS	
The RESTART File	6
Running STATSYSTEM	6
Data Entry [READ]	8
Data Transformation [SET]	14
Data Selection [FØR]	19
Data Sort [SØRT]	21
Data Printout [PRINT]	23
Data Plot [PLØT]	25
Data Modification [DELETE/ADD/REPLACE]	29
Status of System [STATUS]	36
Binary File Utilization [DUMP/RESTØRE]	38
Writing ASCII Files [WRITE/APPEND]	41
Print Out Computer Time Used [USE]	45
Stop Execution [STØP]	46
Aborting a Command [ABØRT]	47
Executing Statistical Analyses [RUN]	48
Explaining Selected Features [EXPLAIN]	50
Section 4.	52
STATISTICAL ANALYSES	
Introduction	52
Simple Statistics [STANDARD]	53
Univariate Summary Statistics [SUMMARY-STATISTICS]	57
Regression Analysis [CURVILINEAR-FIT]	70
Multiple Regression [MUL-REGRESSION]	75
Correlation Example	82
Stepwise Correlation Multiple Regression [MUL-CØRRELATION]	86
Data Display Routines	91
Options	92
Frequency Tables [FREQUENCY]	94
Histograms [HISTOGRAM]	95
Bargraphs [BARGRAPH]	96
Graphs of Cumulative Distributions [CUMULATIVE]	97
One-Way Analysis of Variance [ONEWAY-ANALYSIS]	105
Weibull Reliability Analysis [WEIBULL]	110
Chi-Square Test [CHI-SQUARE]	116
T-Statistics [T TEST]	119

■ Statistical computations have evolved through three generations. In the first generation numerous individual batch programs were developed. Each program required a unique input format which entailed considerable data preparation. As a result it was very difficult to run a number of analyses on the same set of data.

Statistical packages of batch programs, such as the BMD series, formed the second generation. These packages provided a large selection of analyses on a common set of data. Data transformation and selection capabilities were provided as additional, powerful data analyses tools. However, use of these packages required some knowledge of statistical analysis, programming, and a separate setup for each analysis.

The third generation of statistical computations was coincident with the advent of the time-shared computer. Various individual statistical programs were developed. Because of the ease of access and the employment of conversational time-shared programs their use far outstripped that of their batch counterparts. However, the old problem of the first generation returned. Each program had its own data input format, requiring considerable data preparation once again.

■ STATSYSTEM represents the beginning of the fourth generation. Its design allows data to be stored in various input files and to be entered only once; the user is permitted to perform a large variety of statistical analyses on the data. Flexible transformation and selection capabilities permit easy data manipulation to be performed on line, conversationally. STATSYSTEM is intended to be simple and easy to use, but is also powerful and flexible enough to meet the requirements of demanding users.

USER MANUAL
FOR THE
HOTEL-MOTEL
CASH FLOW PROGRAM

DEVELOPED BY

JOHN H. NABORS, JR.

COPY _____

PREFACE

The program "HOTEL" is one of a series of cash flow programs that was developed to assist the developer or the owners of a hotel in developing estimates of the cash flow from a hotel or motel.

The program is being developed on a continuous basis. The User Manual will be revised in the near future to reflect the final program format. User privileges are available for those EDUCARE members that have requested a USER MANUAL for the DESIGN ANALYSIS PROGRAM. Other users will be accepted upon application to the author.

A MAIL-IN Service is available from the author to users without time-sharing capabilities.

Telephones

Business Hours (214) 634-9283
Residence (214) 259-5888

UNTIL NOTIFIED OTHERWISE, "HOTEL" will not work in conjunction with the program "DAP". Thus, the data file for the program "HOTEL" must contain a 0 on line 100.

TABLE OF CONTENTS

	PAGE
PREFACE	a
PROGRAM DESCRIPTION	
Cash Flow Schedule	1
Sensitivity Schedule	2
Input Form Instructions	3
Input Data Form	4
Program Execution	8
Program Control	8
EXAMPLE	
Cash Flow Data File	9
Output From "HOTEL"	11
Discussion	20
MODIFICATIONS	.

PROGRAM DESCRIPTION

CASH FLOW SCHEDULE

The cash flow portion of the Hotel/Motel program provides the analyst with a flexible and simple means to prepare a cash flow analysis on any size hotel. Since most hotel operations can be broken down into five or six departments, the program allows up to six revenue and expense categories which can be used as departments.

Some of the features for the Cash Flow Schedule portion of the program are listed below:

- * Up to six income and expense categories (departments) can be used, two of which can be titled by the analyst.
- * Up to seven overhead expense categories can be used, two of which can be titled by the analyst.
- * Taxes & Insurance and Rental Income can be displayed before or after HOUSE PROFIT.
- * Up to three loans can be placed on the property.
- * Up to eight occupancy levels can be investigated in a single analysis at any given average room rates.
- * Revenue, expense and overhead ratios are presented for any one occupancy level.
- * Revenues can be entered as percentages of ROOMS income or in annual dollars.
- * Expenses can be entered as percentages of the corresponding income category or in annual dollars.
- * Overhead expenses can be entered as percentages of total income category or in annual dollars.
- * Any category that is not necessary may be deleted by the entry of 0 data on the input sheet.
- * Computer costs for eight occupancy levels should amount to less than \$10.
- * The Output is ready for reproduction and distribution.

The program can be used for financial planning for a proposed hotel or motel or for an operating hotel.

EDUCARE

SENSITIVITY TABLE

The Sensitivity Table produces a unique planning tool for the hotel/motel analyst. The Cash Flow Schedule presents the revenue and expense data in a manner related to different occupancy levels. In addition, revenue and expense ratios are presented for each category. The Sensitivity Table allows the analyst to increase or decrease these ratios and to investigate their effect on House Profit.

All revenue will be converted to percentages of ROOM REVENUE. Likewise, all expense categories will be converted to percentages of their revenue and all overhead categories will be converted to percentages of the TOTAL SALES. The sensitivity of the annual house profit to changes in various percentages can then be investigated. Note that all the ratios are based upon only one column of output, which is the first column in the sample analysis.

Three types of effects on house profit and cash flow are displayed. The simplest effect to use is shown as the Y-EFFECT which is the increase in annual house profit from a discrete increase of one percentage point in a revenue category without an increase in its expense category. Also illustrated is the effect of the decrease of one percentage point for each expense category and for any overhead item. This Y-EFFECT is useful when the analyst is determining what the effect will be of an increase in revenue from one department without a corresponding increase in overhead or departmental expense.

The Z-EFFECT is the dollar effect on annual house profit resulting from an increase in room rate, occupancy rate or any revenue category with a corresponding increase in the respective expense category. This Z-EFFECT is useful when, for example, the analyst assumes that once a property has reached an equilibrium, that an increase in room rate will not effect other revenue categories.

The X-EFFECT takes into effect the entire relationship of the revenue categories to room revenue--an increase in room rate increases room revenue and all other revenue categories by their respective ratios displayed on the cash flow schedule. Then, each expense category is effected through its respective ratio with each revenue category and each overhead category is effected through its respective ratio with total revenue. The end result is the effect on house profit if the average room rate is increased (or decreased) by \$1.00 or if the occupancy percentage had been increased (or decreased) by one percent.

Further explanation is made on the following pages. See Page 20.

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ON - LINE SURVEY CALCULATIONS
USING
COGO \$\$

PROBLEM PROPOSED AND DATA
SUPPLIED BY ROY R. FISHER JR.

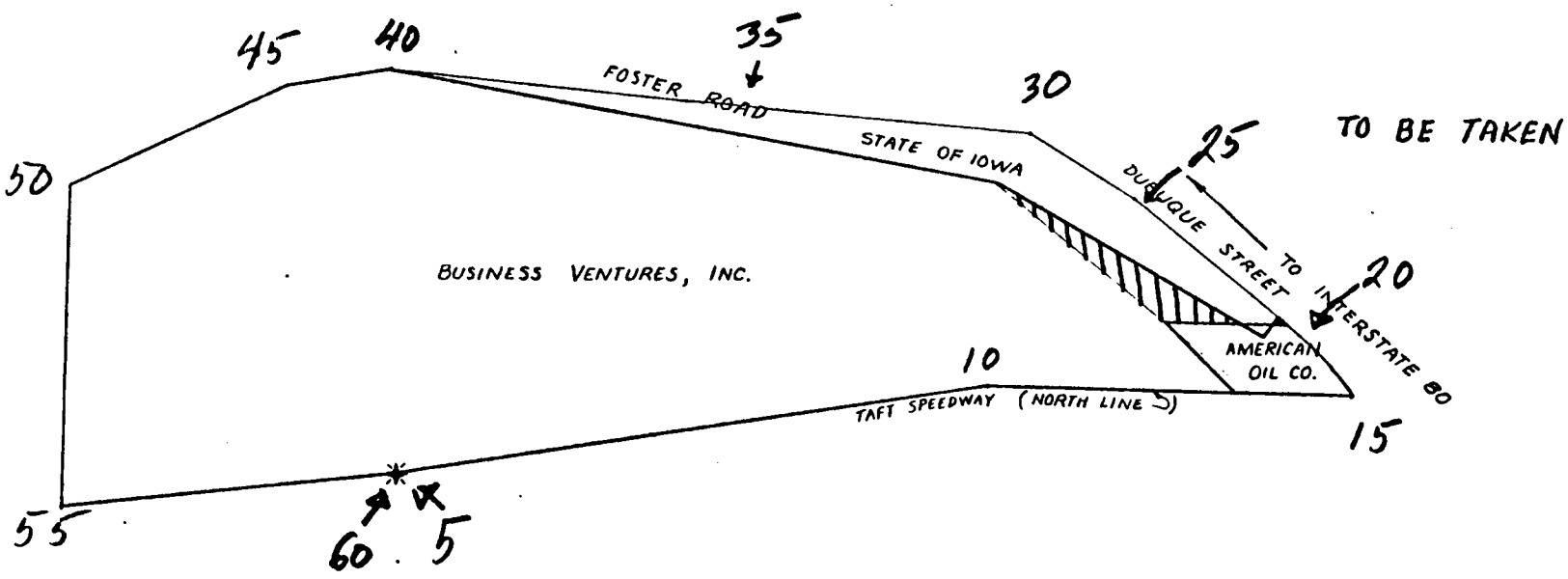
EDUCARE COMPUTER NETWORK

THE CO-ORDINATE GEOMETRY PROGRAM
IS A PRODUCT OF G.E. TIMESHARING
AND IS AVAILABLE TO ALL SUBSCRIBERS

Reprinted with permission of Roy Fisher, MAI, SRA Certified General Real Estate Appraiser in Texas (TX132791-G and Florida (R20000251), Edmond C. Fisher, Board Chairman of Roy R. Fisher, Inc. and Terrell A. Honnold, MAI, President, American Real Estate, Ltd.

ENGLERT TRACT

NORTH DUBUQUE
IOWA CITY, IOWA 52240



ROY R. FISHER, INC.
 DAVENPORT, IOWA 52803
 SEPTEMBER 1971
 [Signature]

A Message Exchange Program

Program Name: MAILBOX

The "Mailbox" program was written to facilitate exchange of messages between users on the same user catalog of the G. E. Timesharing system. The Mailbox program itself provides procedure which allows the user to check the status of messages which concern him. It further will provide a mechanism through which he may notify another user that he has created a message for his attention. In order to communicate with another user the person entering the message must merely provide the subscriber suffix (last 2 digits of user number) under which the addressee will normally log on, his name and the name of the file which contains the message. The actual message is created as a normal file; the only restriction on that file is that the sixth character of the file name must be an asterisk (this notation will make the file accessible to all users within the same catalog).

Upon running the Mailbox program the user will be required to provide a name. This should normally be his last name but must correspond exactly with the name to which a message was posted. He will then be required to respond to the following inquiries:

MSG CHECK? The user is required to provide a yes/no response; he may enter a Y or YES as the affirmative response, any other entry will be interpreted to be equivalent to No. An affirmative response will provide a check of all messages which concern the name entered previously and the user number currently active. Three types of messages may be printed in response to the Yes entry.

- 1) A LIST message followed by the identification of the file to be listed. This is a notification that the message has been posted to his name and the user should list the file specified.
- 2) A PENDING message followed by file identification. This is a notification that a message that he has previously filed to another user still remains pending. That user has not yet received notification of the message still filed.
- 3) A PURGE message followed by file identification. This is a notification that a previously pending file was received by the addressee and that a previously pending file was received by the addressee and that the user who sent the file now purge that message. The file identification is followed by a notification of the date and time that the addressee received notification.

LOG MSG? An affirmative answer (of the same format as above) will allow the current user (as identified by the currently active user number and the previously entered user name) to file a message for the attention of another user. The filename to be communicated, the addressee's user number and name will be entered as below.

USER ##? The addressee's user number (last two digits) must be entered here.

TO NAME? The name of the addressee must be entered here. It normally should be entered as his lastname only. The entry may contain no commas.

FILENAME? The name of the file which contains the actual message must be entered here. The sixth character of the file name must be an asterisk; if it is not the user will be so notified and the entry re-requested.

QUIT If the entry is affirmative the program will terminate properly filing the information previously entered or received. This is the only valid exit from the program which will provide for automatic updating of the internal files. If a negative entry is made here the program will return to the request for name and proceed similarly. This return to the beginning provides for the capability of checking for messages filed under alternate spellings of the name of the intended recipient.

USER'S GUIDE FOR GRAPHIC ANALYSIS PROGRAMS

PURPOSE AND ORIGIN OF PROGRAMS

These programs compute and print Ellwood-type graphs using a standard teletype terminal. The printouts are designed for display as finished graphs with titles, explanatory remarks, and scales. Input is typed in by the user and becomes a part of the final display. See sample printouts on following pages. See also the graphs on pages 88 and 96 of Ellwood, Part I. Observe that the first sample printout and the graph on page 88 of the Ellwood text were constructed according to the same input and that the second sample printout corresponds to the graph on page 96. The only difference is that the graphs illustrated in the Ellwood text show the plotted curves running from left to right with respect to time, whereas the following printouts show curves running from top to bottom with respect to time. In other words if the sample computer graphs are turned 90 degrees, they are near facsimiles of the graphs in the Ellwood text. The mathematical derivations and the purposes of the graphs are explained in detail in the Ellwood text on pages 85-96.

The programs were developed by Charles B. Akerson, MAI, CRE. Both programs are an adaptation of PLOTTO, a standard GE time sharing program used for plotting one to six functions of X simultaneously. Given the required input, the computer performs all of the necessary calculations and causes the teletypewriter to produce the finished graph.

CHOICE OF PROGRAM

The user has a choice of two programs, namely the REGPLOT program or the JAYPLOT program. REGPLOT presumes that income will be received exactly as specified in the input, whereas JAYPLOT presumes that income will vary in direct proportion to the resale price. In other words, REGPLOT is a regular plot of resale prices which correspond to selected equity yield rates and JAYPLOT uses the J FACTOR premise to plot the changes in both income and price which correspond to selected equity yield rates.

It is important to recognize the difference between the programs. See Ellwood text for further explanation of the J FACTOR premise. REGPLOT and JAYPLOT are separate programs. The two programs produce graphs which are somewhat similar in appearance but which have separate and distinct meanings.

Classroom Material for

EDUCARE - I

University of Wisconsin, 1971

PREMISE: A REAL ESTATE PROJECT IS AN ENTERPRISE AND THEREFORE A MANAGEMENT SYSTEM

SOURCE: Management Dynamics: The New Synthesis by John A. Beckett.
McGraw Hill's Series in Management, 1971. New York.

I. Traditional Management Functions

A. The traditional functions of management imply a sequence of:

Planning
Organizing
Directing
Controlling

B. An American oil company has expanded the functions of management to be:

Environmental appraisal
Objectives development
Strategic planning
Demand forecasting
Logistics planning--Utilization
Logistics planning--Development and operations scheduling
Operations control

C. A similar but longer list of functions has been proposed by Marvin Bower, a well known management consultant:

Setting objectives
Planning strategy
Establishing goals
Developing a company philosophy
Establishing policies
Planning the organizational structure
Providing personnel
Establishing procedures
Providing facilities
Providing capital
Setting standards
Establishing management programs and operating plans
Providing control information
Activating people

II. A Systems Approach to Management Analysis

A. A revised list that does include some flavor of systems can be prepared. The elemental functions involved in man-made organizational undertakings might be listed like this:

Goal-setting
Forming policies
Searching for opportunities which are consistent with policies
Selecting opportunities which are consistent with policies
Constructing systems for capturing selected opportunities
Installing systems for capturing selected opportunities
Operating the systems that have been installed
Maintaining and continuously perfecting the operating systems

B. This list captures some of the flavor of systems thinking in that:

It contains the word systems in several places
It includes some of the feeling for the flow of events
It defines somewhat more clearly the idea of the interrelationships of activities
It expresses the presence of standards (in the form of policies) at one point
It even hints at the presence of feedback

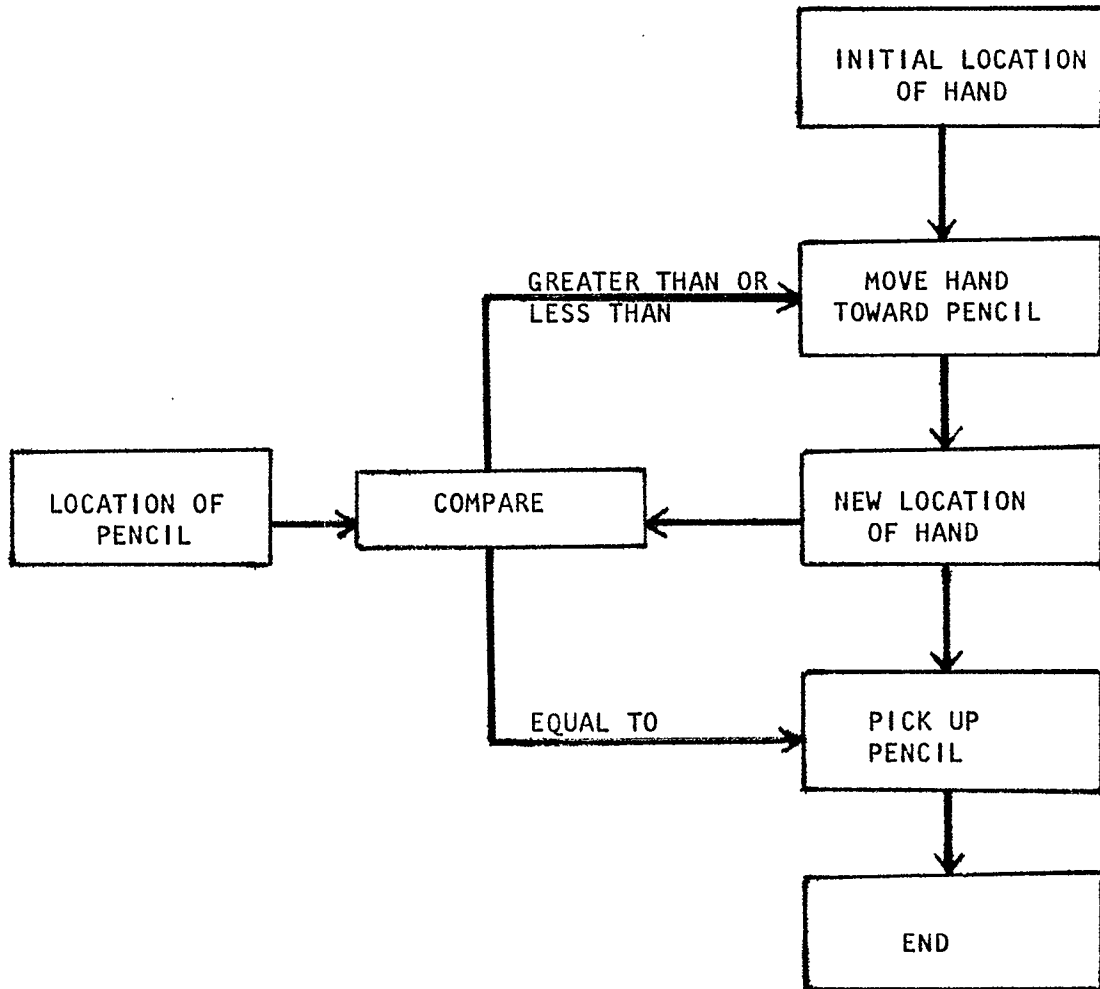
C. A careful look at these systems models will disclose that all systems have both structure and process that can be identified, if not completely isolated; they are comprised of:

Conditions in certain locations or with respect to certain factors at a given time. For example, the present position of the hand - its location at a given moment; the number of new cars on hand at a certain point in time. In systems parlance, these conditions are called levels, reservoirs, or states.

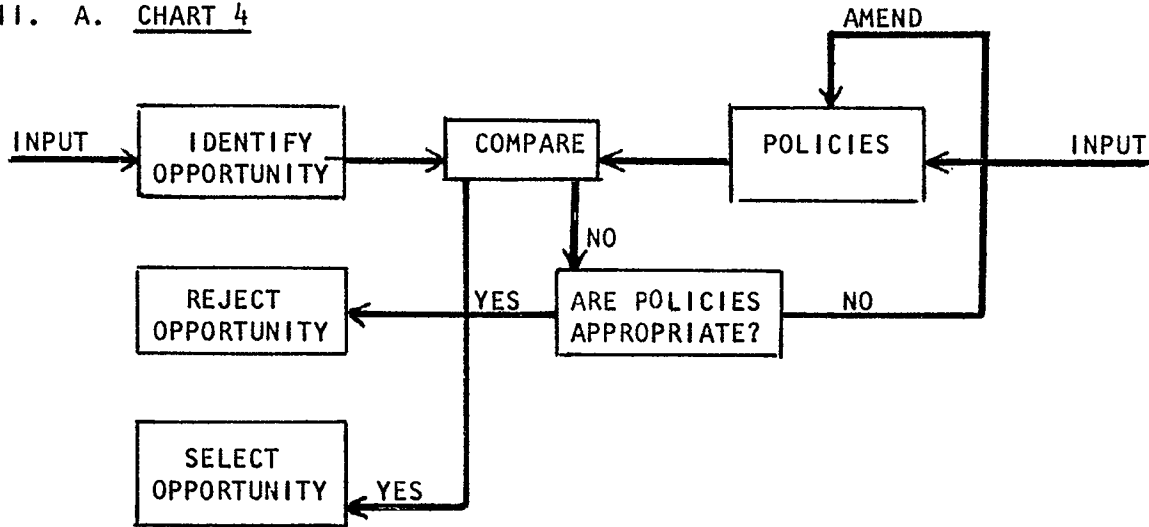
Action that occurs in moving the contents of one reservoir to another. For example, the movement of the hand from one position to another, the passage of light from the sun to the leaf, and the transfer of chlorophyll from the leaf to the tree. These are called flow rates.

Choices from among the alternatives available within the system. For example, a decision to continue to move the hand in the direction of the pencil, or a decision by the President of the United States to direct more federal government effort toward solution of problems in metropolitan areas, and less toward exploration of outer space. These are called decisions.

Lines of Communication that carry messages about states and flow rates and the actions that adjust their relationships to achieve some objective (or conform to some standard). For example eye-optic nerve-cerebellum connections that inform the motor centers of the brain of the present position of the hand with respect to the pencil and transfer information back to the nerve-muscle connections to bring the hand closer to the pencil. These are called information channels.



III. A. CHART 4



- B. This whole process is more complex than a simple flow chart representation can depict, but the essence of the process can be discerned from such characterization as that shown in Chart 4; it is the beginning of a systems description of the management process.

This amended model, general though it is, recognizes the inputs to the system from other exogenous systems; characterizes the (circumscribed) whole as an integrated system; points out levels of states (policies, standards) within the system; identifies action points (decisions) within the system;

- documents the interrelationships between actions and information storage points;
- traces the flow of information from outside the system within the system
- depicts the process as dynamic.

This model, supported by the explanations, is helpful in providing a basis for assessing the validity of common presumptions; it should provide fair warning that policy-making/opportunity-selecting cannot be adequately understood by simply viewing it as "a process that man performs through the act of decision-making."

- C. Information plays the critical role in the process. To construct acceptable operating systems or models one must draw on information sources both inside and outside the decision making organization--- a real estate enterprise.

Outside: Information about alternative kinds of operating systems that can be constructed to supplement

Inside: Existing knowledge and skills relating to the construction of operating systems;

Inside: Inside information about existing standards for constructing operating systems, which in turn, are the product of information flows that come in part from within the organization,

to reflect its requirements, and in part from sources outside the organization.

D. As the movement of the system depends upon the external and internal inputs, the configuration and the behavior of a given system represent a negotiated consensus between two general sources of power--- "the power of the environment to dictate the form and the behavior of the organization, on the one hand, and the power of the organization to decide for itself what its conformation and behavior will be, on the other. To be mindful of the inevitable presence of both forces is to be able to penetrate the meaning of organization purpose--- in every system, every organization."---John A. Beckett.

E. Compare this to the definition of feasibility:

"A real estate project is 'feasible' when the real estate analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit to a context of specific constraints and limited resources."--- James A. Graaskamp

IV. A feasible solution depends on the degree to which you correctly define the problems. The critic or analyst or economic architect of a real estate system must attempt to "comprehend the nature and the degree of:

the dynamics of the organization (the subsystem);

the dynamics of the environment (the system);

the prevailing and potential power of the organization to exert its influence upon the environment;

the prevailing and potential power of the environment to exert its influence upon the organization;

the dynamics of the interrelationships between organization and environment.

To work effectively in such an environment one needs:

to comprehend the pattern within which all systems are combined;

to seek to identify the innumerable internal forces whose interplay among themselves and interaction with external forces may influence the formation of purpose;

to seek to identify the innumerable external forces which may influence the conformation and the behavior of the system organization with which the system designer is concerned;

to seek to measure the effects that will result from the interaction and the interplay of such internal and external forces under given conditions;

to design the organization system in such a way that achievable alternative results (which have been selected from among them as purposes, objectives and goals) are, in fact, produced from the engineered combination of forces.

That the human being is limited in his ability to design the total of such interrelationships in the organizations which he builds should now be eminently clear. A great deal of the design of intersystem relations has already been taken care of by the interplay of forces that are either beyond the depth of his present understanding, or else beyond the reach of his influence, the grand design, (which was conceived and installed by some other power) inevitably confines the mortal systems architect. (Page 183 - Beckett)

LECTURE NOTES FOR EDUCARE SLIDE SET
May 1, 1973

Slide No.	Comment
#1	EDUCARE is the acronym for Educational Foundation for Computer Applications in the Real Estate Industry. At least this logo is cheaper than a neon sign.
#2	EDUCARE is a non-profit foundation organized in Wisconsin as a non-stock chapter 181 corporation to serve as a joint venture of: The American Society of Real Estate Counselors The Society of Real Estate Appraisers The American Institute of Real Estate Appraisers
#3	Its ultimate objective is to bring the computer terminal into everyday use...
#4	by appraisers and counselors in the field.
#5	The EDUCARE program has had three phases in its development: 1. The first step of the Foundation was to develop a program via contract through University of Wisconsin Foundation on the Madison campus using Professor Robert Knitter, director of the UW School of Business Computer Center, and Professor James Graaskamp of the School of Business Real Estate Department. 2. After testing and revising a course program, a seminar program was established by the Foundation with the assistance of the University of Wisconsin Extension on the Madison campus. While it was hoped that these courses would be self-supporting in the long run, it was anticipated by the directors that their innovative nature and costly format would involve Foundation underwriting of some operating deficit.

3. At the request of those who attended the early EDUCARE sessions, the Foundation created EDUCARE Network Inc., a taxable corporation operating as a cooperative of users to provide special contract benefits with GE Time Sharing and ongoing development of a library of programs, plus assistance in the exchange of ideas among subscribers. Its working capital is provided by subscriber's deposits. Surplus, if any, is used to develop new programs or provide additional services to the subscriber. Membership is limited to those who have taken EDUCARE or designated professionals who have otherwise acquired command of GE Time Sharing techniques.

#6 The Foundation has six directors, with each member organization appointing two. The present directors are:

John S. Schneider, President; Atlanta, Georgia

Roy R. Fisher, Jr., Vice President and Secretary; Davenport, Iowa

Norman Benedict, Treasurer; Hamden, Connecticut

Robert A. Steele; Los Angeles, California

Ron Brown; Victoria, Texas

William E. Coyle, Jr., Pawtucket, Rhode Island

Each of the three professional societies advanced \$10,000 and took back a note to fund the Foundation.

Operation and instruction of the program has been the responsibility of Professor Robert Knitter, Director of the U.S. School of Business Computer Center, and Professor James Graaskamp of the School of Business Real Estate Department. In addition the teaching staff consists of 10 additional professors and graduate students so that the student/teacher ratio can be as low as 3-1 during initial workshop sessions.

- #7 The purpose of EDUCARE is to provide continuing education on the techniques, applications, and implications of the computer for the appraisal profession. The first step is classroom training...
- #8 with hours of hands-on terminal time...
- #9 plus preparation of manuals for further office training and terminal operation...
- #10 plus ongoing technical advice on equipment and software by telephone, and terminal programs called MAILBOX and HELP! MAILBOX allows any subscriber to send written messages to any other subscriber through a special file system for the exchange of sales data, committee meeting dates or nonsense. New systems mean not only faster ways of doing the old things but new ways of answering client's questions better and with more professional presentation...
- #11 so subscribers can rewrite the fundamentals of valuation practice that were carved in stone in the 1930's.
- #12 Madison is in the center of a metropolitan area of 275,000 persons, the State Capitol, a finance center, a larger regional medical center than Rochester, Minnesota. It is served by Interstate 90 and 94 and three airlines, Northwest Orient, North Central, and Ozark.
- #13 Bascom Hall is the sentimental center of the UW campus for 35,000 students on the shores of Lake Mendota.
- #14 The EDUCARE program is held at Lowell Hall Center, a University owned and operated classroom and hotel facility combined,

- #15 with outstanding food service served at the table...
- #16 with an indoor swimming pool...
- #17 with single rooms at \$11 a night...
- #18 but it's greatest advantage are the facilities for workshop teaching in sound-proof room for our terminals...
- #19 connected to fully equipped classrooms. But the greatest resource of all is a staff of enthusiasts who are graduate students in real estate or computer science...
- #20 like Dan Schwartz...
- #21 or Al Hayes shown here with Phil Won of Hawaii...
- #22 or Mike Robbins, lecturing here on computer mapping...
- #23 or Professor James Graaskamp...
- #24 or the Director of EDUCARE and resident guru on systems, Bob Knitter.
- #25 The workshop format alternates a half hour lecture with a half hour of hands-on computer time. We rely on teams of two students for each terminal. We run from 8:30 A.M. until 10:00 P.M. Each student is doing an Ellwood problem on the terminal 30 minutes after the start of the course on Sunday evening.
- #26 The EDUCARE network on the GE Mark III Time Sharing system begins with your telephone...

- #27 the network is available in 300 major cities in virtually every state in the U.S. and Canada (in pink) without dialing long distance.
- #28 The basic link is a computer terminal such as this standard teletype unit with audio coupler for the telephone (in blue on the right) and the paper tape input option (the yellow puncher and reader on the right). This unit rents for approximately \$65 a month including maintenance from a variety of vendors around the country.
- #29 But the teletype is almost obsolete as innovations which increase flexibility and reduce costs arrive monthly, such as this Wang Model 1200, a typewriter, terminal and cassette storage set-up for about \$225 a month. (The blond is a little extra)...
- #30 or this wide-carriage GE Terminette 300 with cassette input and output...
- #31 or this silent CRT display unit which can be had with a hard copy option...
- #32 or this light 26 point completely portable Execuport unit which can be purchased for about \$2,000.
- #33 Here is a partial list of programs for EDUCARE network including a variety of cash flow and discount models, an automatic market comparison system which uses the appraiser's own data in his own private data file and...
- #34 accounting programs which tell him immediately by run, session, project, or by user how he has been spending the money in his office. Many EDUCARE subscribers itemize time on their invoices for computer time as a subtle advertisement as to their progressive

sophistication. Many others came to EDUCARE only after their local Savings & Loans and Mortgage Companies said they were anxious to use computer analysis but did not know anybody in town who could do it for them.

#35 We presently have 70 appraisal firms throughout the country on EDUCARE Network. Several firms have sent half a dozen members each and any number of firms have sent both partners. Their monthly bills run from \$30 to \$500 a month not including rental of a terminal and most of this time has been billable to a client.

#36 EDUCARE already has an alumni group which held a three day advance seminar last fall to compare notes and learn new techniques. Here is Norm Benedict and John Shanahan with Alan Hayes. "Gee, things have changed a lot since we were last in school 6 months ago."

EDUCARE

DFAFT NUMBER 2, February 23, 1974

Curriculum Content for EDUCARE Course II

Purpose:

1. To introduce present EDUCARE users to new services and techniques available for Real Estate Analysis on computer terminal
2. To exchange and compare applications of the terminal as presently used in participant offices.
3. To permit users to evaluate present EDUCARE services and to indicate priority in the development in improved programs and services

Wednesday Evening, October 9: Organizational meeting following dinner:
To collect last minute examples for mimeograph and assign specific times for participant presentations of examples they brought along, etc.

Thursday morning, October 10: New EDUCARE models:
Land Development Models (2) Knitter
Development Economic Impact Model Robin/Mortenson/Graaskamp
Hotel/Hotel Model Knitter/Graaskamp
New Minimod Mortenson

Thursday afternoon: A new tool:
GE's Financial Analysis Language (FAL) as a Modeling Tool Knitter

Thursday Evening: Case examples provided by EDUCARE members

Friday Morning, October 11: Availability of census tract data on computer terminal
(Demonstration Case)
Demonstration of the MKT COMP features

Friday afternoon: Economic impact of computers on the appraisal office:
Individual participants' review of a questionnaire to be sent to all members of EDUCARE Network
Recent technology and its consequences for Network including GE System Changes, terminals, programable terminals and calculators
Review of current Network resources
What to eliminate
What to work on next (roundtable discussion)

Saturday morning, October 12: Participant demonstrations of applications and workshop

Saturday afternoon: University of Wisconsin football game

"Other Computer Applications to Appraisal"

I. Variations on the Cost Approach to Value

- A. University of Wisconsin Architectural-Investment Model
 - 1. Construction cost-revenue units
 - 2. Marginal analysis of specifications
 - 3. Marginal analysis of revenue groups
 - 4. Seasonal analysis of revenue and cost
- B. The Nika Corporation Cost-Estimating System
 - 1. Central information bank for area comparisons
 - 2. Alternate levels of detail appropriate to stage of project
 - 3. Feedback for data bank
 - 4. Feedback between cost estimating and project control system
- C. Howze-Matic Tax Assessment System
 - 1. Combination data bank and valuation system
 - 2. Costing by exception
 - 3. Combination of visual and quantitative data
- D. Property Management Accounting Systems

II: Variations on Market Comparison Approach to Value

- A. Community Growth Models
 - 1. Projectron, an SMSA service by William R. Smolkin
 - 2. 1970 Census data on tape analyzed by R.L. Polk and Company or Larry Smith and Company
 - 3. General community growth models
- B. Sales Transactions Data Banks
 - 1. SREA Data Center Incorporated
 - 2. Pacific Coast Real Estate Exchange
 - 3. Realtron, Incorporated
 - 4. Local multiple listing office data banks
- C. Automated Market Valuation Systems
 - 1. California County Tax Assessment Systems
 - 2. University of California Los Angeles Appraisal Model by Professor Fred Case
 - 3. Market Value Prediction Models based on regressions analysis (common to various university labs)
 - 4. Market sales data banks and comparison models (such as University of Wisconsin Comparison Model)
- D. Business Sales Volume Simulation Models
 - 1. Holiday Inn Projection Model
 - 2. Gasoline station valuation models based on regression coefficients
 - 3. Accounting firm pro-forma projection models

EDUCARE - San Francisco

I. Mission:

- A. To teach the significance of computer technology to the appraisal profession.
- B. To ease the entry of the profession into computers by providing low cost training and advisory services through education.
- C. To speed the use of computers in the field (slide 2)
- D. In small classes of 30 - Mike Robbins lecturing on data banks from the earth satellite.
- E. Daily experience on the terminal (Al Hayes and Phil Won)
- F. One teaching assistant for every 3 or 4 students
- G. Dan Swango and assistant looking for program bug
- H. They found it!
- I. Lo and behold cash flow output
- J. A GE terminal with cassette feed instead of paper tape, wide carriage and audio coupler.
- K. Typewriter type of keyboard so hunt and peck artist can become computer experts.
- L. Cassette input and output device (market data files and comparable set)
- M. Portatype - weighs 26#, can be used for negotiations right in the office.
- N. CRT display units - this unit is being used to display sales data on Chicago market for an appraisal firm now - fast, flexible, hard copy option.
- O. CRT display portable - 18# - screen size requires gen cutter eye
- P. Graphic output device capable of drawing cash flow graphs, plot plans, blue prints, utility maps, etc.

- II. New hardware imply the possibility of new systems. The three approaches to value are models of a decision process which attempts to answer the question what is fair market value. All models have a variety of limitations in practical use. To analyze the limitations of any decision model one should ask the following questions:

- A. What decision needs to be made?
 - B. What data is available to make it?
 - C. What hypothesis is available to structure the data?
 - D. What are the limitations of the model user?
 - E. What are the constraints on communicating the output?
 - F. What is the cost/benefit ratio of using the model?
- III. Computer technology has removed all of these constraints except the limitations of the analyst. Appraisal theory improvement depends on you learning more investment theory, more statistics, more about the revolution and real estate collection and management.
- A. 50 appraisal offices are already making use of the computer in their office and EDUCARE Course II has already been scheduled so that these 50 can share their experiences,
 - B. EDUCARE is attempting to avoid partisan politics, the development of commercial enterprises which will compete with outstanding services such as Omnimetrics or Realmetrics, or any exclusiveness relative to ideas and services. The question is not does the computer have a use in an appraisal office. The question is how soon the independent appraiser can adapt to its potential.
 - C. High volume low price appraisal will soon be the monopoly of assessors and their data banks via automated appraisal systems. The low volume high fee business for sophisticated investors has already been lost to the CPA, the management consultant, and the engineer. How much will be left to the appraiser using present technique in 1980? Will you need a 50th anniversary meeting?
- IV. Your materials kit includes a list of programs for the beginner which are on EDUCARE network, one such program is RATES which uses internal rate of return and adjusted internal rate of return for analysis.
- A. Internal rate defined
 - B. Adjusted rate of return defined
 - C. After tax spendable

PRESENT VALUE CONCEPTS

I. CONCEPT OF PRESENT VALUE OR WORTH OF ONE DOLLAR

A. Example of the present value of a single year's return

1) Assumptions:

- a) \$1,000 will be received at the end of one year
- b) Investment rate of return sought is 6%

2) Solution

Unit of \$1 at 6% has a conversion rate of .9434.

.9434 x \$1,000 = \$943.40.

Check: \$943.40 x 6% = \$56.60; \$943.40 + \$56.60 = \$1,000.

$$\left(P = \frac{S}{(1+i)^n}; \frac{\$1,000}{(1.06)^1} = \$943.40 \right)$$

B. Example of the present value of a single payment to be received after several years

1) Assumptions:

- a) \$20,000 will be received at the end of five years
- b) Investment rate of return sought is 7%

2) Solution

Unit of \$1 at 7% has a conversion rate of .7130.

\$20,000 x .7130 = \$14,260

Check: \$14,260 x (1.07)⁵ = \$20,000

II. CONCEPT OF PRESENT VALUE OF ONE DOLLAR PER ANNUM

A. Example of converting a series of identical or even net annual revenues into a present value

1) Assumptions:

- a) \$1,000 will be received at the end of each of three consecutive years
- b) Investment rate of return sought is 6%

2) Solution

Annuity of \$1 per year for three years has a conversion rate of 2.673. 2.673 x \$1,000 = \$2,673

Check:

Year 1	-	.9434 x \$1,000	=	\$ 943.40
Year 2	-	.8900 x \$1,000	=	890.00
Year 3	-	.8396 x \$1,000	=	<u>839.60</u>
Total - Three Years				\$2,673.00

COMPARISON OF CRITICAL VALUATION ASSUMPTIONS FOR THREE PRESENT VALUE VIEWPOINTS IN REAL ESTATE

Prepared for Discussion at EDUCARE Seminar

By Professor James A. Graaskamp

<u>Traditional Income Appraisal</u>	<u>Ellwood Valuation</u>	<u>Modern Capital Theory</u>
1. Instant investment	1. Instant investment	1. discontinuous series of outlays
2. Productivity limited to net income from parcel before debt and income tax.	2. Productivity limited to parcel after debt but before income tax.	2. Productivity is net change in spendable cash from all sources after debt and income tax traced to real estate.
3. Continuous income function	3. Continuous income function	3. discontinuous series of tax classified receipts
4. Recapture from income	4. Recapture from income & resale	4. Payback of equity from spendable cash and debt from net revenue & resale.
5. Projected for full useful life of improvements	5. Projected for normal turnover period 5-10 years of typical investor	5. Projected for elapsed time of outlays and receipts for specific investor time line horizon.
6. Arbitrary discount factor	6. Weighted average Inwood discounting	6. Selected present value discounting based on characteristics of investor and property revenue pattern

COMPARISON OF CRITICAL ASSUMPTIONS FOR THREE VALUATION MODELS OR VIEWPOINTS IN REAL ESTATE

Prepared for EDUCARE
Madison, Wisconsin

By Professor James A. Graaskamp

Col. A	Col. B	Col. C
Economic Allocation of Resources	Accept or Reject Loan Application or How Much to Lend?	Which Investment Has the Best Probability of Maximizing Net Spendable & Net Worth
1. Instant investment	1. Instant investment	1. Discontinuous series of outlays
2. Productivity limited to net income from parcel before debt and income tax	2. Productivity limited to parcel after debt but before income tax	2. Productivity is net change in spendable cash from all sources after debt and income tax traced to real estate.
3. Continuous income function	3. Continuous income function	3. Discontinuous series of tax classified receipts
4. Recapture from income	4. Recapture from income & resale	4. Payback of equity from spendable cash and debt from net revenue & resale.
5. Projected for full useful life of improvements	5. Projected for normal turnover period 5-10 years of typical investor	5. Projected for elapsed time of outlays and receipts for specific investor time line horizon.
6. Arbitrary discount factor	6. Weighted average Inwood discounting	6. Selected present value discounting based on characteristics of investor and property revenue pattern

ELLWOOD REVIEW AND MODELLING

1. The basic premise of the income approach to value is the algorithm $I/C = \text{value}$. The net income figure would appear to be a static quantity but over the years it has evolved into a concept of cash expectations from income in the first year.
 - A. The simple algorithm was designed to teach to all in the real estate field a basic concept which was easy to use.
 - B. Depending upon the sophistication of the appraiser, the client, and the market to which the value decision related, the shape of the income projection could be altered drastically but implicitly by the capitalization rate. (Refer to drawings on page _____)
 1. Straight Line Method (income declines to nothing and reinvestment is ignored.)
 2. Hoskold's Method---Income declines more gradually as capital is reinvested.
 3. Inwood Method---Income remains level assuming reinvestment at the equity rate.
 4. Basic Ellwood Method---Income assumed level but recapture on resale varies. (Cash expenses include only average outlays for items with useful life shorter than projection with resale assumption accounting for deferred replacement items.)
 5. Ellwood Method with the J factor-Income can rise or fall in the same direction as recapture. (Implicitly cash expenses may be rising to meet outlays for cumulative deferred expenses.)
11. A refresher on third edition Ellwood using auxiliary table CY. (Refer to copy of pages 94-95 of Ellwood third edition)
 - A. Notice salient fact number 4. While we do not know what rents and expenses will be in any following year, the solution presumes we know the net increase in net income and that this change

will move in the same direction as resale value. Without this key simplification we cannot create a table of J factors to ease manual computation.

- B. A second key assumption is the use of the Inwood table for equity discounting. It requires reinvestment at the same rate of the Y for the property but the choice to reinvest may not be in real estate nor may it be continuous.
 - 1. Equity investments may be discreet with an adequate down payment accumulated only every three to five years with equity monies accumulating in intermediate securities in the meantime.
 - 2. Inwood assumptions presume continuous and instantaneous reinvestment which may be true of money institutions but not of non-institutional equity investors.
- C. Ellwood provides a devastating revolution in appraisal thinking by permitting recognition of the short term forecast, the impact of leverage, and precise application of the influence of multiple faceted financing of sales.
- D. However, to simplify the educational problem of placing these tools in the hands of existing appraisers who do not have extensive mathematical training or computational equipment, it was necessary for Ellwood to provide a book of tables and manuals for relative simplicity application in the field.
- E. Tables require that changing allocations between interest and principal, or debt service and cash dividends, or net worth and balance due on loans follow a mathematical pattern. Moreover, staging of investment or disinvestment must be eliminated to make possible a fixed point at which to begin and when measuring the time value of money as a single PV.

III. Electronic calculators remove the necessity of using tables if the user understands the sequence of steps by which he must make original computations. The computer terminal for which a library

of programs is available makes it unnecessary for the user to understand the sequence of computational steps as the terminal will ask a question in the easiest syntax and convert the information to the sequence required for computation automatically.

- A. If you remove the need to use tables in a field, then the original necessity of simplifying assumptions is also removed.
- B. Instead the professional must determine which assumptions ideally serve the flow chart of analysis and decision steps for the problem at hand.
- C. Next the professional must determine the marginal advantage in convenience and computational cost of alternative programmable analytical features in the ideal decision process.
- D. Eventually if the professional changes the assumptions of his most sophisticated models, he must modify the method by which he teaches the basic algorithm of $I/C = \text{value}$ so that the student can grow from the basic model to the most complex without a contradiction in terms somewhere along the way.
- E. Among the change to basic assumptions which represent most sophisticated Ellwood will be:
 - 1. Staging of investment and resale.
 - 2. Erratic changes in gross rents, expenses, and interest amounts.
 - 3. Stepped changes in income tax impact on value.
 - 4. Alternative methods to Inwood for discounting and valuation which recognize reinvestment and opportunity preferences.

$$\text{EQUITY RATE} = \text{EXP}(Y) - 1$$

WHERE:

$$Y = (\text{LOG}(X) - \text{LOG}(\text{ORIGINAL INVESTMENT})) / N$$

$$X = \text{NET WORTH ON SALE} - \text{CAP. GAINS TAX ON SALE} + W$$

$$W = \sum_{I=1}^N V_I \times (1 + \text{CEQ})^{N-I}$$

$$V_I = (\text{SPENDABLE CASH AFTER TAXES} \\ + \text{TAX SAVINGS} \\ - \text{NET INVESTED CASH}) \text{ FOR THE } I\text{-TH YEAR}$$

$$\text{CEQ} = \text{COST OF EQUITY CAPITAL RATE}$$

$$N = \text{NUMBER OF YEARS OWNED}$$

PROCESS
(form)



STRUCTURE
(context)

$$V = \frac{I}{C} = \frac{NOI}{OAR}$$

1. Information available
2. Economic assumptions
3. Skill of user
4. Scope of client

OF CASH FLOW ANALYSIS

1. CASH RECEIPTS PER PERIOD
2. AFTER TAX CASH ACCOUNTING
3. DISCONTINUOUS INCOME FUNCTION
4. 5-10 YEAR PROJECTIONS
5. DISCONTINUOUS OUTLAYS
6. CAPITAL PAYBACK: INCOME, REFINANCING & SALE
7. OTHER PROFIT CENTERS, i.e.

TAX SAVINGS OR UP-FRONT TAKE-OUTS

ECONOMIC ASSUMPTIONS

OF BASIC $I/C = V$

- 1. Economic rents**
- 2. Accrual accounting**
- 3. Level income**
- 4. Projected for useful life**
- 5. Instant investment**
- 6. Capital recovered from income**
- 7. No salvage**

SKILL OF USER

- 1. professional STD. performance**
- 2. education level of entry**
- 3. effectiveness of cont'g education**
- 4. rate of innovation acceptance**
- 5. economic incentive**
- 6. professional incentive**

SCOPE OF CLIENT

decision making authority

knowledge and approval

client's relevant audience

subjective external constraints

see risk control

OF ELLWOOD OAR

- 1. Economic rents**
 - 2. Cash accounting for "N" Periods**
 - 3. Continuous income function**
 - 4. 5-10 year projections**
 - 5. Instant investment**
 - 6. Capital recovered from income & sale**
 - 7. No income tax**
-

IMV PROGRAM
INVESTMENT MARKET VALUE ANALYSIS
DATA INPUT FORM

PROJECT ID: EDUCARE SEMINAR PROBLEM ONE
UNIVERSITY OF WISCONSIN

Date: 2 DECEMBER 1970

ILLUSTRATION OF EFFECTS OF TAX STATUS OF PROPERTY INVESTORS: This problem illustrates the effects of income tax situations for different owners. Subject property is an older garden apartment with a future net income stabilized, for simplification, at \$310,000. Seller is willing to take back a \$300,000 deferred purchase money mortgage at 8%, interest only, for three years.

First analysis: Prospective purchasers are a syndicate of persons in the 50% tax bracket, without other investment income. If they are to obtain an after tax yield of 8½%, they can pay about \$2,900,000; and if they refinanced the property at current mortgage rates, it would not materially raise the IMV of this property.

Second analysis: Purchasers are a syndicate of men in the 70% tax bracket due to numerous other investments in need of tax shelter. To obtain the same yield, since they can apply operating losses (tax shelter) to other income, this property can be priced at \$3,429,000, or 18% more than to the first syndicate.

NOTE: The fallacy in these two analyses is in the assumption that the resale price of the property, ten years hence, shall be determined by the overall property depreciation rate of 7%, as shown in this input form. Does the property deserve the same OA Depreciation rate for both analyses?????

PREPARED BY:
AMBH

ALL INPUTS INVOLVING A % MUST BE ENTERED AS A DECIMAL EQUIVALENT [11.75%=.1175]

PROJECT ID (Maximum 30 characters per line)

100 EDUCARE SEMINAR PROBLEM ONE
101 UNIVERSITY OF WISCONSIN

USED FOR ELLWOOD'S VALUATION

AVG. ANNUAL NET INCOME BEFORE TAX YIELD AFTER TAX YIELD

102 310000 , .14 , .085

OPERATION CODE:

- 1—Produces IMV for a given after tax equity yield rate
- 2—Produces four after tax equity yield rates for four given IMVs

NET INCOME CODE:

- 1—Constant net income value for each year
- 2—Different net income value for each year (If the last year of the projection term does not fall in the last position of a line fill the remaining years of that line with zeros)

OPERATION CODE PROJECTION TERM (yrs) NET INCOME CODE

103 1 , 10 , 1

NET INCOME [If net income is constant enter the value in position (1) only]

(1) (2) (3) (4) (5)

104 310000 , _____ , _____ , _____ , _____

(6) (7) (8) (9) (10)

105 _____ , _____ , _____ , _____ , _____

(11) (12) (13) (14) (15)

106 _____ , _____ , _____ , _____ , _____

(16) (17) (18) (19) (20)

107 _____ , _____ , _____ , _____ , _____

OWNERSHIP FORM CODE:

- 1—Corporation (Operating losses applied to other investments)
- 2—Corporation (Operating losses carried back/carried over)
- 3—Corporation (Taxable income offset by losses from other investments)
- 4—Corporation (Set-up solely for this investment)
- 5—Non-corporation (Operating losses applied to other investments)
- 6—Non-corporation (Operating losses carried back/carried over)
- 7—Non-corporation (Taxable income offset by losses from other investments)

EXCESS DEPRECIATION RECAPTURE CODE:

- 1—No recapture
- 2—FHA 221 (d) (3), 236 before 1975 (After 20 months-declines 1% per month)
- 3—All other residential rentals (After 100 months-declines 1% per month)
- 4—All non-residential—100% recapture

OWNERSHIP FORM CODE FEDERAL TAX RATE STATE TAX RATE STATE CAPITAL GAINS RATE EXCESS DEPRECIATION RECAPTURE CODE

108 6 , .50 , .05 , .05 , 3

APPRECIATION/DEPRECIATION AT RESALE:

APP/DEP CODE:

- 1—% of IMV (Enter the % in the APP/DEP AT RESALE column)
- 2—\$ amount (Enter the \$ amount in the APP/DEP AT RESALE column)
- 3—Reversionary \$ amount (Enter the \$ amount in the APP/DEP AT RESALE column)

APP/DEP CODE APP/DEP AT RESALE (\$ OR %) SALES COMMISSION RATE (0 if none)

109 1 , .07 , .03

DEPRECIABLE CAPITAL ASSETS:

METHOD CODE:

ASSET CODE: Asset value as a:

- 1—\$ amount (Enter the \$ amount in the ASSET VALUE column)
- 2—% of IMV (Enter the % in the ASSET VALUE column)
- 3—% of the difference between IMV and land value (Enter \$ amount for land value in LAND VALUE column and the % in the ASSET VALUE column)

- 1—Straight line
- 2—125%
- 3—150%
- 4—200%
- 5—Sum-of-years-digits

NUMBER OF ASSETS (0 to 6)

LAND VALUE (0 if ASSET CODE 3 is not used)

110 3 , 0

[Assets MUST be entered in order of ASCENDING ASSET CODES]

	ASSET CODE	ASSET VALUE (\$ or %)	METHOD CODE	LIFE	SALVAGE (0 if none)
111	<u>2</u>	<u>.48</u>	<u>2</u>	<u>25</u>	<u>0</u>
112	<u>2</u>	<u>.16</u>	<u>2</u>	<u>11</u>	<u>0</u>
113	<u>2</u>	<u>.16</u>	<u>1</u>	<u>5</u>	<u>0</u>
114					
115					
116					

MORTGAGES:

MORTGAGE CODE:

- 1—Existing mortgage or mortgage of known \$ amount (Enter the \$ amount in the KEY FIGURE column)
- 2—New mortgage amount which is a % of IMV (Enter the ratio (%) in the KEY FIGURE column)

THE FOLLOWING TWO OPTIONS CANNOT BE USED SIMULTANEOUSLY

- 3—Secondary mortgage amount which is the difference between IMV and sum of known amounts for equity cash and the other mortgages (Enter the \$ amount for cash equity in the KEY FIGURE column)
- 4—Secondary mortgage amount which is the difference between a total mortgage ratio and the sum of other mortgages of known amounts (Enter the total mortgage ratio (%) in the KEY FIGURE column)

TERM AND ANNUAL CONSTANT:

For each mortgage either the TERM or the ANNUAL CONSTANT must be provided except in the case of a balloon for which both must be provided. Enter a zero for the TERM or the ANNUAL CONSTANT, whichever is unknown. The annual constant must be at least 8 decimal places.

NUMBER OF MORTGAGES (0 to 6)

117 2

[Mortgages MUST be entered in order of ASCENDING MORTGAGE CODES]

	MORTGAGE CODE	KEY FIGURES (\$ or %)	INTEREST RATE	TERM (Months)	ANNUAL CONSTANT
118	<u>1</u>	<u>1570311.</u>	<u>.06</u>	<u>0</u>	<u>.13757961</u>
119	<u>1</u>	<u>300000.</u>	<u>.08</u>	<u>36</u>	<u>.08000000</u>
120					
121					
122					
123					

1ST RUN

100 EDUCARE SEMINAR PROBLEM ONE
101 UNIVERSITY OF WISCONSIN
102 310000,.14,.085
103 1,10,1
104 310000
108 6,.50,.05,.05,3
109 1,.07,.03
110 3,0
111 2,.48,2,25,0
112 2,.16,2,11,0
113 2,.16,1,5,0
117 2
118 1,1570311,.06,0,.13757961
119 1,300000,.08,36,.08000000

2 DEC 70

INVESTMENT MARKET VALUE ANALYSIS
 EDUCARE SEMINAR PROBLEM ONE
 UNIVERSITY OF WISCONSIN

1ST RUN

PREPARED BY A COMPUTER IN CONSULTATION WITH
 M. B. HODGES, JR MCLEAN, VIRGINIA

 INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 14.00%: \$ 2909322

AFTER TAX YIELD OF 8.50%: \$ 2900765

DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:

EXISTING 6.00% 9 YRS 7 MONS \$ 1570311
 EXISTING 8.00% 3 YRS 0 MONS \$ 300000

EQUITY CASH: \$ 1030454

RESALE OF INVESTMENT IN 10 YEARS:

ESTIMATED RESALE PRICE \$ 2697712

LESS: MORTGAGE BAL. 0
 SALES COMMISSION 80931

CASH REVERSION BEFORE TAXES \$ 2616781

LESS: CAPITAL GAINS TAX(ALT.) 326388
 TAX ON RECAPTURED DEPR. 12259
 TAX PREFERENCE TAX 13861

CASH REVERSION AFTER TAXES \$ 2264273

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	310000	114812	215184	-19996	0	125231	69957
2	310000	107088	205709	-2797	0	132955	69957
3	310000	98888	197090	14022	0	441155	-230043
4	310000	66182	192913	50905	30950	149861	63007
5	310000	56938	189928	63134	33145	159105	60812
6	310000	47125	94269	168606	88518	168918	5439
7	310000	36707	94269	179024	92519	179336	1438
8	310000	25646	94269	190085	99794	190397	-5837
9	310000	13902	94269	201829	105960	202141	-12003
10	310000	2400	94269	213331	111998	121212	74390

2ND
RUN

OLD INPUT

READY

108 5,.70,.05,.05,3

118 1,2250000,.0975,260,0

REPLACE INPUT

(THESE NEW INPUT FIGURES ARE THE
(ONLY CHANGES MADE FOR 2ND RUN

FOR SECOND IMV ANALYSIS THE SYNDICATE PURCHASERS WERE CHANGED TO REFLECT INDIVIDUALS HAVING SUBSTANTIAL INCOME FROM OTHER INVESTMENTS AND BEING IN THE 70% INCOME TAX BRACKET. FURTHER, A NEW FIRST MORTGAGE IS OBTAINED, YET THE SELLER REMAINS WILLING TO TAKE BACK A SECOND MORTGAGE OF THE SAME AMOUNT AND TERMS AS HE WOULD HAVE DONE UNDER THE FIRST PREMISE.

2DEC 70

INVESTMENT MARKET VALUE ANALYSIS
 EDUCARE SEMINAR PROBLEM ONE
 UNIVERSITY OF WISCONSIN

2nd
 RUN

PREPARED BY A COMPUTER IN CONSULTATION WITH
 M. B. HODGES, JR MCLEAN, VIRGINIA

 INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 14.00%: \$ 2922092

AFTER TAX YIELD OF 8.50%: \$ 3428576

DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:

EXISTING 9.75% 21 YRS 8 MONS \$ 2250000
 EXISTING 8.00% 3 YRS 0 MONS \$ 300000

EQUITY CASH: \$ 878576

RESALE OF INVESTMENT IN 10 YEARS:

ESTIMATED RESALE PRICE \$ 3188576

LESS: MORTGAGE BAL. 1737163
 SALES COMMISSION 95657

CASH REVERSION BEFORE TAXES \$ 1355756

LESS: CAPITAL GAINS TAX(ALT.) 510356
 TAX ON RECAPTURED DEPR. 19724
 TAX PREFERENCE TAX 15391

CASH REVERSION AFTER TAXES \$ 810285

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	310000	241976	254338	-186314	-133214	31874	169364
2	310000	238725	243139	-171864	-122882	35125	159032
3	310000	235143	232952	-158095	-113037	338707	-150813
4	310000	207196	228014	-125210	-89525	42654	149675
5	310000	202846	224487	-117333	-83893	47004	144043
6	310000	198053	111421	526	376	51797	59774
7	310000	192771	111421	5808	4152	57079	55998
8	310000	186950	111421	11629	8314	62900	51836
9	310000	180536	111421	18043	12900	69314	47250
10	310000	173467	111421	25112	17955	76383	42195

INVESTMENT MARKET VALUE ANALYSIS

DATA INPUT FORM

PROJECT ID: EDUCARE SEMINAR PROBLEM FOUR

UNIVERSITY OF WISCONSIN

Date: 3 DECEMBER 1970

VALUATION PROBLEM: Five contiguous properties containing numerous old store and walk-up apartments are ready for assembly, and will be ripe for multistory commercial and apartment redevelopment in five years, when a new subway station is scheduled nearby. A broker, after many months of negotiations, has informed his client, a large, diversified corporation, that it will take \$786,000 cash to swing the deal; that the several owners will take a deferred purchase money note for the balance, amortising over five years. The raw land value for redevelopment in 1975, net after demolition costs, is predicted to be \$2,625,000. The corporate purchaser wants a 10% equity return after taxes. How much can be paid, assuming annual net property incomes as shown in this analysis?

PREPARED BY:

MBH

ALL INPUTS INVOLVING A % MUST BE ENTERED AS A DECIMAL EQUIVALENT [11.75%=.1175]

PROJECT ID (Maximum 30 characters per line)

100 EDUCARE SEMINAR PROBLEM FOUR
101 UNIVERSITY OF WISCONSIN

USED FOR ELLWOOD'S VALUATION

AVG. ANNUAL NET INCOME BEFORE TAX YIELD AFTER TAX YIELD

102 185000 , .15 , .10

OPERATION CODE:

- 1—Produces IMV for a given after tax equity yield rate
- 2—Produces four after tax equity yield rates for four given IMVs

NET INCOME CODE:

- 1—Constant net income value for each year
- 2—Different net income value for each year (If the last year of the projection term does not fall in the last position of a line fill the remaining years of that line with zeros)

OPERATION CODE PROJECTION TERM (yrs) NET INCOME CODE

103 1 , 5 , 2

NET INCOME [If net income is constant enter the value in position (1) only]

(1) (2) (3) (4) (5)

104 195000 , 195000 , 180000 , 170000 , 130000

(6) (7) (8) (9) (10)

105 _____ , _____ , _____ , _____ , _____

(11) (12) (13) (14) (15)

106 _____ , _____ , _____ , _____ , _____

(16) (17) (18) (19) (20)

107 _____ , _____ , _____ , _____ , _____

OWNERSHIP FORM CODE:

- 1—Corporation (Operating losses applied to other investments)
- 2—Corporation (Operating losses carried back/carried over)
- 3—Corporation (Taxable income offset by losses from other investments)
- 4—Corporation (Set-up solely for this investment)
- 5—Non-corporation (Operating losses applied to other investments)
- 6—Non-corporation (Operating losses carried back/carried over)
- 7—Non-corporation (Taxable income offset by losses from other investments)

EXCESS DEPRECIATION RECAPTURE CODE:

- 1—No recapture
- 2—FHA 221 (d) (3), 236 before 1975 (After 20 months-declines 1% per month)
- 3—All other residential rentals (After 100 months-declines 1% per month)
- 4—All non-residential—100% recapture

OWNERSHIP FEDERAL STATE TAX STATE CAPITAL EXCESS DEPRECIATION
FORM CODE TAX RATE RATE GAINS RATE RECAPTURE CODE

108 1 , .504 , .05 , .05 , 1

APPRECIATION/DEPRECIATION AT RESALE:

APP/DEP CODE:

- 1—% of IMV (Enter the % in the APP/DEP AT RESALE column)
- 2—\$ amount (Enter the \$ amount in the APP/DEP AT RESALE column)
- 3—Reversionary \$ amount (Enter the \$ amount in the APP/DEP AT RESALE column)

APP/DEP CODE APP/DEP AT RESALE (\$ OR %) SALES COMMISSION RATE (0 if none)

109 3 , 2625000 , 0

DEPRECIABLE CAPITAL ASSETS:

METHOD CODE:

ASSET CODE: Asset value as a:

- 1—\$ amount (Enter the \$ amount in the ASSET VALUE column)
- 2—% of IMV (Enter the % in the ASSET VALUE column)
- 3—% of the difference between IMV and land value (Enter \$ amount for land value in LAND VALUE column and the % in the ASSET VALUE column)

- 1—Straight line
- 2—125%
- 3—150%
- 4—200%
- 5—Sum-of-years-digits

NUMBER OF ASSETS (0 to 6)

LAND VALUE (0 if ASSET CODE 3 is not used)

110 6 , 900923

[Assets MUST be entered in order of ASCENDING ASSET CODES]

	ASSET CODE	ASSET VALUE (\$ or %)	METHOD CODE	LIFE	SALVAGE (0 if none)
111	<u>3</u>	<u>.07</u>	<u>1</u>	<u>18</u>	<u>1000</u>
112	<u>3</u>	<u>.12</u>	<u>1</u>	<u>15</u>	<u>2500</u>
113	<u>3</u>	<u>.09</u>	<u>1</u>	<u>8</u>	<u>1000</u>
114	<u>3</u>	<u>.14</u>	<u>1</u>	<u>14</u>	<u>4000</u>
115	<u>3</u>	<u>.37</u>	<u>1</u>	<u>16</u>	<u>5000</u>
116	<u>3</u>	<u>.21</u>	<u>1</u>	<u>5</u>	<u>0</u>

MORTGAGES:

MORTGAGE CODE:

- 1—Existing mortgage or mortgage of known \$ amount (Enter the \$ amount in the KEY FIGURE column)
- 2—New mortgage amount which is a % of IMV (Enter the ratio (%) in the KEY FIGURE column)

THE FOLLOWING TWO OPTIONS CANNOT BE USED SIMULTANEOUSLY

- 3—Secondary mortgage amount which is the difference between IMV and sum of known amounts for equity cash and the other mortgages (Enter the \$ amount for cash equity in the KEY FIGURE column)
- 4—Secondary mortgage amount which is the difference between a total mortgage ratio and the sum of other mortgages of known amounts (Enter the total mortgage ratio (%) in the KEY FIGURE column)

TERM AND ANNUAL CONSTANT:

For each mortgage either the TERM or the ANNUAL CONSTANT must be provided except in the case of a balloon for which both must be provided. Enter a zero for the TERM or the ANNUAL CONSTANT, whichever is unknown. The annual constant must be at least 8 decimal places.

NUMBER OF MORTGAGES (0 to 6)

117 6

[Mortgages MUST be entered in order of ASCENDING MORTGAGE CODES]

	MORTGAGE CODE	KEY FIGURES (\$ or %)	INTEREST RATE	TERM (Months)	ANNUAL CONSTANT
118	<u>1</u>	<u>83106</u>	<u>.075</u>	<u>147</u>	<u>0</u>
119	<u>1</u>	<u>133837</u>	<u>.0675</u>	<u>0</u>	<u>.11264921</u>
120	<u>1</u>	<u>46479</u>	<u>.055</u>	<u>45</u>	<u>0</u>
121	<u>1</u>	<u>161656</u>	<u>.065</u>	<u>0</u>	<u>.11655543</u>
122	<u>1</u>	<u>364700</u>	<u>.0675</u>	<u>0</u>	<u>.12236616</u>
123	<u>3</u>	<u>786000</u>	<u>.10</u>	<u>60</u>	<u>0</u>

100 EDUCARE SEMINAR PROBLEM FOUR
101 UNIVERSITY OF WISCONSIN
102 185000,.15,.10
103 1,5,2
104 195200,195200,180000,170000,130000
108 1,.504,.05,.05,1
109 3,2625000,0
110 6,900923
111 3,.07,1,18,1000
112 3,.12,1,15,2500
113 3,.09,1,8,1000
114 3,.14,1,14,4000
115 3,.37,1,16,5000
116 3,.21,1,5,0
117 6
118 1,83106,.075,147,0
119 1,133837,.0675,0,.11264921
120 1,46479,.055,45,0
121 1,161656,.065,0,.11655543
122 1,364700,.0675,0,.12236616
123 3,786000,.10,60,0

INVESTMENT MARKET VALUE ANALYSIS
 EDUCARE SEMINAR PROBLEM FOUR
 UNIVERSITY OF WISCONSIN

PREPARED BY A COMPUTER IN CONSULTATION WITH
 M. B. HODGES, JR MCLEAN, VIRGINIA

 INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 15.00%: \$ 2216931

AFTER TAX YIELD OF 10.00%: \$ 2238231

DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:

EXISTING	7.50%	12 YRS	3 MONS	\$	83106
EXISTING	6.75%	13 YRS	7 MONS	\$	133837
EXISTING	5.50%	3 YRS	9 MONS	\$	46479
EXISTING	6.50%	12 YRS	7 MONS	\$	161656
EXISTING	6.75%	11 YRS	11 MONS	\$	364700
NEW 2ND	10.00%	5 YRS	0 MONS	\$	662453

EQUITY CASH: \$ 786000

RESALE OF INVESTMENT IN 5 YEARS:

ESTIMATED RESALE PRICE \$ 2625000

LESS: MORTGAGE BAL. 514654
 SALES COMMISSION 0

CASH REVERSION BEFORE TAXES \$ 2110346

LESS: CAPITAL GAINS TAX(ALT.) 348093
 TAX ON RECAPTURED DEPR. 0
 TAX PREFERENCE TAX 1156

CASH REVERSION AFTER TAXES \$ 1761097

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	195200	112849	130463	-48112	-25441	158735	-50943
2	195200	98166	130463	-33429	-17677	173418	-58707
3	180000	82071	130463	-32534	-17203	189513	-74381
4	170000	64444	130463	-24907	-13170	203703	-84977
5	130000	45631	130463	-46094	-24374	212208	-103465

INVESTMENT MARKET VALUE ANALYSIS

DATA INPUT FORM

PROJECT ID: EDUCARE SEMINAR PROBLEM FIVE

UNIVERSITY OF WISCONSIN

Date: 2 DECEMBER 1970

ANALYSIS OF AN ACTUAL SALE: In June 1970 a New York manufacturing corporation, with much taxable income, purchased a 306-unit, poorly located and unattractively planned garden apartment complex in Virginia, paying cash above existing 6% mortgages. The land is zoned commercial, but if it were vacant it would probably not sell at much more than if zoned for row houses. If the purchaser obtains a shift in the tax assessment, from land to buildings, reducing the land value to \$268,000, what would be the IMV for an equity yield of .0875? The actual purchase price was \$2,640,000.

Next, prepare a price-yield curve surrounding the actual purchase price, and while doing so, determine the yield at such purchase price. Do this under the assumption that the land assessment will be reduced.

Finally, what would a REIT have paid for this property, to have obtained the same equity yield (.0875), but failing to get the land valuation, as assessed, below its present \$450,000? Note that in order for the REIT to achieve a suitable cash-flow-to-equity ratio, it would have had to refinance the property at the best available terms as of the purchase date.

PREPARED BY:

T. B. A.

ALL INPUTS INVOLVING A % MUST BE ENTERED AS A DECIMAL EQUIVALENT [11.75%=.1175]

PROJECT ID (Maximum 30 characters per line)

100 EDUCARE SEMINAR PROBLEM FIVE
101 UNIVERSITY OF WISCONSIN

USED FOR ELLWOOD'S VALUATION

AVG. ANNUAL NET INCOME BEFORE TAX YIELD AFTER TAX YIELD

102 217000 , .15 , .0875

OPERATION CODE:

- 1-Produces IMV for a given after tax equity yield rate
- 2-Produces four after tax equity yield rates for four given IMVs

NET INCOME CODE:

- 1-Constant net income value for each year
- 2-Different net income value for each year (If the last year of the projection term does not fall in the last position of a line fill the remaining years of that line with zeros)

OPERATION CODE PROJECTION TERM (yrs) NET INCOME CODE

103 1 , 10 , 2

NET INCOME [If net income is constant enter the value in position (1) only]

	(1)	(2)	(3)	(4)	(5)
104	<u>220000</u>	<u>220000</u>	<u>218000</u>	<u>218000</u>	<u>216000</u>

	(6)	(7)	(8)	(9)	(10)
105	<u>216000</u>	<u>214000</u>	<u>214000</u>	<u>210000</u>	<u>210000</u>

	(11)	(12)	(13)	(14)	(15)
106	_____	_____	_____	_____	_____

	(16)	(17)	(18)	(19)	(20)
107	_____	_____	_____	_____	_____

OWNERSHIP FORM CODE:

- 1-Corporation (Operating losses applied to other investments)
- 2-Corporation (Operating losses carried back/carried over)
- 3-Corporation (Taxable income offset by losses from other investments)
- 4-Corporation (Set-up solely for this investment)
- 5-Non-corporation (Operating losses applied to other investments)
- 6-Non-corporation (Operating losses carried back/carried over)
- 7-Non-corporation (Taxable income offset by losses from other investments)

EXCESS DEPRECIATION RECAPTURE CODE:

- 1-No recapture
- 2-FHA 221 (d) (3), 236 before 1975 (After 20 months-declines 1% per month)
- 3-All other residential rentals (After 100 months-declines 1% per month)
- 4-All non-residential-100% recapture

OWNERSHIP FORM CODE FEDERAL TAX RATE STATE TAX RATE STATE CAPITAL GAINS RATE EXCESS DEPRECIATION RECAPTURE CODE

108 1 , .48 , .10 , .10 , 3

APPRECIATION/DEPRECIATION AT RESALE:

APP/DEP CODE:

- 1-% of IMV (Enter the % in the APP/DEP AT RESALE column)
- 2-\$ amount (Enter the \$ amount in the APP/DEP AT RESALE column)
- 3-Reversionary \$ amount(Enter the \$ amount in the APP/DEP AT RESALE column)

APP/DEP CODE APP/DEP AT RESALE (\$ OR %) SALES COMMISSION RATE (0 if none)

109 3 , 1860000 , .0175

5-2

DEPRECIABLE CAPITAL ASSETS:

METHOD CODE:

ASSET CODE: Asset value as a:

- 1—\$ amount (Enter the \$ amount in the ASSET VALUE column)
- 2—% of IMV (Enter the % in the ASSET VALUE column)
- 3—% of the difference between IMV and land value (Enter \$ amount for land value in LAND VALUE column and the % in the ASSET VALUE column)

- 1—Straight line
- 2—125%
- 3—150%
- 4—200%
- 5—Sum-of-years-digits

NUMBER OF ASSETS (0 to 6)

LAND VALUE (0 if ASSET CODE 3 is not used)

110 3 , 268000

[Assets MUST be entered in order of ASCENDING ASSET CODES]

	ASSET CODE	ASSET VALUE (\$ or %)	METHOD CODE	LIFE	SALVAGE (0 if none)
111	<u>3</u>	<u>.64</u>	<u>2</u>	<u>26</u>	<u>0</u>
112	<u>3</u>	<u>.19</u>	<u>2</u>	<u>13</u>	<u>0</u>
113	<u>3</u>	<u>.17</u>	<u>1</u>	<u>5</u>	<u>0</u>
114					
115					
116					

MORTGAGES:

MORTGAGE CODE:

- 1—Existing mortgage or mortgage of known \$ amount (Enter the \$ amount in the KEY FIGURE column)
- 2—New mortgage amount which is a % of IMV (Enter the ratio (%) in the KEY FIGURE column)

THE FOLLOWING TWO OPTIONS CANNOT BE USED SIMULTANEOUSLY

- 3—Secondary mortgage amount which is the difference between IMV and sum of known amounts for equity cash and the other mortgages (Enter the \$ amount for cash equity in the KEY FIGURE column)
- 4—Secondary mortgage amount which is the difference between a total mortgage ratio and the sum of other mortgages of known amounts (Enter the total mortgage ratio (%) in the KEY FIGURE column)

TERM AND ANNUAL CONSTANT:

For each mortgage either the TERM or the ANNUAL CONSTANT must be provided except in the case of a balloon for which both must be provided. Enter a zero for the TERM or the ANNUAL CONSTANT, whichever is unknown. The annual constant must be at least 8 decimal places.

NUMBER OF MORTGAGES (0 to 6)

117 2

[Mortgages MUST be entered in order of ASCENDING MORTGAGE CODES]

	MORTGAGE CODE	KEY FIGURES (\$ or %)	INTEREST RATE	TERM (Months)	ANNUAL CONSTANT
118	<u>1</u>	<u>1186414</u>	<u>.06</u>	<u>0</u>	<u>.09170491</u>
119	<u>1</u>	<u>855518</u>	<u>.06</u>	<u>0</u>	<u>.09713413</u>
120					
121					
122					
123					

1st RUN

100 EDUCARE SEMINAR PROBLEM FIVE
101 UNIVERSITY OF WISCONSIN
102 217000,.15,.0875
103 1,10,2
104 220000,220000,218000,218000,216000
105 216000,214000,214000,210000,210000
108 1,.48,.10,.10,3
109 3,1860000,.0175
110 3,268000
111 3,.64,2,26,0
112 3,.19,2,13,0
113 3,.17,1,5,0
117 2
118 1,1186414,.06,0,.09171491
119 1,855518,.06,0,.09713413

2 Dec 70-2

5-4

INVESTMENT MARKET VALUE ANALYSIS
 EDUCARE SEMINAR PROBLEM FIVE
 UNIVERSITY OF WISCONSIN

1ST RUN

PREPARED BY A COMPUTER IN CONSULTATION WITH
 M. B. HODGES, JR MCLEAN, VIRGINIA

 INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 15.00%: \$ 2357132

AFTER TAX YIELD OF 8.75%: \$ 2492436

 DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:

EXISTING 6.00% 17 YRS 9 MONS \$ 1186414

EXISTING 6.00% 16 YRS 1 MONS \$ 855518

EQUITY CASH: \$ 450504

RESALE OF INVESTMENT IN 10 YEARS:

ESTIMATED RESALE PRICE \$ 1860000

LESS: MORTGAGE BAL. 1094217
 SALES COMMISSION 32550

CASH REVERSION BEFORE TAXES \$ 733233

LESS: CAPITAL GAINS TAX(ALT.) 231206
 TAX ON RECAPTURED DEPR. 13867
 TAX PREFERENCE TAX 0

CASH REVERSION AFTER TAXES \$ 488160

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	220000	120576	184713	-85289	-45373	71336	73461
2	220000	116176	177515	-73691	-39203	75736	67291
3	218000	111504	170851	-64355	-34236	80408	60324
4	218000	106545	165877	-54422	-28952	85367	55040
5	216000	101279	163039	-48318	-25705	90633	49793
6	216000	95689	84706	35605	18941	96223	5147
7	214000	89755	84171	40074	21319	102157	769
8	214000	83454	84171	46375	24671	108458	-2583
9	210000	76765	84171	49064	26102	115147	-8014
10	210000	69662	84171	56167	29880	122250	-11792

2 DEC 70 -1

5-5

2ND RUN

OLD INPUT
READY
103 2,10,2
REPLACE INPUT

(COMPUTER IS NOW IN OPERATION CODE 2, PREPARED
TO ASK USER FOR A NUMBER OF TRIAL IMV AMOUNTS,
TO GIVE USER THE AFTER TAX YIELD FOR EACH)

2 Dec 70-2

(5-6

2 ND RUN

WHAT IS TRIAL IMV AMOUNT NO 1 (0=STOP)?2564000

AFTER TAX YIELD 6.92%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 2 (0=STOP)?2650000

AFTER TAX YIELD 5.19%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 3 (0=STOP)?2475000

AFTER TAX YIELD 9.27%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 4 (0=STOP)?2750000

AFTER TAX YIELD 3.60%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 5 (0=STOP)?2350000

AFTER TAX YIELD 13.07%
DO YOU WANT DETAIL(0=NO,1=YES)?0

WHAT IS TRIAL IMV AMOUNT NO. 6 (0=STOP)?2850000

AFTER TAX YIELD 2.33%
DO YOU WANT DETAIL(0=NO,1=YES)?0

2 DEC 70-2

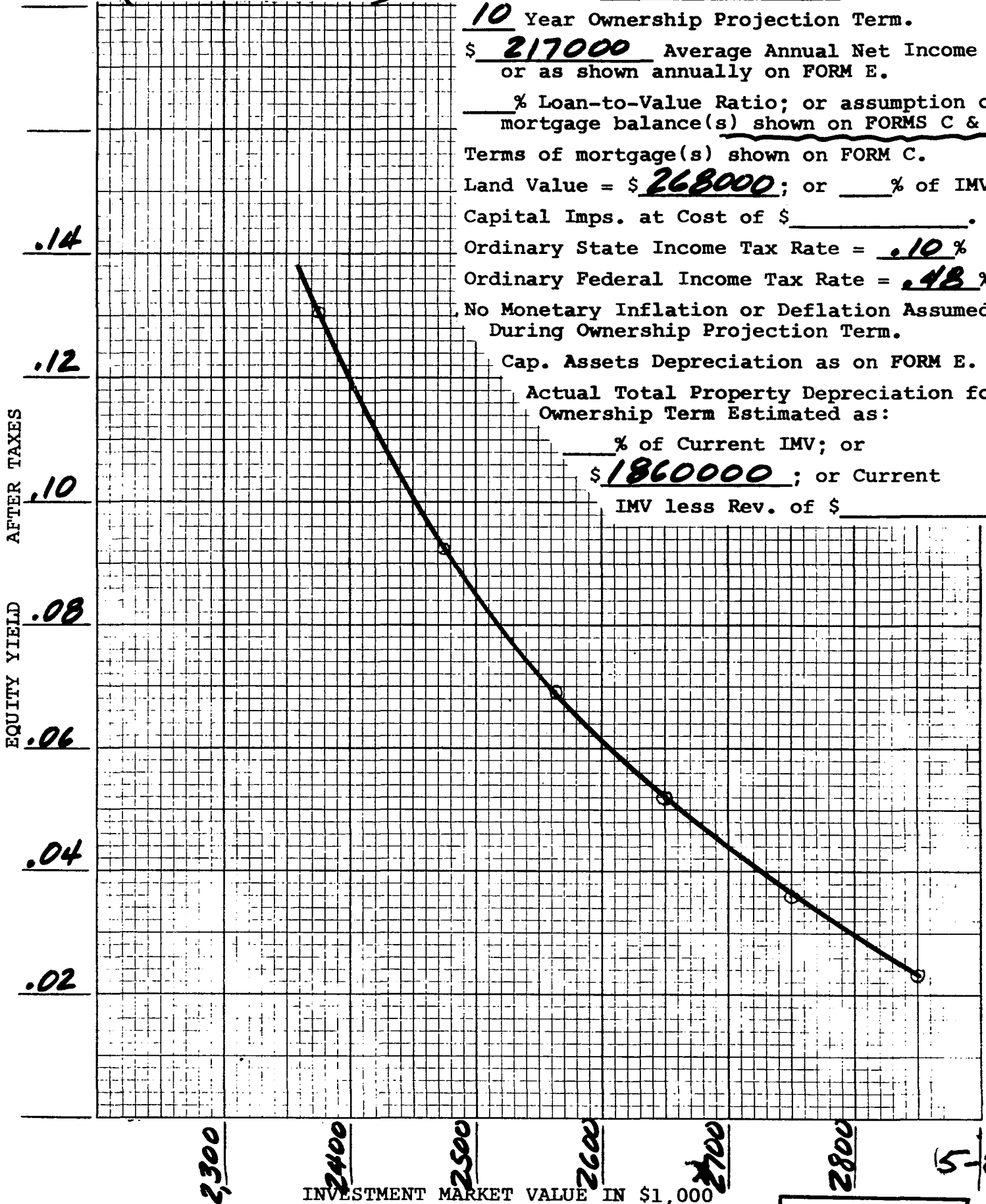
5-7

GRAPHIC ANALYSIS FOR INVESTMENT MARKET VALUE

(EDUCARE FIVE)

Investment Criteria

10 Year Ownership Projection Term.
 \$ 217000 Average Annual Net Income or as shown annually on FORM E.
 _____ % Loan-to-Value Ratio; or assumption of mortgage balance(s) shown on FORMS C & D
 Terms of mortgage(s) shown on FORM C.
 Land Value = \$ 268000; or _____ % of IMV.
 Capital Imps. at Cost of \$ _____.
 Ordinary State Income Tax Rate = .10 %
 Ordinary Federal Income Tax Rate = .48 %
 No Monetary Inflation or Deflation Assumed During Ownership Projection Term.
 Cap. Assets Depreciation as on FORM E.
 Actual Total Property Depreciation for Ownership Term Estimated as:
 _____ % of Current IMV; or
 \$ 1860000; or Current IMV less Rev. of \$ _____.



INVESTMENT MARKET VALUE ANALYSIS
EDUCARE SEMINAR PROBLEM FIVE
UNIVERSITY OF WISCONSIN

PREPARED BY A COMPUTER IN CONSULTATION WITH
M. B. HODGES, JR MCLEAN, VIRGINIA

INVESTMENT MARKET VALUE:

BEFORE TAX YIELD OF 15.00%: \$ 1875093

AFTER TAX YIELD OF 8.75%: \$ 2095923

DETAIL FOR AFTER TAX IMV

FINANCING:

MORTGAGES:

NEW 1ST 10.25% 25 YRS 0 MONS \$ 1571942

EQUITY CASH: \$ 523981

RESALE OF INVESTMENT IN 10 YEARS:

ESTIMATED RESALE PRICE \$ 1860000

LESS: MORTGAGE BAL. 1336034
 SALES COMMISSION 32550

CASH REVERSION BEFORE TAXES \$ 491416

LESS: CAPITAL GAINS TAX(STD.) 149296
 TAX ON RECAPTURED DEPR. 8291
 TAX PREFERENCE TAX 15355

CASH REVERSION AFTER TAXES \$ 318474

YR	NET INCOME	MORTGAGE INTEREST	BOOK DEPR.	TAXABLE INCOME	INCOME TAX	MORTGAGE AMORTIZE	CASH FLOW AFTER TAX
1	220000	160466	136674	-77140	-33170	14281	78423
2	220000	158931	131348	-70279	-30219	15816	75472
3	218000	157231	126417	-65648	-28228	17516	71481
4	218000	155349	122737	-60086	-25836	19398	69089
5	216000	153265	120637	-57902	-24897	21482	66150
6	216000	150956	62676	2368	1018	23791	40235
7	214000	148400	62280	3320	1427	26347	37826
8	214000	145569	62280	6151	2644	29178	36609
9	210000	142434	62280	5286	2272	32313	32981
10	210000	138961	62280	8759	3766	35786	31487

3RD RUN

OLD INPUT

READY

103 1,10,2

108 5,.40,.04,.05,3

110 3,450000

117 1

118 2,.75,.1025,300,0

REPLACE INPUT

(PLACES COMPUTER BACK INTO CODE 1 OPERATION
WITH NEW DATA FOR A REAL ESTATE INVESTMENT
TRUST AS THE PROSPECTIVE PURCHASER.
NEW FINANCING REQUIRED TO GET THE REIT
A CASH FLOW RETURN SATISFACTORY TO ITS
STOCKHOLDERS)

2 DEC 70-2

5-10

Sample Minimod Input + Output

Used during early 1970s in UH Real Estate Program --
Fire-runner to more sophisticated discounted cash flow
program

Rg1

10-70

X

LINE 43
on at 17:03 10/02/70 FRIDAY 103
USER NUMBER,PASSWORD--DZN401,X

READY

RUN MIM DELETED
RUN MINIMOD

MINIMOD 17:04 10/02/70 FRIDAY 103

ENTER COMPANY OR PROJECT NAME

? UNIVERSITY PROPERTIES

ENTER ORIGINAL COST OF LAND

? 250000

ENTER ORIGINAL COST OF BUILDING

? 700000

DEPRECIATION METHODS INCLUDE 1. SUM OF THE YEARS DIGITS, 2. STRAIGHT LIN

E, 3. 1.25 DECLINING BALANCE, 4. 1.5 DECLINING BALANCE, AND 5. DOUBLE DE

CLINING BALANCE

ENTER % DEPRECIABLE, DEPRECIATION METHOD, STARTING YEAR, USEFUL LIFE

? 1,4,1,40

DO YOU HAVE OTHER COMPONENTS (YES OR NO)

? NO

ENTER MORTGAGE NAME, AND AMOUNT

? FIRST MORTGAGE,600000

ENTER MONTHLY PAYMENT, INTEREST RATE, BONUS INTEREST RATE

? 4500,.085,.01

ENTER START YEAR, END YEAR, AND TERM ON THIS MORTGAGE

? 1,10,30

DO YOU HAVE ANOTHER MORTGAGE (YES OR NO)

? NO

pg 2

ENTER ANNUAL GROSS RENT, AND RATE OF GROWTH OF GROSS RENT
? 200000,.03
ENTER VACANCY RATE
? .05
ENTER ANNUAL EXPENSES, AND RATE OF GROWTH OF EXPENSES
? 60000,.02
ENTER REAL ESTATE TAXES, AND RATE OF GROWTH OF R.E. TAXES
? 10000,.02
ENTER PROJECT VALUE RATE OF GROWTH
? .01
ENTER WORKING CAPITAL LOAN INTEREST RATE
? .12
ENTER EXTRAORDINARY EXPENSES YEAR 1
? 0
ENTER MARGINAL INCOME TAX RATE
? .50
ENTER EQUITY DISCOUNT RATE
? .10
ENTER OPPORTUNITY COST OF CAPITAL
? .10
ALL INPUTS ARE IN DO YOU WISH TO MAKE ANY CHANGES BEFORE RUNNING (YES OR NO)
? NO
DO YOU WANT MORTGAGE SCHEDULES PRINTED (YES OR NO)
? YES
DO YOU WANT DEPRECIATION SCHEDULES PRINTED (YES OR NO)
? YES
MINI MODEL HAS FIVE PARTS; ENTER FIVE NUMBERS) FOR NO PRINT, 1 FOR PRINT

? 1,1,1,1,1
MINI MODEL CALCULATES DATA FOR 10 YEARS, ONLY FOUR YEARS DATA IS PRINTED

, ENTER THE FOUR YEARS YOU WANT OUTPUT FOR
? 1,2,5,10

CASH FLOW ANALYSIS FOR UNIVERSITY PROPERT

MORTGAGE AMORTIZATION SCHEDULE FOR - - FIRST MORTGAGE

MORTGAGE AMOUNT 600000.00
INTEREST RATE 8.50
MONTHLY PAYMENT 4500.00

YEAR	INTEREST PAYMENT	PRINCIPAL PAYMENT	BALANCE	BONUS INT PAYMENT	BONUS INT RATE
1	50880	3119	596879	2000	0.0033
2	50604	3395	593483	2060	0.0035
3	50304	3695	589787	2120	0.0036
4	49977	4022	585765	2180	0.0037
5	49622	4377	581386	2240	0.0038
6	49235	4764	576621	2300	0.0040
7	48813	5186	571435	2360	0.0041
8	48355	5644	565790	2420	0.0043
9	47856	6143	559646	2480	0.0044
10	47313	6686	552959	2540	0.0046

DEPRECIATION SCHEDULE FOR

TOTAL COST
DEPRECIABLE COST
USEFUL LIFE

BUILDING
700000
700000
40

YEAR	DEPRECIATION TAKEN	UNDEPRECIATED BALANCE
1	26249	673750
2	25265	648484
3	24318	624166
4	23406	600759
5	22528	578231
6	21683	556547
7	20870	535677
8	20087	515589
9	19334	496254
10	18609	477645

TOTAL INITIAL INVESTMENT 950000
TOTAL MORTGAGE AMOUNT 600000
TOTAL INITIAL EQUITY 350000

194

1	YEAR	1	2	5	10
	GROSS RENT	200000	206000	224000	254000
	LESS VACANCY ALLOWANCE	10000	10300	11200	12700
	EFFECTIVE GROSS INCOME	190000	195700	212800	241300
	LESS REAL ESTATE TAXES	10000	10199	10799	11799
	LESS EXPENSES	60000	61199	64799	70799
	NET INCOME	120000	124300	137200	158700
	LESS DEPRECIATION	26249	25265	22528	18609
	LESS INTEREST	52880	52664	51862	49853
	TAXABLE INCOME	40869	46369	62809	90237
	2 PLUS DEPRECIATION	26249	25265	22528	18609
	LESS PRINCIPAL PAYMENTS	3119	3395	4377	6686
	CASH THROW-OFF	63999	68239	80959	102160
	LESS TAXES	20434	23184	31404	45118
	CASH FROM OPERATIONS	43565	45054	49555	57041
	WORKING CAPITAL LOAN BALANCE	0	0	0	0
	SPENDABLE CASH AFTER TAXES	43565	45054	49555	57041
	TAX SAVINGS ON OTHER INCOME	0	0	0	0
3*	* * * * *				
	MARKET VALUE	950000	959500	988000	1035500
	BALANCE OF LOANS	596879	593483	581386	552959
	NET WORTH OF PROPERTY	353120	366016	406613	482540
	CAPITAL GAIN	17500	44500	125500	269970
	TAXES ON SALE	8749	19382	48509	86434
4*	* * * * *				
	& INIT EQUITY PAYBACK AFT TAX	.1245	0.2532	0.6651	1.4373
	NET INCOME-MARKET VALUE RATIO	.1263	0.1295	0.1389	0.1533
	RETURN ON NET WORTH BEFORE TAX	.1918	0.2298	0.2415	0.2538
	RETURN ON NET WORTH AFTER TAX	.1084	0.1374	0.1532	0.1746
	BASH RETRN ON ORIG CASH EQ B/T	.1829	0.1950	0.2313	0.2919
	CASH RETRN ON ORIG CASH EQ A/T	.1245	0.1287	0.1416	0.1630
	DEFAULT RATIO	.6300	0.6187	0.5886	0.5478
	DEBT COVER RATIO	2.1429	2.2173	2.4395	2.8069
5*	* * * * *				
	P.V. OF THE PROJECT B/4 TAX	979200	1017071	1124180	1276355
	P.V. OF THE PROJECT AFT TAX	952668	963314	997760	1054690

DO YOU WANT TO RERUN, (YES OR NO)

? YES

ENTER LINE NUMBER OF CHANGE

? 11

2 COMPONENTS HAVE BEEN INPUTED. IF ONE IS TO BE CHANGED, ENTER ITS NUMB

ER. TO ADD A COMPONENT, ENTER A 3

? 1

ENTER ORIGINAL COST OF LAND

? 200000

ANY MORE CHANGES (YES OR NO)

? YES

ENTER LINE NUMBER OF CHANGE

? 12

1 MORTGAGES HAVE BEEN ENTERED. IF ONE IS TO BE CHANGED, ENTER ITS NUMB

R. TO ADD A MORTGAGE, ENTER A 2

? 1

ENTER MORTGAGE NAME, AND AMOUNT

? FIRST MORTGAGE, 600000

ENTER MONTHLY PAYMENT, INTEREST RATE, BONUS INTEREST RATE

? 0, .08, 0

ENTER START YEAR, END YEAR, AND TERM ON THIS MORTGAGE

? 1, 10, 30

ANY MORE CHANGES (YES OR NO)

? NO

DO YOU WANT MORTGAGE SCHEDULES PRINTED (YES OR NO)

? YES

DO YOU WANT DEPRECIATION SCHEDULES PRINTED (YES OR NO)

? NO

MINI MODEL HAS FIVE PARTS; ENTER FIVE NUMBERS 0 FOR NO PRINT, 1 FOR PRINT

? 1, 1, 1, 0, 1

MINI MODEL CALCULATES DATA FOR 10 YEARS, ONLY FOUR YEARS DATA IS PRINTED

, ENTER THE FOUR YEARS YOU WANT OUTPUT FOR

? 1, 2, 5, 10

CASH FLOW ANALYSIS FOR UNIVERSITY PROPERT

MORTGAGE AMORTIZATION SCHEDULE FOR --FIRST MORTGAGE

MORTGAGE AMOUNT 600000.00
INTEREST RATE 8.00
MONTHLY PAYMENT 4402.74

YEAR	INTEREST PAYMENT	PRINCIPAL PAYMENT	BALANCE	BONUS INT PAYMENT	BONUS INT RATE
1	47818	5014	594985	0	0.0000
2	47402	5430	589555	0	0.0000
3	46951	5881	583673	0	0.0001M
4	46463	6369	577304	0	0.0000
5	45934	6897	570405	0	0.0000
6	45362	7470	562935	"0	0.0000
7	44742	8090	554844	0	0.0000
8	44070	8762	546081	0	0.0000
9	43343	9489	536592	0	0.0000
10	42555	10276	526314	0	0.0000

TOTAL INITIAL INVESTMENT 900000
TOTAL MORTGAGE AMOUNT 600000
TOTAL INITIAL EQUITY 300000

1 YEAR	1	2	5	10
GROSS RENT	200000	206000	224000	254000
LESS VACANCY ALLOWANCE	10000	10300	11200	12700
EFFECTIVE GROSS INCOME	190000	195700	212800	241300
LESS REAL ESTATE TAXES	10000	10199	10799	11799
LESS EXPENSES	60000	61199	64799	70799
NET INCOME	120000	124300	137200	158700
LESS DEPRECIATION	25249	25265	22528	18609
LESS INTEREST	47818	47402	45934	42555
TAXABLE INCOME	45931	51631	68736	97534
2. PLUS DEPRECIATION	26249	25265	22528	18609
LESS PRINCIPAL PAYMENTS	5014	5430	6897	10276
CASH THROW-OFF	67167	71467	84367	105867
LESS TAXES	22965	25815	34368	48767
CASH FROM OPERATIONS	44201	45651	49998	57099
WORKING CAPITAL LOAN BALANCE	0	0	0	0
SPENDABLE CASH AFTER TAXES	44201	45651	49998	57099
TAX SAVINGS ON OTHER INCOME	0	0	0	0
3* * * * *				
MARKET VALUE	900000	909000	936000	981000
BALANCE OF LAONS	594985	589555	570405	526314
NET WORTH OF PROPERTY	305014	319445	365594	454685
CAPITAL GAIN	17500	44000	123500	265470
TAXES ON SALE	8749	19257	48009	85309
5* * * * *				
P.V. OF THE PROJECT B/4 TAX	938346	984129	1111128	1286449
P.V. OF THE PROJECT AFT TAX	909514	926000	974703	1047057

Page 8

DO YOU WANT TO RERUN, (YES OR NO)
? NO

TIME 5 SECS.

OFF
OFF AT 17:33
PROC. TIME... 5 SEC.
TERM. TIME... 29 MIN.

Risk Unlimited, Inc.
A 50-Unit Apartment Project

8/02/72

Step 1: Read

The Deep-End Construction Company has an option to buy land at \$50,000 for a 50-unit apartment building. They have not received final estimates on the cost to construct the building or furniture but the building is expected to be in the "old ball park" of \$725,000 and furnishings will run around \$800 per unit.

Step 2: Input to Mini-Mod worksheet

Certain items are fixed for purposes of analysis. Deep-End investors have an opportunity cost of capital of 8% after taxes and desire a 15% rate of return to equity. An FHA 297 loan is available for \$720,000 at 7% interest plus 1/2% insurance charge for 40 years. Analysis should cover a 10-year projection for years 1, 2, 5, and 10. There is no staging of the project. Working capital loan rate is 8%. Annual growth rate for rents is estimated at 2 1/2%, expenses at 3%, and real estate taxes at 4%. The building will be depreciated on 200% declining balance 50-year useful life and furniture has a useful life of .6 years and will be depreciated by sum-of-the-digits.

Step 3: Go to terminal, sign on, and call for OLD REDATA

The remaining inputs for Mini-Mod worksheet showing the actual costs incurred after the project was completed are available by calling for OLD REDATA to obtain the following items:

1. Personal income tax rate
2. Extraordinary expenses
3. Vacancy rate
4. Annual gross rent
5. Annual expenses
6. Annual real estate taxes
7. Project value growth rate
8. Cost of building
9. Cost of furnishing

(Note: the computer terminal will produce a different set of data for each student based on a statistical model for picking numbers for the unknown variables above. It will then be possible to combine the results of each student into a range of possible alternative outcomes for the project and class discussion will later explore the potentials of this method for evaluating Project Risk)

Risk Unlimited, Inc. (continued)

Step 4: Go to terminal and prepare data file from worksheet for paper tape

Your sample file should look like the facsimile below. Be careful to use decimal points for all percentages and put "zeros" for items which have no data, such as staging year and ratio.

```
SDF1          12:20CDT    08/02/72  Wednesday
01 SAMPLE DATA FILE 1
02 IMA STUDENT
03 .15,.12,.35
04 3,1,0,0,3400,.09,.09
05 170000,.025,31000,.03,26000,.04,.005
06 LAND
07 50000,0,0,1,0
08 BUILDING
09 720000,1.,5,1,50
10 FURNITURE
11 41200,1.,1,1,6
22 FHA 297 LOAN
23 720000,0,.075,0,1,40,40,0
```

Step 5: Dial GE, log-on, and create file with paper tape above

Step 6: Process file with OLD MEDIT PROCEDURE

Step 7: Run OLD MINI-MOD

Do not forget you want output for years 1, 2, 5, and 10. Call for selected outputs indicating 1,0,0,1,1,1,1

Step 8: Record results

When you have completed a satisfactory run of Mini-Mod record the following items of information from the results on the columnar sheets posted at the back of the room. The collected results of all alternative outcomes will then be analyzed statistically for range, average, and standard error to introduce risk analysis as forecasting statistical variance in class discussion.

EDUCARE I

Tuesday Morning 8/01/72?

Problem 1AF - Use of GRM in computing FMV

Subject property has a gross rent of \$46,080* and an estimated vacancy rate of 5%*. Annual expenses are \$8400* and real estate taxes are an additional \$9000*. The market indicates that a gross rent multiplier (GRM) of 6.0 is applicable. What is the FMV of the property. Disregard financing.

Answer: $FMV = (GRM) (Gross\ rents\ before\ vacancy)$
 $(6.0)(\$46,080) = \$276,480$

* These facts will be expanded in the problems which follow.

Problem 2AF - Use of OAR in computing FMV

Now assume that the GRM is not known, but that the market indicates that the overall capitalization rate (OAR) for similar properties is .0975. (The OAR is the sum of the interest rate of return for the entire property plus the building recapture rate and is computed from comparable sales by dividing net operating income before depreciation and debt service by the FMV of the property).

What is the FMV of the subject property using the facts given in Problem 1AF?

Answer:

Gross rent		\$46,080
Less vacancy		<u>2,304</u>
Effective gross income		\$43,716
Less		
Annual expenses	8400	
Real estate taxes	<u>9000</u>	<u>17,400</u>
Net operating income		26,376
Fair market value =	$\frac{Net\ operating\ income}{OAR}$	$= \frac{26,376}{.0975} = \$270,523$

Problem 3AF - Composition of the OAR: interest rate of return plus building recapture.

In Problem 2AF we've used an OAR of .0975. If we assume that this rate, discovered in the market, was for buildings similar to the subject property with a remaining useful life of 40 years and a land-building ratio of 1:4, then what is the interest rate of return and the building recapture rate included in the OAR of .0975?

Answer: The building recapture rate included in the OAR is a function of remaining building life and the land-building ratio. Thus, the building recapture rate included in the OAR is the product of the building recapture rate and the ratio of building to total value.

Thus,
 $(.025)(.80) = .020$ - building recapture rate included in the OAR.

If we subtract the building recapture rate included in the OAR from the OAR we derive the interest rate of return of .0775.

$$.0975 - .020 = .0775$$

Problem 4GH - Introduction of debt financing in computing FMV: Band of investment

Assume the same facts as in problem IAF, except that neither the GRM nor the OAR from the market is known, in addition assume that an 80% mortgage is available at 7 3/4% and that an investor require a 12% rate of return on his 20% equity position. Determine FMV by computing the OAR using the band of investment approach. Net operating income is \$26,376.

Answer: The interest rate of return for the entire property is computed as the weighted average of the 20% equity at 12% and the 80% loan at 7 3/4%. Thus,

$$\begin{aligned} \text{Interest rate of return} &= (\text{equity portion})(\text{equity rate}) + (\text{loan portion})(\text{loan rate}) \\ &= (.20)(.12) + (.80)(.0775) = .0860 \end{aligned}$$

In order to determine the OAR, we must add the interest rate of return (.08600) to the building recapture rate included in the OAR. Thus,

Interest rate of return from band of investment	.0860
Building recapture rate included in OAR = $(.025)(.80)$	<u>.0200</u>
OAR	.1060

$$\text{FMV} + \frac{\text{Net operating income}}{\text{OAR}} = \frac{26,376}{.106} = \$248,830$$

Problem 5GH - Debt financing is computing FMV: Simple Ellwood

Assume the factual situation in problem 1AF with a constant annual income over a ten year projection period of \$26,376. The equity yield rate is 12% on a 20% equity position with an 80% mortgage at 7 3/4% and 20 year term. The property is expected to decline 10% in value over the ten year projection period. What is the FMV of the property?

Answer:

OAR=R=Y-MCI adj. for decline in value

Y=.12, equity yield rate

OAR=R=.12-(.80)(.039488)+(.10)(.056984) M=0.80, mortgage loan ratio

OAR=R=.094394

C=.039488, mortgage coefficient (Table C, p. 191, 20-yr amortization, 10 yr. projection, 12% equity yield, 7 3/4% interest.

$$FMV = \frac{\text{net operating income}}{OAR}$$

$$= \frac{26,376}{.094384}$$

$$= \$279,424$$

.056984 = $\frac{1}{s_n}$ from Table C, p. 191, 20 yr.

amortization, 10 yr. projection, 12% equity yield.

Problem 5GH - Solution for mortgage coefficient C without using Table C.

$$C = Y + P \frac{1}{s_n} - f$$

Y = equity yield = .12

P = proportion of mortgage paid off in 10 years (=

$\frac{1}{s_n}$ sinking fund factor, 12%, 10 years, annually, p. 148, column 3 = .046984.

f = annual debt service, monthly, computed as a multiple of 12 times monthly installment to amortize 1; 7 3/4% interest, 20 years, monthly, page 77, col.6; (.008209) (12) = .09852

I = mortgage interest rate = 7 3/4%

Sp = amount of 1 at compound interest, 7 3/4%, 10 years, monthly, page 77 = 2.165189

$$P = \frac{(f - 1)(S - 1)}{(I - 1)(P)}$$

$$= \frac{(.09852 - 1)(2.165189 - 1)}{(.0775)}$$

$$= .316028$$

$$\text{Then } C = Y + P \frac{1}{s_n} - f$$

$$C = .12 + (.316028)(.056984) - .09852 = \underline{\underline{.039488}}$$

Problem 5GH - Lab Problem

- A. Using the facts given above, use the UW Ellwood program to compute C and FMV.

- B. Use the UW Ellwood program to compute C and FMV using the facts given above, except use the following financing:

1st mortgage: \$180,000, 20 year, 7 3/4%, 5 year balloon

2nd mortgage: \$15,000, 10 year, 8 1/2%, 5 year balloon

Also: assume 5% decline in original value in five years

Each of these programs are to be turned in to Herm Kelting by Tuesday 9 P.M.

Problem 6GH - Use of the Ellwood J factor to determine FMV

Use the same factual situation in problem 5GH to determine the FMV of the property. Note that the use of the J factor from Table C_y assumes that the 10% decline in value is caused by a constant annual decrease in income.

$$r = Y - MC$$

r = capitalization rate before adjustment for decline in value

Y = equity yield = .12

M = loan ratio = .80

C = mortgage coefficient = .039488
from Table C, page 191, 20 years amortization, 10 year projection, 12% equity yield, 7 3/4% interest

$$R = \frac{r + (\text{depr}) \frac{1}{s_n}}{1 - (\text{depr}) (J)}$$

R = overall cap rate

depr = % decline in value during the projection period = .10

$$R = \frac{.08841 + (.10) (.056984)}{1 - (.10) (.3655)}$$

$\frac{1}{s_n}$ = sinking fund factor, equity rate, projection period from Table C_y, page 279 = .056984

$$R = \frac{.094108}{.96345} = .097678 = \text{OAR}$$

J = .3655 from Table C_y, page 277.

$$\text{FMV} = \frac{\text{net operating income}}{\text{OAR}} = \frac{26,376}{.097678} = \$270,030$$

Problem 71Q - Use of Investment Market Value (IMV) program to determine value

Now, assume the same factual situation as in Problem 91Q with gross income of \$46,080, operating expenses of \$8400 and real estate taxes of \$9000. Extraordinary expenses of \$7625 yields first year net operating income of \$18,751, second year net operating income of \$26,634 and subsequent years income increasing at the differential rate between 2% growth in effective gross income, 2% growth in operating expenses, and a 5% growth in real estate taxes.

The owner is an individual in the 30% bracket and the capital gain rate is 15%. The estimated project appreciation is 13% (note that in problem 91Q the rate of project value growth of 1% yields an increase from \$240,000, original cost to \$271,700, or 13%). There is a 3% sales commission associated with the ultimate sale.

The five depreciable asset groupings are shown below:

Building	\$165,300
Parking	7,200
Furnishings	13,200
Elevator	12,500
Transaction cost	<u>1,800</u>
	\$200,000

A later factor will be a staged capital addition in the seventh year (minimal); at this time IMV is unable to stage capital addition or financing.

The project, for the purposes of this problem has a \$180,000 mortgage at 7 3/4% with a 20 year term and a \$15,000 second mortgage at 8 1/2% and a constant of .14800000 (must carry to 8 places).

What is the IMV, if the investors' desired rate of return is 12%?

Turn in a completed run to Herm Kelting

Problem 81Q - After tax yield using the IMV program

Determine the after tax yield, if the following property costs are known:

Land & non-depreciable elevator	\$40,000*
Building	165,300*
Elevator	12,500*
Furnishings	13,200
Parking	7,200*
Transaction costs	<u>1,800</u>
Total	\$240,000

* Existing property items of time of sale; furnishings are to be added by new owner.

A completed run is required as a ticket for dinner, accuracy under pressure is a professional attribute!

Problem 81Q - Lab Problem

Assume that the property could be acquired for 5% less than the existing asking price, although financing would remain the same. Assume further that the entire purchase price reduction is assigned to the building.

What effect would this have on IMV?

(Clue: you may reenter the old paper tape and replace line III.)



Specializing Exclusively in the valuation of Real Property
PROFESSIONAL APPRAISERS AND CONSULTANTS • JOSEPH J. BLAKE AND ASSOCIATES, INC.

MAIN OFFICE
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WESTBURY, L. I., N. Y. 11590
334-8900

EDUCARE SEMINAR

MARCH 17, 1974 - MARCH 22, 1974

DEMONSTRATION CASE

PREPARED BY:

MARK I. ROTH

The following is just one example of the type of problem which is more easily solved through the use of a computerized investment analysis model.

Briefly the problem was as follows:

The subject was located on the East Coast of the United States and was a waterfront parcel. The area of the land was about 30 acres of which about 11 acres were upland.

The parcel was improved with various warehouse structures and three pier sheds. The only structures of any consequence were the pier sheds and a seven story, reinforced concrete, 265,000 Square Ft. loft.

After careful analysis of the market it was determined that the highest and best use was for general purpose industrial.

Page 1 of the following begins to determine exactly how to best improve the property.

The assignment was to determine the highest and best use of the subject property. The client was not well versed in real estate and the investment analysis served to prove our conclusions.

Due to the nature of the existing improvements the Appraiser must examine two possible alternatives of developing the subject.

- 1) Demolish Buildings #2, 3, 4, 5 and #6 and erect a 300' x 600' general purpose industrial facility.
- 2) Demolish all improvements except the pier structures and erect a 300' x 1000' general purpose industrial structure.

The Appraiser must now examine the economic advantages and disadvantages of each alternative.

Option 1

This option requires the demolition of Buildings numbered 2, 3, 4, 5 and 6. The total demolition costs, as per the demolition schedule, are \$77,650. Adjusting upward for the small size of the demolition job, the applicable total is \$85,400. The value of the land associated with this option is 280,000 S.F. at \$2.50/S.F. or \$700,000. The direct costs in constructing the 180,000 S.F. general purpose industrial building amounts to \$1,770,000 when the indirect costs are added this amounts to \$1,946,000. This brings the total investment to:

Land	\$ 700,000.
Demolition	\$ 85,400.
Improvement	<u>\$1,946,000.</u>
Total	\$2,731,400.

The total annual net income which could be derived from the structure is \$360,000. The demolition costs can be added to the direct costs of construction and depreciated by the 150% declining balance method for a 40 year period. The indirect costs may be expensed in the year paid thereby reducing taxes in the first year. Market Value is estimated at \$3,425,000 upon completion of construction and sale at the end of the projection:

*** PROJECT SPECIFICATIONS ***

PREPARED BY: _____

ATTN: _____

1. NUMBER OF YEARS
TO BE PROJECTED ... 10
2. INVESTORS
PURCHASE PRICE (COST BASIS) ... 2731400
3. FINANCING:

	LOAN AMOUNT	INTEREST RATE	PERIODS PER YR	# INT. ONLY	TERM OR PAYMENT
4. EQUITY INVESTMENT (CASH DOWN) ...	(1) 2568750	9.500	12	0	25
5. * TAX RATE FOR ORDINARY INCOME ...		54.00 %			
6. * TAX RATE FOR LONG TERM GAINS ...		30.00 %			
7. * CURRENT GROSS INCOME ...	360000				
(0.00 % GROWTH RATE)					
8. * CURRENT OPERATING EXPENSES ...	176000				

9. AFTER TAX RETURN ON
REINVESTMENT OF (CUMUL) NET SPENDABLE ... 7.00 %

10. DEPRECIATION

AMOUNT AVAILABLE	METHOD USED	LIFE IN YEARS	TYPE OF PROPERTY
1855400	150 %	40.0	COMML.

11. * RESIDUAL VALUE
IN YEAR (10) IS ESTIMATED AT ... 3425000
BEFORE SELLING EXPENSE OF 2.00 %

12. RESIDUAL VALUE WAS OBTAINED BY
EXPLICIT ASSIGNMENT OF VALUE (3425000)

13. (*) ASTERISKED INPUT VARIABLES (BELOW)
WERE SPECIFIED ON A YEAR BY YEAR BASIS:

YR	GROSS INCOME	OPER. EXPENSE (*)	NOI	% CAP RATE	MARKET VALUE	% APPREC	% TAX ORD	% TAX LONG
1	360000	176000	184000	6.59	2793913	2.29	50.00	30.00
2	360000	0	360000	12.60	2857856	2.29	50.00	30.00
3	360000	0	360000	12.32	2923263	2.29	50.00	30.00
4	360000	0	360000	12.04	2990167	2.29	50.00	30.00
5	360000	0	360000	11.77	3058602	2.29	50.00	30.00
6	360000	0	360000	11.51	3128603	2.29	50.00	30.00
7	360000	0	360000	11.25	3200206	2.29	50.00	30.00
8	360000	0	360000	11.00	3273449	2.29	50.00	30.00
9	360000	0	360000	10.75	3348367	2.29	50.00	30.00
10	360000	0	360000	10.51	3425000	2.29	50.00	30.00
TOT	3600000	176000	3424000					
AVE	360000	17600	342400					

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D E C I S I O N E X REAL ESTATE ANALYSIS /// COMMERCIAL

PURCHASE TERMS

THE PRICE FOR THIS PROPERTY IS \$ 2731400. THE BUYER WILL PAY \$ 162650 IN CASH.

FINANCING CONSISTS OF A 25 YEAR FIRST MORTGAGE FOR \$ 2568750 AT 9.50 % INTEREST WITH 12 PAYMENTS PER YEAR OF \$ 22443 EACH.

PROJECTION ASSUMPTIONS

FIRST YEAR GROSS OPERATING INCOME (AFTER VACANCY ALLOWANCE) WILL BE \$ 360000, AND IS PROJECTED TO GROW 0.0 % PER YEAR.

FIRST YEAR OPERATING EXPENSES WILL BE \$ 176000, AND IS PROJECTED TO GROW 0.0 % PER YEAR.

THE TOTAL AVAILABLE FOR DEPRECIATION IS \$ 1855400. THE PROPERTY TYPE FOR PURPOSES OF DEPRECIATION RECAPTURE IS COMMERCIAL. ESTIMATED USEFUL LIFE WILL BE 40 YEARS AND THE METHOD OF DEPRECIATION IS 150 % DECLINING BALANCE.

SALE OF THE PROPERTY IN 10 YEARS IS PROJECTED AT \$ 3425000, WHICH IS EQUIVALENT TO 2.3 % APPRECIATION PER YEAR. A 2.0 % COMMISSION AGAINST PROJECTED MARKET VALUE, IS REFLECTED IN THE YEAR OF SALE, SO THAT THE FIGURES SHOWN ARE NET AFTER SELLING EXPENSES.

INVESTORS FINANCIAL CIRCUMSTANCES

A 50% EFFECTIVE TAX RATE FOR ORDINARY TAXABLE INCOME GENERATED BY THE REAL ESTATE INVESTMENT IS ASSUMED. A 30% EFFECTIVE TAX RATE IS ASSUMED FOR LONG TERM CAPITAL GAIN TAXATION.

THE INVESTOR ANTICIPATES THAT AFTER-TAX CASH DERIVING FROM THE INVESTMENT, MAY BE REINVESTED AT 7.0 % AFTER-TAXES.

YR	GR OP INC	TOT EXP	NET OP INC	MARKET VALUE	MORTGAGE INT.	PRINC.	GR SPENDABLE \$\$	GR EQ %%	INCOME \$\$	INCOME %%
1	360000	176000	184000	2738034	242901	26416	-85317	-52.5	-58901	-36.2
2	360000	0	360000	2800699	240279	29038	90683	61.6	119721	81.4
3	360000	0	360000	2864798	237397	31920	90683	34.9	122603	47.1
4	360000	0	360000	2930363	234229	35089	90683	24.0	125771	33.2
5	360000	0	360000	2997430	230747	38570	90683	18.0	129253	25.6
6	360000	0	360000	3066031	226919	42398	90683	14.2	133081	20.9
7	360000	0	360000	3136202	222711	46606	90683	11.7	137289	17.6
8	360000	0	360000	3207980	218085	51232	90683	9.8	141915	15.3
9	360000	0	360000	3281400	213000	56317	90683	8.4	147000	13.6
10	360000	0	360000	3356500	207411	61906	90683	7.3	152589	12.2

YR	DEPREC- IATION	SUBJECT TO RE- CAPTURE	TAXABLE INCOME	TAXES PAID	TAXES DEFERRED	REINV- ESTMENT INC.	-- A F T E R TOTAL RETURN	%%	TAX -- NET WORTH	IRR %%
1	69578	23193	-128478	-64239	27502	0	-15529	-9.5	147121	-9.5
2	66968	43776	52753	26376	43007	0	113003	76.8	260123	26.5
3	64457	61948	58146	29073	42181	3026	118474	45.5	378597	32.5
4	62040	77503	63731	31866	41413	7551	125609	33.2	504206	32.7
5	59713	90831	69540	34770	40700	12196	133046	26.4	637253	31.4
6	57474	101920	75607	37804	40040	16964	140803	22.1	778055	29.8
7	55319	110854	81971	40985	39434	21853	148895	19.1	926950	28.2
8	53244	117714	88671	44335	38878	26862	157340	17.0	1084290	26.8
9	51248	122576	95752	47876	38373	31986	166157	15.3	1250447	25.4
10	49326	125517	103263	441075	-351528	37222	175363	14.0	1425810	24.2

10 YEAR SUMMARY

THE PORTION OF EQUITY OWNED BY THE INVESTOR IS INITIALLY 6.0 %, AND IS 36.0 % AT THE END OF YEAR 10.

CASH INVESTED GROWS FROM \$ 162650 TO \$ 1425810 DURING THIS PERIOD, WHICH IS EQUIVALENT TO A 24.25 % COMPOUND RATE OF GROWTH, AFTER TAXES.

107.1 % OF ORIGINAL INVESTMENT IS RECOVERED IN THE FORM OF CASH AFTER TAXES, BY THE END OF YEAR 4.

FIRST YEAR WITHOUT TAX SHELTER IS 1982, WHEN TAXABLE INCOME WILL EXCEED CASH FLOW BY \$ 5069.

\$ 468750 COULD BE REALIZED BY REFINANCING AT THE END OF 5 YEARS, ASSUMING THE ORIGINAL RATIO OF DEBT TO EQUITY.

SALE IN 1977 YIELDS OPTIMAL RATE OF RETURN (32.69 %), WITH CASH TO INVESTOR OF \$ 504206 NET OF SELLING EXPENSE, LOANS DUE, AND TAXES.

EXPLANATION OF COLUMN HEADINGS

Gross Operating Income is the amount of income projected for each year, after allowance for vacancy and credit losses.

Total Operating Expenses is the total for operating expenses projected for each year.

Net Operating Income is the amount of income remaining each year after vacancy and credit losses, and after deducting operating expenses.

Market Value is the value of this property, projected year by year. Market Value is determined by applying the appreciation rate, if any, to the purchase price, less selling expense, if any. As an alternative, an estimated selling price may be given in lieu of appreciation rate, and the equivalent appreciation rate will be computed by the system.

Mortgage Interest is the total interest expense incurred on loans outstanding for each year.

Mortgage Principal Payment is the total amortization expense on loans outstanding for each year. This portion of debt service is not deductible for tax purposes, but reduces the amount of loans due.

Gross Spendable \$\$ is the total amount each year before income taxes. The term Cash Flow is also used in this sense. Gross spendable equals net operating income less mortgage interest and amortization. This item is also shown as a percentage of investor's net worth for each year.

EXPLANATION OF COLUMN HEADINGS

(Continued)

Gross Equity Income is the sum of gross spendable and mortgage principal payment in each year. This item is also shown both as a dollar amount, and as a percentage of investor's net worth.

Depreciation is the total amount of depreciation taken each year for tax purposes.

Subject to Recapture is the amount of excess depreciation taken to date, which would be taxed at ordinary rates rather than at capital gain rates, if the property were sold in the given year. There is no recapture possibility when the straight-line method is used. Exposure to recapture declines to zero over time, at a rate depending on the type of property involved.

Taxable Income is the amount of income or shelter provided the investor each year relative to federal income taxation, which is produced by this investment.

Taxes Paid is the federal income tax paid each year on this property. A negative tax indicates a tax shelter. This item is computed by applying the ordinary tax rate to taxable income. In addition, taxes paid in year of sale would include a possible capital gain as well as depreciation recapture element.

EXPLANATION OF COLUMN HEADINGS

(Continued)

Deferred Taxes shows for each year the amount of taxes incurred this year, but due to be paid in year of sale. The calculation relates to capital gain and recapture taxation, and parallels the taxes paid approach.

Reinvestment Income is the return each year (on an after-tax basis) of net spendable relating to this investment.

Total Return is the total investment return each year, consisting of the sum of cash flow, principal payment, appreciation, reinvestment return, and tax shelter benefit, if any, less taxes paid this year and less provision for taxes relating to capital gains and possible depreciation recapture. This item is shown as a dollar amount and as a percentage of investor's net worth for the given year.

Net Worth shows the extent to which cash invested has grown in each year, after provision for selling expense, loans due, and all federal income taxes. This item is given as a dollar amount, and as well as a compound rate of growth of cash invested. This rate is also called the internal rate of return.

Next the new section of the property must be analyzed along with the remaining portion to arrive at the overall return for the entire parcel.

	<u>New Section</u>	<u>Old Section</u>	<u>Total</u>
Net Income	\$ 360,000.	\$ 255,000.	\$ 615,000.
Depreciation	\$2,031,400.	\$ 168,600.	\$2,200,000.
Investment Cost	\$2,731,400.	\$2,318,100.	\$5,049,500.
Value	\$3,425,000.	\$2,318,100.	\$5,743,100.

*** PROJECT SPECIFICATIONS ***

PREPARED BY: -----

ATTN: -----

1. NUMBER OF YEARS
TO BE PROJECTED ... 10

2. INVESTORS
PURCHASE PRICE (COST BASIS) ... 5049500

3. FINANCING:

	LOAN AMOUNT	INTEREST RATE	PERIODS PER YR	# INT. ONLY	TERM OR PAYMENT
(1)	4020000	9.500	12	0	25

4. EQUITY
INVESTMENT (CASH DOWN) ... 1029500

5. * TAX RATE
FOR ORDINARY INCOME ... 50.00 %

6. * TAX RATE
FOR LONG TERM GAINS ... 30.00 %

7. * CURRENT
GROSS INCOME ... 615000
(0.00 % GROWTH RATE)

8. * CURRENT
OPERATING EXPENSES ... 176000

9. AFTER TAX RETURN ON
REINVESTMENT OF (CUMUL) NET SPENDABLE ... 7.00 %

10. DEPRECIATION

AMOUNT AVAILABLE	METHOD USED	LIFE IN YEARS	TYPE OF PROPERTY
22000000	150 %	40.0	COMML.

11. * RESIDUAL VALUE
IN YEAR (10) IS ESTIMATED AT ... 5743100
BEFORE SELLING EXPENSE OF 2.00 %

12. RESIDUAL VALUE WAS OBTAINED BY
EXPLICIT ASSIGNMENT OF VALUE (5743100)

13. (*) ASTERISKED INPUT VARIABLES (BELOW)
WERE SPECIFIED ON A YEAR BY YEAR BASIS:

YR	GROSS INCOME	OPER. EXPENSE (*)	NOI	% CAP RATE	MARKET VALUE	% APPREC	% TAX ORD	% TAX LONG
1	615000	176000	439000	8.58	5114912	1.30	50.00	30.00
2	615000	0	615000	11.87	5181172	1.30	50.00	30.00
3	615000	0	615000	11.72	5248289	1.30	50.00	30.00
4	615000	0	615000	11.57	5316277	1.30	50.00	30.00
5	615000	0	615000	11.42	5385145	1.30	50.00	30.00
6	615000	0	615000	11.27	5454905	1.30	50.00	30.00
7	615000	0	615000	11.13	5525569	1.30	50.00	30.00
8	615000	0	615000	10.99	5597148	1.30	50.00	30.00
9	615000	0	615000	10.85	5669654	1.30	50.00	30.00
10	615000	0	615000	10.71	5743100	1.30	50.00	30.00
TOT	6150000	176000	5974000					
AVE	615000	17600	597400					

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D E C I S I O N E X REAL ESTATE ANALYSIS /// COMMERCIAL

PURCHASE TERMS

THE PRICE FOR THIS PROPERTY IS \$ 5049500. THE BUYER WILL PAY \$1029500 IN CASH.

FINANCING CONSISTS OF A 25 YEAR FIRST MORTGAGE FOR \$ 4020000 AT 9.50 % INTEREST WITH 12 PAYMENTS PER YEAR OF \$ 22443 EACH.

PROJECTION ASSUMPTIONS

FIRST YEAR GROSS OPERATING INCOME (AFTER VACANCY ALLOWANCE) WILL BE \$ 615000, AND IS PROJECTED TO GROW 0.0 % PER YEAR.

FIRST YEAR OPERATING EXPENSES WILL BE \$ 176000, AND IS PROJECTED TO GROW 0.0 % PER YEAR.

THE TOTAL AVAILABLE FOR DEPRECIATION IS \$ 2200000. THE PROPERTY TYPE FOR PURPOSES OF DEPRECIATION RECAPTURE IS COMMERCIAL. ESTIMATED USEFUL LIFE WILL BE 40 YEARS AND THE METHOD OF DEPRECIATION IS 150 % DECLINING BALANCE.

SALE OF THE PROPERTY IN 10 YEARS IS PROJECTED AT \$ 5743100, WHICH IS EQUIVALENT TO 1.3 % APPRECIATION PER YEAR. A 2.0 % COMMISSION AGAINST PROJECTED MARKET VALUE, IS REFLECTED IN THE YEAR OF SALE, SO THAT THE FIGURES SHOWN ARE NET AFTER SELLING EXPENSES.

INVESTORS FINANCIAL CIRCUMSTANCES

A 50% EFFECTIVE TAX RATE FOR ORDINARY TAXABLE INCOME GENERATED BY THE REAL ESTATE INVESTMENT IS ASSUMED. A 30% EFFECTIVE TAX RATE IS ASSUMED FOR LONG TERM CAPITAL GAIN TAXATION.

THE INVESTOR ANTICIPATES THAT AFTER-TAX CASH DERIVING FROM THE INVESTMENT, MAY BE REINVESTED AT 7.0 % AFTER-TAXES.

YR	GR OP INC	TOT EXP	NET OP INC	MARKET VALUE	MORTGAGE INT.	MORTGAGE PRINC.	GR SPENDABLE \$\$	GR EQ %%	GR EQ \$\$	INCOME %%
1	615000	176000	439000	5012614	380131	41341	17529	1.7	58869	5.7
2	615000	0	615000	5077548	376028	45444	193529	18.5	238972	22.9
3	615000	0	615000	5143324	371518	49954	193529	15.8	243482	19.9
4	615000	0	615000	5209951	366560	54911	193529	13.7	248440	17.6
5	615000	0	615000	5277442	361110	60361	193529	12.0	253890	15.8
6	615000	0	615000	5345807	355119	66352	193529	10.6	259881	14.2
7	615000	0	615000	5415057	348534	72937	193529	9.4	266466	13.0
8	615000	0	615000	5485205	341295	80176	193529	8.5	273705	12.0
9	615000	0	615000	5556261	333338	88133	193529	7.6	281662	11.1
10	615000	0	615000	5628238	324591	96880	193529	6.9	290409	10.3

YR	SUBJECT					REINV-	-- A F T E R		T A X --	
	DEPREC- IATION	TO RE- CAPTURE	TAXABLE INCOME	T A X E S PAID	T A X E S DEFERRED	ESTMENT INC.	TOTAL RETURN	%%	NET WORTH	IRR %%
1	82500	27500	-23631	-11815	19184	0	14614	1.4	1044114	1.4
2	79406	51906	159566	79783	48183	2054	177994	17.0	1222109	9.0
3	76429	73335	167054	83527	46947	10160	188944	15.5	1411053	11.1
4	73562	91897	174878	87439	45769	18571	200431	14.2	1611483	11.9
5	70804	107701	183086	91543	44649	27298	212486	13.2	1823970	12.1
6	68149	120850	191732	95866	43584	36348	225143	12.3	2049113	12.2
7	65593	131443	200873	100436	42572	45728	238437	11.6	2287550	12.1
8	63133	139576	210571	105286	41611	55446	252401	11.0	2539951	12.0
9	60766	145342	220896	110448	40700	65504	267074	10.5	2807025	11.8
10	58487	148829	231922	528997	-373199	75905	282493	10.1	3089518	11.6

10 YEAR SUMMARY

THE PORTION OF EQUITY OWNED BY THE INVESTOR IS INITIALLY 20.4 %, AND IS 40.2 % AT THE END OF YEAR 10.

CASH INVESTED GROWS FROM \$1029500 TO \$ 3089518 DURING THIS PERIOD, WHICH IS EQUIVALENT TO A 11.62 % COMPOUND RATE OF GROWTH, AFTER TAXES.

105.3 % OF ORIGINAL INVESTMENT IS RECOVERED IN THE FORM OF CASH AFTER TAXES, BY THE END OF YEAR 9.

FIRST YEAR WITHOUT TAX SHELTER IS 1980, WHEN TAXABLE INCOME WILL EXCEED CASH FLOW BY \$ 7344.

\$ 519223 COULD BE REALIZED BY REFINANCING AT THE END OF 5 YEARS, ASSUMING THE ORIGINAL RATIO OF DEBT TO EQUITY.

SALE IN 1979 YIELDS OPTIMAL RATE OF RETURN (12.16 %), WITH CASH TO INVESTOR OF \$2049113 NET OF SELLING EXPENSE, LOANS DUE, AND TAXES.

Option One provides an optimal rate of return of about 12% after 6 years. The cash investment required \$1,029,500 or less than land value.

This investment will have grown to \$3,089,518 in ten years, almost three times the original investment.

The total return after 10 years is 11.6%.

Option 2

This option requires the demolition of Buildings numbered 1, 2, 3, 4, 5, 6, 7 and 8. The cost of this demolition as per the schedule is \$580,000. This proposal involves the erection of a 300' x 1000' or 300,000 S.F. general purpose industrial structure.

The direct costs associated with construction of the building are \$2,949,000 and the total cost including indirect costs is \$3,244,000. The value of the land involved is \$1,175,000. The property would generate a net rent of \$600,000. Market Value is estimated at \$5,714,000 upon completion of construction and at time of sale.

Therefore the total investment would be:

Land	\$1,175,000.
Demolition	\$ 580,000.
Construction	<u>\$3,244,000.</u>
Total	\$4,999,000.

*** PROJECT SPECIFICATIONS ***

PREPARED BY: _____

ATTN: _____

1. NUMBER OF YEARS
TO BE PROJECTED ... 10

2. INVESTORS
PURCHASE PRICE (COST BASIS) ... 4999000

3. FINANCING:

	LOAN AMOUNT	INTEREST RATE	PERIODS PER YR	# INT. ONLY	TERM OR PAYMENT
(1)	4285000	9.500	12	0	25
4. EQUITY INVESTMENT (CASH DOWN) ...			714000		

5. * TAX RATE
FOR ORDINARY INCOME ... 50.00 %

6. * TAX RATE
FOR LONG TERM GAINS ... 30.00 %

7. * CURRENT
GROSS INCOME ... 600000
(0.00 % GROWTH RATE)

8. * CURRENT
OPERATING EXPENSES ... 295000

9. AFTER TAX RETURN ON
 REINVESTMENT OF (CUMUL) NET SPENDABLE ... 7.00 %

10. DEPRECIATION

AMOUNT AVAILABLE	METHOD USED	LIFE IN YEARS	TYPE OF PROPERTY
3529000	150 %	40.0	COMML.

11. * RESIDUAL VALUE
 IN YEAR (10) IS ESTIMATED AT ... 5714000
 BEFORE SELLING EXPENSE OF 2.00 %

12. RESIDUAL VALUE WAS OBTAINED BY
 EXPLICIT ASSIGNMENT OF VALUE (5714000)

13. (*) ASTERISKED INPUT VARIABLES (BELOW)
 WERE SPECIFIED ON A YEAR BY YEAR BASIS:

YR	GROSS INCOME	OPER. EXPENSE (*)	NOI	% CAP RATE	MARKET VALUE	% APPREC	% TAX ORD	% TAX LONG
1	6000000	295000	305000	6.02	5066276	1.35	50.00	30.00
2	6000000	0	600000	11.69	5134457	1.35	50.00	30.00
3	6000000	0	600000	11.53	5203556	1.35	50.00	30.00
4	6000000	0	600000	11.38	5273585	1.35	50.00	30.00
5	6000000	0	600000	11.23	5344557	1.35	50.00	30.00
6	6000000	0	600000	11.08	5416483	1.35	50.00	30.00
7	6000000	0	600000	10.93	5489378	1.35	50.00	30.00
8	6000000	0	600000	10.79	5563253	1.35	50.00	30.00
9	6000000	0	600000	10.64	5638123	1.35	50.00	30.00
10	6000000	0	600000	10.50	5714000	1.35	50.00	30.00
TOT	60000000	295000	5705000					
AVE	6000000	29500	570500					

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D E C I S I O N E X REAL ESTATE ANALYSIS /// COMMERCIAL

PURCHASE TERMS

THE PRICE FOR THIS PROPERTY IS \$ 4999000. THE BUYER WILL PAY \$ 714000 IN CASH.

FINANCING CONSISTS OF A 25 YEAR FIRST MORTGAGE FOR \$ 4285000 AT 9.50 % INTEREST WITH 12 PAYMENTS PER YEAR OF \$ 22443 EACH.

PROJECTION ASSUMPTIONS

FIRST YEAR GROSS OPERATING INCOME (AFTER VACANCY ALLOWANCE) WILL BE \$ 600000, AND IS PROJECTED TO GROW 0.0 % PER YEAR.

FIRST YEAR OPERATING EXPENSES WILL BE \$ 295000, AND IS PROJECTED TO GROW 0.0 % PER YEAR.

THE TOTAL AVAILABLE FOR DEPRECIATION IS \$ 3529000. THE PROPERTY TYPE FOR PURPOSES OF DEPRECIATION RECAPTURE IS COMMERCIAL. ESTIMATED USEFUL LIFE WILL BE 40 YEARS AND THE METHOD OF DEPRECIATION IS 150 % DECLINING BALANCE.

SALE OF THE PROPERTY IN 10 YEARS IS PROJECTED AT \$ 5714000, WHICH IS EQUIVALENT TO 1.3 % APPRECIATION PER YEAR. A 2.0 % COMMISSION AGAINST PROJECTED MARKET VALUE, IS REFLECTED IN THE YEAR OF SALE, SO THAT THE FIGURES SHOWN ARE NET AFTER SELLING EXPENSES.

INVESTORS FINANCIAL CIRCUMSTANCES

A 50% EFFECTIVE TAX RATE FOR ORDINARY TAXABLE INCOME GENERATED BY THE REAL ESTATE INVESTMENT IS ASSUMED. A 30% EFFECTIVE TAX RATE IS ASSUMED FOR LONG TERM CAPITAL GAIN TAXATION.

THE INVESTOR ANTICIPATES THAT AFTER-TAX CASH DERIVING FROM THE INVESTMENT, MAY BE REINVESTED AT 7.0 % AFTER-TAXES.

YR	GR OP INC	TOT EXP	NET OP INC	MARKET VALUE	MORTGAGE INT.	PRINC.	GR SPENDABLE \$\$	%	GR EQ \$\$	INCOME %
1	600000	295000	305000	4964950	405189	44066	-144255	-20.2	-100189	-14.0
2	600000	0	600000	5031768	400816	48439	150745	22.9	199184	30.3
3	600000	0	600000	5099485	396008	53247	150745	18.3	203992	24.8
4	600000	0	600000	5168114	390724	58531	150745	15.2	209276	21.0
5	600000	0	600000	5237666	384915	64340	150745	12.8	215085	18.2
6	600000	0	600000	5308153	378529	70726	150745	11.0	221471	16.1
7	600000	0	600000	5379590	371510	77745	150745	9.5	228490	14.4
8	600000	0	600000	5451988	363793	85461	150745	8.3	236207	13.1
9	600000	0	600000	5525360	355312	93943	150745	7.4	244688	12.0
10	600000	0	600000	5599720	345988	103267	150745	6.6	254012	11.1

YR	DEPREC- IATION	SUBJECT TO RE- CAPTURE	TAXABLE INCOME	T A X E S PAID DEFERRED	REINV- ESTMENT INC.	-- A F T E R TOTAL RETURN	%	T A X -- NET WORTH	IRR %	
1	132338	44113	-232527	-116263	38309	0	-56284	-7.9	657716	-7.9
2	127375	83262	71809	35905	66088	0	164010	24.9	821725	7.3
3	122598	117636	81394	40697	63969	6079	173122	21.1	994848	11.7
4	118001	147411	91276	45638	61944	14208	184531	18.5	1179379	13.4
5	113576	172762	101510	50755	60008	22560	196435	16.7	1375814	14.0
6	109317	193854	112154	56077	58160	31139	208861	15.2	1584675	14.2
7	105217	210846	123273	61637	56395	39946	221841	14.0	1806516	14.2
8	101272	223893	134935	67467	54710	48979	235406	13.0	2041922	14.0
9	97474	233142	147214	73607	53104	58237	249587	12.2	2291509	13.8
10	93819	238736	160193	644356	-512687	67714	264416	11.5	2555926	13.6

10 YEAR SUMMARY

THE PORTION OF EQUITY OWNED BY THE INVESTOR IS INITIALLY 14.3 %, AND IS 36.0 % AT THE END OF YEAR 10.

CASH INVESTED GROWS FROM \$ 714000 TO \$ 2555926 DURING THIS PERIOD, WHICH IS EQUIVALENT TO A 13.60 % COMPOUND RATE OF GROWTH, AFTER TAXES.

116.5 % OF ORIGINAL INVESTMENT IS RECOVERED IN THE FORM OF CASH AFTER TAXES, BY THE END OF YEAR 8.

FIRST YEAR WITHOUT TAX SHELTER IS 1983, WHEN TAXABLE INCOME WILL EXCEED CASH FLOW BY \$ 9448.

\$ 564824 COULD BE REALIZED BY REFINANCING AT THE END OF 5 YEARS, ASSUMING THE ORIGINAL RATIO OF DEBT TO EQUITY.

SALE IN 1979 YIELDS OPTIMAL RATE OF RETURN (14.21 %), WITH CASH TO INVESTOR OF \$1584675 NET OF SELLING EXPENSE, LOANS DUE, AND TAXES.

SENSITIVITY ANALYSIS

-----SIGNIFICANT INFORMATION MAY BE OBTAINED BY VARYING THE INVESTMENT ASSUMPTIONS, ONE BY ONE, OVER A RANGE OF POSSIBLE VALUES.

THE FOLLOWING SHOWS HOW 10 YEAR AFTER-TAX WORTH, AND RATE OF RETURN VARY AS THE INTEREST RATE ON MORTGAGE IS VARIED FROM 7% TO 11%, WITH INTERVALS OF 1% :

INTEREST RATE	NET WORTH	RATE OF RETURN	CASH ON CASH
7.00	3211565	16.23	-8.18
8.00	2953861	15.26	-12.87
9.00	2690048	14.18	-17.72
10.00	2420463	12.98	-22.72
11.00	2145904	11.63	-27.87

THE FOLLOWING SHOWS HOW 10 YEAR AFTER-TAX WORTH, AND RATE OF RETURN VARY AS THE EQUITY GROWTH RATE IS VARIED FROM MINUS 1% TO PLUS 3%, IN INTERVALS OF 1% :

APPRECIATION RATE	NET WORTH	RATE OF RETURN	CASH ON CASH
-1.00	1737532	9.30	-20.20
0.00	2065436	11.21	-20.20
1.00	2424218	13.00	-20.20
2.00	2816436	14.71	-20.20
3.00	3244833	16.35	-20.20

THE FOLLOWING SHOWS HOW 10 YEAR AFTER-TAX WORTH, AND RATE OF RETURN VARY AS GROSS INCOME IS REDUCED FROM 2% TO 10%, IN INTERVALS OF 2% :

GROSS INCOME	NET WORTH	RATE OF RETURN	CASH ON CASH
588000	2473749	13.23	-21.88
576000	2391572	12.85	-23.57
564000	2309395	12.46	-25.25
552000	2227218	12.05	-26.93
540000	2145040	11.63	-28.61

THE FOLLOWING SHOWS HOW 10 YEAR AFTER-TAX WORTH, AND RATE OF RETURN VARY AS THE EFFECTIVE TAX RATE FOR ORDINARY INCOME IS VARIED FROM 30% TO 70%, IN INTERVALS OF 10%. FOR EACH VARIATION, THE TAX RATE USED FOR CAPITAL GAINS IS ONE HALF THE CORRESPONDING RATE FOR TAXING ORDINARY INCOME.

TAX RATE FOR ORD. INCOME	NET WORTH	RATE OF RETURN	CASH ON CASH
30.00	3006946	15.46	-20.20
40.00	2818510	14.72	-20.20
50.00	2630074	13.93	-20.20
60.00	2441638	13.08	-20.20
70.00	2255429	12.19	-20.20

THE FOLLOWING SHOWS HOW 10 YEAR AFTER-TAX WORTH, AND RATE OF RETURN VARY FOR FIVE VARIATIONS IN PURCHASE PRICE:

PURCHASE PRICE	NET WORTH	RATE OF RETURN	CASH ON CASH
5165631	2605915	11.46	-16.38
4999000	2555926	13.60	-20.20
4832369	2505936	16.43	-26.35
4665738	2455947	20.49	-37.89
4499107	2405958	27.37	-67.38

Note that this option requires a cash investment of \$714,000 and provides a 14.0% return which is better than Option One.

It is also important to note that if for some reason the total investment in Option Two should come to \$5,165,631 that this option would still provide a 11.5% return. Note that the net rent per square foot can be reduced to \$1.80/S.F. and still provide a better than 11% return.

Option Two is clearly the better of the two alternatives for industrial development of the subject parcel.

5-2-74

PROPOSED EDUCARE PROFESSIONAL EXAM
co-sponsored by:
American Society of Real Estate Counselors
Society of Real Estate Appraisers
American Institute of Real Estate Appraisers

INSTRUCTIONS: This exam has two parts. Part I requires some brief essay-type explanations in the exam booklet to be completed in one and one-half hours. Part II consists of four problem exercises which must be done on a computer terminal. You will have four hours to complete the exercises and will be charged for the actual terminal time used as reported for your examination I.D. Each examinee will receive similar but unique data from the computer for his examination. You may use the EDUCARE manual, your EDUCARE course notes, and any other materials. You must, however, provide an affidavit that no person assisted you in your computer technique or selection of methods and models.

PART I (150 points)

- A. For the following true-false questions, indicate whether you believe the statement to be true or false and then justify your selection in no more than three sentences.

Computer models for real estate analysis:

1. T F allow the professional to use techniques he doesn't fully understand.
 2. T F allow far greater precision and accuracy in performing calculations.
 3. T F are generally more expensive to use than alternative methods.
 4. T F encourage the professional to use complex techniques on traditionally simple real estate problems.
 5. T F provide the professional with identification of alternative courses of action for specific problems.
-
6. T F Alphabetic characters may be mixed with digits when providing numbers to a computer program because they will be ignored.
 7. T F If two investments are compared, the one with the higher present value of receipts will always have the higher internal rate of return.
 8. T F The adjusted internal rate of return attempts to recognize that cash generated by an investment might not be reinvested at the rate earned by that investment.

9. T F If estimated data used in a valid cash flow model are statistically certain to be within five per cent of their individual actual values, then the results of the model will also be within five per cent of actual value.
10. T F A density financial model will eventually be the best way to measure investment yield in terms of true risk.
- B. For the following multiple-choice questions, select and circle all choices which complete the opening statement correctly.
1. Using a computer time sharing system always requires that you:
- (a) know how to write computer programs.
 - (b) know how to "log-on" and call out programs.
 - (c) correct errors in data you provide.
 - (d) correct errors in programs you use frequently.
 - (e) know how to create a data file.
2. A commercial computer time sharing system (such as G. E. or Tymeshare) usually:
- (a) is accessed by a standard telephone
 - (b) requires that you have access to a terminal (such as a teletype).
 - (c) requires a terminal with paper tape or magnetic tape.
 - (d) requires a clock or other time logging device in order to measure the shared time.
 - (e) requires that the user identify himself with a user number and confidential password.
3. Depending on the program used, a rate such as 8 1/2 per cent might be entered as:
- (a) 8.5%.
 - (b) 8.5.
 - (c) .085.
 - (d) 8.5-2E.
 - (e) either (b) or (c) at the user's option.
4. The amount one million dollars would usually be provided to a computer program in the format:
- (a) 1000000.
 - (b) \$1000000.
 - (c) 1. 6E.
 - (d) \$1,000,000.
 - (e) 1M.
5. Data, once stored in a computer file, can be modified by:
- (a) anyone with a terminal.
 - (b) someone with a terminal and the user's number and password.
 - (c) (b) plus previous knowledge of the name of the file.
 - (d) only the time sharing service.
 - (e) no one.

6. The cost of computer processing (exclusive of terminals and communications) is:
 - (a) increasing by more than 10% per year.
 - (b) increasing, but at less than the rate of inflation.
 - (c) is stable.
 - (d) is decreasing slightly (by less than 10% per year).
 - (e) is decreasing rapidly (by more than 10% per year).

7. An advantage of using a valid technique (such as cash flow models) where appropriate is that:
 - (a) through use, the professional's understanding of the situation being modeled will improve.
 - (b) the end user (client) will receive more detail to substantiate a conclusion.
 - (c) the impression of accurate conclusions with inaccurate data is possible.
 - (c) the end user (client) will be impressed with the sophistication of the analysis.

PROPOSED EDUCARE PROFESSIONAL EXAM
co-sponsored by:
American Society of Real Estate Counselors
Society of Real Estate Appraisers
American Institute of Real Estate Appraisers

PART II

- A. (50 points). This problem involves a shopping center development which can be refinanced under two alternative mortgage plans involving combinations of a first and second mortgage and preferred stock as well as a common stock equity position. For your set of data, first log-in and call for the program ELLTEST. This will give you all the detail you need to work the problem on the program ELLWOOD. Then in five sentences or less justify your recommendation in support of one of the alternatives to the exclusion of the other. Attach all your computer output for this exercise to your exam booklet.
- B. (100 points). This problem involves the use of an EDUCARE cash-flow model to forecast the internal rate of return and tax savings to other income of an apartment house investment of a used building with apartments in need of refurbishing and a small retail store on the first floor providing only 15% of gross rents on a long term lease with a per cent of sales as an overage feature. First, log-on and call for CASHTEST, a program which will provide all the data you need. Three alternative input forms are provided with this exam for EDUCARE cash flow models; select the one you think best suited for the job, and fill it in before returning to the terminal to process the data. On your computer output, be sure to indicate where you modified an assumption, if necessary, to fit the facts to the model.
- C. (150 points). This problem will test your ability to use simple statistics programs on the G. E. System. A data file has been created which you can access as TATS1. Using this data, determine the mean average price per front foot and then do a simple linear histogram which shows the relationship of price per front foot to (1) total area of the site; and (2) maximum depth of the site for these commercial land transactions.
- D. (150 points). This problem involves the use of the MKTCOMP system. Five properties and their attributes will be made available to you when you call on MTEXM1. Their attributes for comparison purposes are coded in the very same format as a data file for 100 sales which is available to you as MKT66. One by one, appraise each of the subject properties and determine its estimated appraised value, its comparability index, and then state if you are satisfied with the results and why.



SOCIETY OF REAL ESTATE APPRAISERS

AN INTERNATIONAL ORGANIZATION - HEADQUARTERS 7 SOUTH DEARBORN STREET, CHICAGO, ILLINOIS 60603, -PHONE: FINANCIAL 6-7422

March 2, 1971

Dr. James A. Graaskamp
Assistant Professor in Business
The Graduate School of Business
The University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706



Designates
SENIOR
RESIDENTIAL
APPRAISER



Designates
SENIOR
REAL ESTATE
APPRAISER

Dear Jim:

I understand your first EDUCARE Course was a success. In reporting on it, Roy Fisher asked us to furnish you with labels for the members of the Board of Governors and the Education Committee of the Society. These are enclosed.

The sheets are lightly gummed and can be cut apart for use as labels when you are ready, meanwhile, they are much easier to keep track of in this form.

Congratulations on a successful program.

Cordially,

James V. Morgan
Executive Vice President

JVM:cd
Enclosures

SCOTT APPRAISAL SERVICE INC.

REAL ESTATE APPRAISERS & CONSULTANTS

2509 BROWNCROFT BLVD.
P. O. BOX 9121
PANORAMA BRANCH
ROCHESTER, N. Y. 14625
PHONE - 381 - 5425
AREA CODE 716

July 27, 1971

Professor James A. Graaskamp
Graduate School of Business
1155 Observatory Drive
University of Wisconsin
Madison 53706

Dear Chief and Indians:

Dave and I enjoyed the Educare course very much and I want to express our appreciation for the meticulous care and planning that went into the program, as well as the excellent teaching and assistance provided to us.

You asked for criticisms or comments. We have no criticisms and only a few suggestions that I'll set forth below:

- 1 - I believe that we might be able to take in a little more information on Sunday night. Perhaps the film on computers although I realize some time on statistics should proceed this.
- 2 - I believe a suggestion to the incoming student to bring data on the Income Approach and mortgage information from a few appraisals from his own file could be helpful. We perhaps had more time than later students may have however making up data while facing the terminal does not always result in reasonable inputs and I further think that a comparison of the answers we came up with on our own appraisal as compared to the one produced by the computer would be very interesting.
- 3 - I realize it would result in extra work for Educare, but I believe that an official book of programs on G.E. Time Sharing would be desirable. I believe it should be in loose-leaf notebook form which would allow for the addition of later programs and revisions to the Table of Contents.

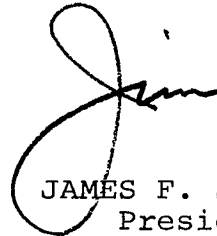
Professor James A. Graaskamp
University of Wisconsin

Page Two
July 27, 1971

As to suggested programs, I believe the one concerning a Wang Simulator would be most desirable and also a simple program on land residual and feasibility that would have total given input of project cost and mortgage data plus debt service and equity demands for the use of producing land value as a support and an application for variances or a change of zoning to permit greater density and/or intensity of use.

Thanks again for all your assistance and kindnesses.

Best regards -

A handwritten signature in black ink, appearing to read 'Jim', with a large loop at the end.

JAMES F. SCOTT, S.R.A.
President
SCOTT APPRAISAL SERVICE, INC

JFS/lb

BERNARD CARMICHAEL, MAI-SREA

REAL ESTATE APPRAISER

102 WASHINGTON BLDG. • P. O. BOX 1062
MONTGOMERY, ALABAMA 36102
PHONE: 264-2476

July 28, 1971

Dr. James A. Graaskamp
Associate Professor in Business
Room 101, School of Business
University of Wisconsin
Madison, Wisconsin 53706

Dear Jim:

The EDUCARE course was great! I learned a lot, but not nearly enough. You have certainly excited my interest. Nearly everybody thought that you all have done a really fine job. If I had gotten nothing more from the course, it would have been worth my coming just to realize how important the computer is, not only to me, but to the entire profession.

It is my intention to use what little influence I have in the Society and the Institute in helping to furnish a concerted effort to see that this knowledge saturates the profession. I think that both the Institute, the Society and the Counselors need to give this thing the hard sell because for the profession to really grow, we will have to turn to the computer. The best vehicle for this is EDUCARE, and I think that EDUCARE has made a wise choice in the selection of you and Bob Knitter, but we do need to give it the hard sell.

We need to get this course where nearly all of our appraisers can be persuaded to take it. The most important thing is to get them there once. Once exposed, those who do not see the urgent necessity for mastering this tool are probably appraisers who are going to die on the vine anyway, so we are not going to concern ourselves with them. But the appraisers who are going to grow, I think, will almost certainly see after the first trip to your fountain of knowledge that they must conquer this tool. So again, the big thing is getting them there. I find that your philosophical lectures fascinating and your talks on statistics and multiple regression most interesting, but I suspect that we would be better off if this came later.

The first step, I think, should be to shorten the course as much as we can possibly manage and really give the students the "nuts and bolts". Show them what this thing

is, what it costs, that it is within their capability to learn it, then turn them loose. Once that is done, I think that they will see the necessity for expanding their knowledge in this field. Then we can move deeper into statistics, multiple regressions and modern, decision-making tools.

Very truly yours,

A handwritten signature in cursive script that reads "Bernard".

Bernard Carmichael, MAI-SREA

bc/lks

MEREDITH H. JAMES, JR.
REAL ESTATE APPRAISALS
1515 WEST ALABAMA, HOUSTON, TEXAS 77006
AREA CODE 713 - PHONE 526-4101

August 6, 1971

Dr. James A. Graaskamp
School of Business
University of Wisconsin
Madison, Wisconsin 53706

Dear Jim,

I want to thank you and all your staff for making the EDUCARE course so interesting, informative, and thought-provoking. I hope there can be many more like it in the future.

One of the biggest benefits I got from the course was the "thought-stimulation", both in theory and in practical application. I got several ideas for some short, "every-day" programs plus a good insight into what the longer programs involve.

I was particularly pleased to find that you are using "HOSKOLD" capitalization. I have been trying to advocate HOSKOLD for many years, with little or no success. Perhaps a lecture or two on the basic "Mathematics of Capitalization" would help to bring out the fact that "HOSKOLD" is the general formula for all capitalization methods and that "Inwood" and "straight-line recapture" are simply special cases of the general HOSKOLD formula. (The attached sheet is some class-room material I used in a course in "Advanced Appraising" at the University of Houston in the early 1950's. You are welcome to adapt it to EDUCARE's course if you think it will help.)

The "thought-stimulation" was so great that I can't possibly put all my thoughts and comments in one short letter. Ideas such as: "Why not use 'discontinuous' discount rates as well as discontinuous income?" Or, "Can alternate income streams be compared by means of regression analysis techniques?" I will try to write you at length on some of these ideas at a later date.

Thanks again to you, Bob K., and all your staff for a wonderful job of covering so much ground in such a short time.

Sincerely,



Meredith H. James, Jr.

IDEA #1

Possible program for a training-aid in EDUCARE course I:

I. OUTPUT:

THIS IS A PROGRAM FOR COMPUTING THE CAPITALIZATION RATE APPLICABLE TO A LEVEL, PERIODIC INCOME STREAM. THE BASIC PREMISES ARE THAT THE INCOME WILL REMAIN LEVEL OVER THE LIFE OF THE INVESTMENT, THAT EACH PERIODIC PARTIAL RETURN OF CAPITAL WILL BE IMMEDIATELY RE-INVESTED AT THE STIPULATED RE-INVESTMENT RATE, AND THAT THE STIPULATED INTEREST RATES WILL REMAIN FIXED OVER THE LIFE OF THE INVESTMENT.

DO YOU WANT TO USE HOSKOLD, INWOOD, OR STRAIGHT-LINE CAPITALIZATION? (1 = HOSKOLD, 2 = INWOOD, 3 = ST. LINE)
ENTER 1, 2, or 3.

?

WHAT IS THE AMOUNT OF THE LEVEL ^{PERIODIC} PAYMENT?
?

FOR HOW LONG? (ENTER NUMBER OF PERIODS)
?

WHAT IS THE DESIRED RATE OF INTEREST ON THE INVESTMENT?
?

> HOW MANY PERIODS PER YEAR?

AT WHAT RATE WILL EACH PERIODIC PARTIAL RETURN OF CAPITAL BE RE-INVESTED? IE: WHAT IS THE RE-INVESTMENT RATE?
? RE-

(Possible replies: If Inwood is stipulated and $I(1) \neq I(2)$:

INWOOD CAPITALIZATION PRESUMES THAT EACH PARTIAL RETURN OF CAPITAL WILL BE IMMEDIATELY RE-INVESTED AT THE SAME RATE OF RETURN AS IS BEING EARNED BY THE SUBJECT INVESTMENT. IF THE RE-INVESTMENT RATE IS DIFFERENT FROM THE RATE BEING EARNED BY THE SUBJECT INVESTMENT, YOU MUST USE HOSKOLD.
DO YOU WANT TO USE HOSKOLD?

(If YES, proceed with the calculation. If NO, go back and repeat the input data questions. Force the student to set $I(1) = I(2)$ before the program will proceed with an INWOOD calculation.

(If Straight-line Capitalization is stipulated and re-investment is not = zero:

STRAIGHT-LINE CAPITALIZATION ASSUMES THAT EACH PARTIAL PERIODIC RETURN OF CAPITAL WILL BE PUT INTO A NON-INTEREST-BEARING CASH RESERVE THAT WILL EQUAL THE ORIGINAL INVESTMENT AT THE END OF THE LIFE OF THE INVESTMENT. THESE CASH RESERVES DO NOT EARN INTEREST UNDER THE STRAIGHT-LINE PREMISE.
DO YOU WANT TO USE HOSKOLD?

(If YES, proceed with the calculation. If NO, go back and repeat the data input questions. Force the student to set $I(2) = 0$ before the program will proceed with a straight-line calculation.)

The basic idea of this program is to force the student to match the input data with the capitalization method before the program will proceed with the calculation. If the input data does not fit the underlying premise of the selected capitalization method, the program will explain the underlying premises of the selected capitalization method and ask for new data.

A general HOSKOLD program could be used as a follow-up to this program. By naming it HOSKOLD, it would be a constant reminder that HOSKOLD is the general formula that fits all cases. Such a program would be an "automatic method selector" that would automatically select the proper capitalization method in accordance with the indicated re-investment rate.

Subsequent programs could introduce the student to the concepts of fluctuating, but periodic income; "negative income" and "internal rates of return"; "adjusted rates"; irregular, non-periodic income; etc.

There is no particular reason why the same discount rate should be applied to every portion of the prospective income. In fact, it is common practice to discount guaranteed minimum rentals at one rate and possible "overages" from percentage leases at a different rate. In the bond market, near-term money almost always commands a lower rate than long-term money. The use of variable rates of return would be in accordance with the actual market place.

"Ellwood" could easily be modified to provide for one rate on the cash-flow and another rate on the potential reversion. This would be more in accordance with the actual market practice than the standard Ellwood concept. (There is almost no market for long-term reversions.)

**CAPITALIZATION FORMULAS
(EQUAL ANNUAL PAYMENTS)**

FUTURE WORTH OF ONE DOLLAR
(For a deposit made at the beginning of the 1st year.)

Example: \$1.0000 deposited @ 5% for 5 years:

End of 1st year:	\$ 1.0000 x 1.05 = \$1.0500
" " 2nd " :	1.0500 x 1.05 = 1.1025
" " 3rd " :	1.1025 x 1.05 = 1.1576
" " 4th " :	1.1576 x 1.05 = 1.2155
" " 5th " :	1.2155 x 1.05 = 1.2763
<hr/>	
Total of 5 deposits of \$1 ⁰⁰ each =	\$5.8019

$$(1) F = (1 + r)^n$$

where, r = rate of interest
n = number of years

FUTURE WORTH OF \$1.00 PER ANNUM = \$5.8019
(For deposits at the beginning of each year.)

$$(2) F = \frac{(1 + r)^n - 1}{r} \times (1 + r)$$

PRESENT WORTH OF ONE DOLLAR
(Due at the end of the year)

Example: \$1.0000 due each year for 5 years:

Due in 1 years:	\$1.00 ÷ 1.0500 = \$.9524
" " 2 " :	1.00 ÷ 1.1025 = .9070
" " 3 " :	1.00 ÷ 1.1576 = .8638
" " 4 " :	1.00 ÷ 1.2155 = .8227
" " 5 " :	1.00 ÷ 1.2763 = .7835
<hr/>	
Total of 5 payments of \$1 ⁰⁰ each =	\$4.3294

$$(3) F = \frac{1}{(1 + r)^n}$$

PRESENT WORTH OF \$1.00 PER ANNUM = \$4.3294
(Payments collectable at the end of each year. Inwood's Premise.)

$$(4) F = \frac{(1 + r)^n - 1}{r} \times \frac{1}{(1 + r)^n}$$

or, =
$$\frac{1}{\frac{r}{(1 + r)^n - 1} + r}$$

FUTURE WORTH OF \$1.00 PER ANNUM = \$5.5256
(For deposits at the end of each year)

$$(5) F = \frac{(1 + r)^n - 1}{r}$$

AMORTIZATION RATE. (The amount which must be deposited at the end of each year in order to build up to \$1.00 = \$.1809

$$(6) F = \frac{r}{(1 + r)^n - 1}$$

PRESENT WORTH OF \$1.00 PER ANNUM = \$4.1954
(Payments collectable at the end of each year. Hoskold's Premise using a 3% re-investment rate.)

$$(7) F = \frac{1}{\frac{r'}{(1 + r')^n - 1} + R}$$

GENERAL FORMULA:

$$F = \frac{1}{D + I}$$

Straight-line

$$F = \frac{1}{sfo + i}$$

Hoskold Premise

$$F = \frac{1}{sfr' + R}$$

Inwood Premise

$$F = \frac{1}{sfr + r}$$

D = Depreciation Rate.
I = Interest Rate.

sfo = d = $\frac{1}{n}$

r' = "safe" rate
R = "Risk" rate

r = "risk" rate

i = int. rate = R - (d - sfr')

Where R = "Actual" rate
r' = "Reasonable" rate

August 16, 1971

Dr. James A. Graaskamp
202 N. Breese Terrace
Madison, Wisconsin

Dear Jim:

I'm writing this in Puerto Rico, so it will be delayed for a while in getting to you. I am trying to recast 201 to bring it and my text more nearly in conformity with each other, as well as adding more drill problems and exercises to the student reference. Then I plan to start on the 301 outline and session details. This is where the Educare course(s) comes into the picture. I wanted to make absolutely sure that the overlap between 301 and Educare was minimal, and yet that the SREA course sequence gave "successful students" a reasonable preparation to make most effective use of the tools provided through Educare.

I promised you to make some comments (and suggestions) about the course, so here goes. First, it is obvious that things still need a little tightening up. This was especially apparent on Wednesday afternoon and evening, but also applied to other evenings.

For a long time, people are going to attend the course with fire in their eyes and full of all sorts of ambition. Most of them are going to be owners or partners and, by God, they're going to get their money's and their time's worth. So you can work their asses off - provided you give them some formal time to "play": a little sightseeing, maybe some cards, and some swimming.

As an example of the modest frustration that a few felt, the group somehow was "ahead of schedule" enough to permit sightseeing time Tuesday afternoon, but somehow "behind schedule" by Wednesday morning. I believe you can do more of substance Sunday evening. Make starting time 4 p.m. ("or else") and start showing the films then, after the sign-in exercise.

I feel that several of the models and programs used were not sufficiently explored in their uses and implications: e.g., Rates, CIT, Hodges. Realmetrics wasn't really handled at all, the Minimod deserves much more treatment and use. What I am suggesting is more concentrated discussion of, and application with, the programs already in the system. Then it will really sell itself, and the discussion of "economics", costs, usage and the like can be deferred until Thursday morning. Frankly, I felt that there was too much "selling" interspersed in the discussions before Thursday. That time could better have been spent, in my opinion, in improving understanding of the use and applications of the programs - and on the machines.

August 16, 1971

Having said all this, I want you and Bob to know that I am already pushing the program as hard as I can, and will continue to do so. It is by far the best opportunity to bring designated appraisers up to the 1970's. I just want to see it even better (as I am sure you do) and financially as well as operationally successful. Between us (and please don't repeat this yet), I have already planted the suggestion that it might be a required course for all SREA (not SRA) applicants. I have just footnoted the Educare course in the manuscript for a reprint monograph of our participation loan series, even if you do take exception to some of the materials in it. I am going to hammer on Educare as an example of what the "profession" should do in a paper I am presenting in Miami in November. And I am supporting it as much as I can with SREA officialdom - including Bernard. So I'm sold.

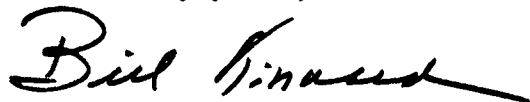
My own problem is that Connecticut is on a real austerity budget. In fact, we still have no mudget at all this fiscal year, and the legislature is still wrangling over taxes. So financing a terminal and "membership" out of university funds is presently out of the question. Every terminal on campus is hard-wired to our computer center's 360 system. And programming assistance is nil in the School of Business - again no funds.

Would a TWIX serve? One of our SBA projects has one.

Anyway, I'm still trying. So keep a user number available for me. It just can't happen for a while.

I hope these comments are helpful. You've got a good product that will certainly be even better as you go along and the system expands. I'll be in touch with you about November or December to start developing the cash flow seminar.

Cordially yours,



William N. Kinnard, Jr.
Associate Dean

cc: Bob Knitter

ja

From The Desk of

Meredith H. James, Jr.

HOSKOLD'S
GENERAL FORMULA
for discounting a
LEVEL, PERIODIC INCOME STREAM

$$R = \frac{1}{I_1 + SF_2}$$

where, R = Cap. Rate

I_1 = Risk Rate

SF_2 = SINKING FUND RE-
QUIREMENT AT I_2 .

I_2 = RE-INVESTMENT RATE

THEN, $VALUE = \frac{INCOME}{CAP. RATE}$

$$SF_2 = \frac{I_2}{(1+I_2)^N - 1}$$

1. STRAIGHT-LINE RECAPTURE:

IF $I_2 = 0$, LET $SF_2 = 1/N$

2. "INWOOD" CAPITALIZATION:

$$I_2 = I_1$$

$$R = \frac{1}{I_1 + SF_1} \equiv \frac{1}{I_2 + SF_2}$$

3. $I_2 \neq I_1$ = "HOSKOLD"

EDUCARE

p.o. box 631 / madison, wisconsin 53701 / phone (608) 256-2355

September 13, 1971

Mr. H. Robert Knitter
Dr. James A. Graaskamp ✓
The University of Wisconsin
Graduate School of Business
1155 Observatory Drive
Madison, Wisconsin 53706

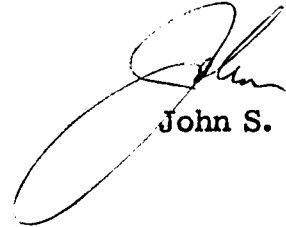
Dear Bob and Jim:

Enclosed herewith is a copy of a letter from Larry Burke giving his impression of the course and suggestions in connection with its possible improvement.

Since this is one of the most constructive letters I have received, I am sending it on to you for your consideration.

With best regards, I am

Very truly yours,



John S. Schneider

JSS/lr

Enclosure

educational foundation for computer applications in the real estate industry, inc.

BURKE, HANSEN & HOMAN
REAL ESTATE APPRAISERS AND CONSULTANTS
111 WEST MONROE, SUITE 818 • PHOENIX, ARIZONA 85008
TELEPHONE (602) 254-5451

September 10, 1971 LARRY BURKE, M. A. I.
JOHN T. HANSEN, M. A. I.
JIM HOMAN, M. A. I.
WALTER J. STEVENS, M. A. I.

Mr. John Schneider, President
Educare
515 Fulton Federal Building
Atlanta, Georgia 30303

Dear John:

I attended the Educare session in Wisconsin in early August this year. Immediately thereafter, I went on a vacation and then to the FIG Congress in Germany. Consequently, I've been very slow in commenting about the Seminar.

As you probably recall, I was somewhat dubious about the need, though certainly willing to go along with your personal judgement. Consequently, when I arrived it was with something of a "show me" attitude.

I came away entirely convinced that this Seminar has fine potential. Of course, like any new seminar it will need improvement insofar as details are concerned. My quick comments so far as details are:

1. The course should be a full week long. It's rather pointless not to use Friday.
2. At this time the course is primarily concerned with the use of the computer and has not sufficiently developed the relationship between the computer and real estate valuation. In other words - not enough Grasskamp. I think an extra day from Grasskamp would help a great deal.
3. Scheduling sessions into the evening may be a little long for those of us who are over 30.
4. I would believe it would be highly appropriate to mail every registrant a copy of a well written book concerning computers and time-sharing, such as:

BASIC FOR BEGINNERS BY WILSON Y GATELY AND
GARY G. BITTER - McGraw-Hill Book Company

Mr. John Schneider, President
September 10, 1971
Page Two

If I had been able to run through this 121 page booklet before arriving I think it would have been only necessary to devote about half as much time to computer operations.

5. I think it's fine to have the various terminal companies send their representatives, but it would be much more appropriate for them to be there at non-class times. Maybe this would be a use for the evenings.

The Galbreath Mortgage Company is now known as Chemical Mortgage Company, a subsidiary of The Chase Manhattan Bank. The opinions expressed in this letter are not necessarily the opinions of Chemical Mortgage Company or The Chase Manhattan Bank.

The Galbreath Mortgage Company

101 EAST TOWN STREET

Columbus, Ohio

43215

DAVID S. COOK
PRESIDENT

TELEPHONE
614/228-3000

December 20, 1971

Dr. James A. Graaskamp
Associate Professor of Real Estate
Graduate School of Business
1155 Observatory Drive
Madison, Wisconsin 53706

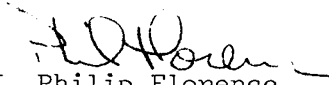
Dear Dr. Graaskamp:

Thank you for your letter of November 14th suggesting various time sharing firms to contact. Last week we installed our terminal and have been able to use and analyze the various programs available through EDUCARE. Omnimetrics, in our opinion, also gives maximum flexibility and we are in contact with them trying to get a handle on costs. Hopefully, by February 20th we will be familiar with various alternatives as a basis for discussing mutual needs for additional program development.

In recognition of your present speaking commitments through August of next year, we would like to invite you, at our expense, to address selected developers for, say a two day seminar sometime during the last quarter of calendar year 1972. We visualize two separate groups that would attend for one day. Perhaps we can discuss this in detail during the week of February 20th.

Sincerely,

THE GALBREATH MORTGAGE COMPANY


J. Philip Florence
Mortgage Loan Representative

JPF/plb



Department of Public Works

EDUCARE
Ministère des Travaux publics

your file / votre dossier
our file / notre dossier

Ottawa, Ontario
K1A 0M2

July 5, 1972

Dr. J.A. Graaskamp,
c/o EDUCARE,
University of Wisconsin,
1155 Observatory Drive,
Madison, Wisconsin
U.S.A.
53706

Dear Dr. Graaskamp:

The Property Services Branch of the Department of Public Works is interested in exploring the area of Educare's MKTCOMP computer program as an aid to its appraisal process.

We are contemplating experimenting with MKTCOMP and multiple regression analysis in the appraisal of some seven hundred properties that are being expropriated for a new airport site on the outskirts of Toronto, Ontario.

Do you have any written literature on the MKTCOMP program other than that found in the EDUCARE course? We would appreciate receiving any literature we can on the development and operation of the MKTCOMP program.

Any help you can give us will be greatly appreciated.

Sincerely,

L.H. Howard,
Chief Appraiser,
Property Services Branch.

G. Paul Rollo:998-4940:cmg

August 8, 1972

Mr. Robert H. Knitter
533 S. Segoe Road
Madison, Wisconsin

Dear Bob:

As we discussed at the last Educare conference and on the telephone Monday morning, I have a little bit of a problem. My partner and I look forward to joining the Educare network as soon as we can solve the problem, which is this.

For a number of reasons (not the least of which is financial), we need for the Market Comparison program to be operable and accessible to us on a day to day basis. We plan to utilize it as an aid in my partner's rather extensive residential appraisal practice. We expect that, initially, we will utilize the program for from fifty to one hundred residences per month, although, depending on a number of factors, our optimum use may well work out to be from one hundred and fifty to two hundred per month. One of our main considerations is the storage charges for data files. We understand that this is G.E.'s charge and not Educare's. Nevertheless, we are not sure how the economics will work out in actual practice.

What we need is for the Market Comparison program to be altered so that parameters may be set in the search of the comparable sales file. This is explained very well in Dr. Cluttenberg's article "Computer Simulation of the Market Approach" in the January - February 1972 Edition of The Real Estate Appraiser, under the subheading Selection of Comparable Sales.

My initial idea is to be able to select comparables by:

- 1 - Price Range (high and low prices)
- 2 - Location code
- 3 - Age
- 4 - Quality rating
- 5 - Sale date

These modifications would make the program usable where there may be a file of two hundred to three hundred sales already in storage but only five to ten of which are truly comparable.

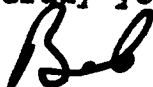
August 8, 1972
Mr. Robert E. Knitter
Page 2 - continued

You mentioned the possibility of utilization of the G.E. Program, Fleximist, however, the double charge necessary for accessing two programs for each appraisal would appear to make this a financially unfeasible solution. That is, if we are doing appraisals for \$35 and \$50 (depending on the client), we can scarcely afford a \$5 to \$6 per appraisal computer charge. The \$1 to \$2 charge per run, if this were all done in one program, does appear to be feasible. (Dr. Cluttenberg suggests this charge as average in his article)

I think you will agree this program has the widest possible application by potential users of Educare. Accordingly, I urge you to give the modification discussed herein, the highest possible priority.

Hope to see you again soon.

Very truly yours,



Robert J. Callaway, S.R.A., M.A.I.

RJC/lw

cc: James A. Graaskamp ✓
Norman Benedict
Roy R. Fisher, Jr.
Robert A. Steele
Ron Brown

REAL ESTATE COUNSELORS

SUITE SIXTEEN, SYLVANIA BUILDING, 403 N. SYLVANIA, FORT WORTH, TEXAS 76111
CODE 817-834-7151

September 7, 1972

Educare Computer Network, Inc.
Attention: H. R. Knitter
533 S. Segoe Road
Madison, Wisconsin 53711

Dear Bob:

I am enclosing a contract agreement for the Educare Computer Network.

It was my intention to handle this matter immediately after returning from the Educare Seminar in July, however, since that time I have been to San Francisco, Lake Tahoe, Pennsylvania, New York and a few other places. Time somehow has passed rapidly.

Today, however, I made contact with the GE time share people in Dallas and found that they definitely do supply the Fort Worth area with a direct line, and have arranged to get a terminal installed.

We hope to be able to coordinate the terminal installation and the beginning of our agreement with Educare both on October 2, 1972. I am leaving next week to teach a course in Puerto Rico and will not be back in the office until the 2nd of October.

At this point we hope to get going with some of the Educare programs and hopefully we will be able to substantially increase the scope of services to our clients and ultimately our net income.

Let me express to you again how much I enjoyed the Educare Seminar, and particularly your part in the presentations. I have no doubt that I will find it necessary to call on you and some of the others in Madison for some counsel and assistance as time goes on, and I am looking forward to attending the follow up to the Educare Seminar after I have had an opportunity to know what needs to be followed up.

At the present time I need to know what I must do to obtain a supply data input forms for the various programs available through Educare, and also need to know more about the programs available through GE. I assume that they can probably give me a catalog with detailed information about their library, however, if you have any suggestions along this line I would appreciate hearing them.

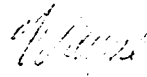
Educare Computer Network, Inc.

September 7, 1972

Page 2

We are particularly interested in programs that will handle multiple regression analysis, and we are very definitely interested in the land development program which you or Jim indicated would be available through Educare toward the end of this year. Any other good advice to a real beginner such as I would be most appreciated.

Sincerely,



Wayne D. Hagood, SREA, MAI, CRE

WDH:sg

Enc. 1

November 27, 1972

Mr. Robert Knitter
533 S. Segoe Road
Madison, Wisconsin 53711

Dear Bob:

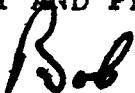
As you are well aware, local participants in Educare greatly need the services of the local G.E. Representative. You assured us, at the time of the Educare Conference, that G.E. had made internal arrangements to compensate the local representative for servicing the local account.

The G.E. Representative in my area, Mr. Joe Ripkin, says that he has not received credit for our account. At my request, he requested credit for our account but was told that the Milwaukee office of G.E. did not allow this. Bob, obviously there is a slip up somewhere. I need the local man but he wants to be compensated for his efforts and I do not blame him. See what you can do on my behalf.

Thank you.

Very truly yours,

CALLAWAY AND PRICE, INC.



Robert J. Callaway, S.R.P.A., M.A.I.

P.S. As much as I enjoy talking to you guys, this calling Wisconsin is getting expensive.

cc: Dr. James A. Graaskamp ✓
Mr. Joe Ripkin

JOHN C. BYRAM, JR.
SUITE 2207 — COMMERCE TOWER
911 MAIN STREET
KANSAS CITY, MISSOURI 64105
(816) 474-8827

December 6, 1972

Mr. James A. Graaskamp
Associate Professor of Business
Graduate School of Business
1155 Observation Drive
Madison, Wisconsin, 53706

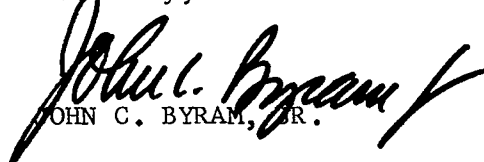
Dear Mr. Graaskamp,

I was pleased to receive your letter of November 20, and your expression of interest in the computerized HUD feasibility analysis. I have read numerous articles written by you and have a high regard for your abilities.

Enclosed is a short explanation of the HUD feasibility analysis and a couple of examples. A variation of this program is presently being used by several large HUD oriented mortgage companies (Associated Mortgage Companies, Advance Mortgage Company). This computer program incorporates all the popular HUD multi-family sections as well as the HUD section for nursing homes.

Dunlap Vanice and I have been providing this program and others to Real Estate people in Kansas City with limited success. We would like to cooperate with you, perhaps a trade for other real estate programs or possibly an opportunity to learn more about potential uses of a computer in the real estate field.

Sincerely,


JOHN C. BYRAM, JR.

JCB:Jr/vs

cc: Mr. Dunlap Vanice

INTRODUCTION AND PURPOSE

The purpose of this computer program is to determine the economic feasibility of a HUD insured multi-family housing project. This feasibility analysis is done by finding the relationship between the cost of a housing proposal and the amount of income necessary to pay operating expenses, debt service and return on invested capital. All calculations are based upon HUD manuals and guidelines.

The computer program will calculate and print out data for the FHA form 2013 (also known as FHA form 2264), and can be used for sections 207, 220, 221(d)4, 236 and 232 of the National Housing Act. Adjustments will be made for new construction or rehabilitation, or for a profit motivated, non-profit or a limited dividend ownership.

The problem may be based upon either the anticipated rent roll, in which case it will calculate the HUD allowable construction cost; it may be based upon the anticipated construction cost (or the mortgage amount) in which case the program will calculate the rent needed in order to support those costs, or it may be based upon the mortgage amount and will show the construction cost breakdown and rental needed to support that construction cost. In each case the appropriate figure for each line of the FHA form 2013 will be printed, although predetermined dollar figures may be substituted for title and recording fees, consultants fees, legal and organizational fees and non-realty items (for section 232-nursing homes).

DATA INPUTS FOR HUDPRO
HUDPRO

REN (TS)

COS (T)

PRO (POSED)

MOR (TGAGE)

EXI (STING)

10 FHA Section _____ MTGOR _____ MOR (TGAGE) _____ EXI (STING) _____

20 UNIT MIX _____

30 UNIT SIZE _____

40 COMMERCIAL INCOME _____, OCCUPANCY _____, EXPENSES _____, CONSTRUCTION TERM _____

50 TAXES _____, INSURANCE _____, LAND VALUE _____, LAND AREA _____, OTHER FEES _____

60 LAND INDEBTEDNESS _____, DISCOUNT _____, OFF-SITE CONSTRUCTION _____, EFFICIENCY _____

70 RENTS OR MTG. PER UNIT _____
COST PER SQUARE FOOT _____

80 LINE NUMBER _____ SUBSTITUTED VALUE _____

90 LINE NUMBER _____ SUBSTITUTED VALUE _____

00 LINE NUMBER _____ SUBSTITUTED VALUE _____

10 1 - Note: The last entry in the file must be a line number followed by the number 1.

TOTAL STRUCTURES----- \$ _____

General Requirements ----- \$ _____

FEES-

Builder's Gen. Overhead

@ _____ % ----- \$ _____

Builder's Profit

@ _____ % ----- \$ _____

Arch. Fee-Design

@ _____ % ----- \$ _____

Arch. Fee-Supvr.

@ _____ % ----- \$ _____

Bond Premium ----- \$ _____

Other Fees ----- \$ _____

TOTAL FEES ----- \$ _____

TOT. for all Imprmts. (Lines 36c, 41, 42 & 49) \$ _____

Cost Per Gross Sq. Ft. ----- \$ _____

Estimated Construction Time ----- Months

CARRYING CHARGES & FINANCING-

▲ 53. Int. _____ Mos. @ _____ %
on \$ _____ -- \$ _____

▲ 54. Taxes ----- \$ _____

▲ 55. Insurance ----- \$ _____

▲ 56. FHA Mtg. Ins. Pre. (0.5%) ----- \$ _____

▲ 57. FHA Exam. Fee (0.3%) ----- \$ _____

▲ 58. FHA Inspec. Fee (0.5%) ----- \$ _____

▲ 59. Financing Fee (%) ----- \$ _____

▲ 60. AMPO (%) ----- \$ _____

▲ 61. FNMA Fee (%) ----- \$ _____

▲ 62. Title & Recording ----- \$ _____

63. **TOTAL CARRYING CHGS. & FINANCING** -- \$ _____

LEGAL AND ORGANIZATION-

▲ 64. Legal ----- \$ _____

▲ 65. Organization ----- \$ _____

66. **TOTAL LEGAL AND ORGANIZATION** ----- \$ _____

▲ 67. Consultant Fee ----- \$ _____

68. Builder and Sponsor Profit & Risk ----- \$ _____

69. **TOTAL EST. DEVELOPMENT COST (Excl. of
Land or Off-site Cost)(Line 50+63+66+67+68)** \$ _____

70. LAND (Est. Market Price of Site)
_____ sq. ft. @ \$ _____ per sq. ft. \$ _____

71. **TOTAL ESTIMATED REPLACEMENT
COST OF PROJECT (Add 69 + 70)** ----- \$ _____

EXAMPLE NUMBER 1

A builder is considering the development of a 120 unit apartment project which will be financed under Section 221(d)4. The unit mix is expected to include 30 one-bedroom apartments with 750 square feet, 75 two-bedroom apartments with 900 square feet and 15 three-bedroom apartments with 1200 square feet. A check of comparable units in the area indicate that one-bedroom apartments could be rented for \$175 per month, two-bedroom units at \$205 per month, three-bedroom units should rent for \$265 per month, and income from coin-operated laundry should run around \$175 per month. Operating expenses including taxes and insurance are expected to cost \$850 per unit per annum; the occupancy level is projected at 93%, and a 18 month construction term is anticipated. The project is to be built on 360,000 square feet of land which will cost \$120,000. payable at the initial loan closing. Taxes during the construction period are projected at \$10,000, builders risk insurance will be \$12,000, and "other fees" (2013 form line #48) will be 3000. There are no off-site construction costs, there will be a 3% discount on the permanent loan, and it is expected that the rentable square foot area will be 83% of the gross building area (the efficiency). What construction costs could be supported by those rentals and how would the FHA form 2013 look?

The data inputs (or variables) would be arranged as follows (which corresponds to the data input form on page 5)

```

10 221 PM REN PRO
20 30 75 15 0 0
30 750 900 1200 0 0
40 175 .93 850 18
50 10000 12000 120000 360000 3000
60 120000 .03 0 .83
70 175 205 265 0 0
80 1
  
```

The preliminary output would be as follows

```

TYPE INPUT FILE NAME
? EXAMPLE
FHA SECTION 221
TOTAL STRUCTURES (LINE 41) 1480131.12
TOT. ALL IMPRMTS (LINE 50) 1636898.98
COST PER SQ. FT. (LINE 51) 12.58
TOT.PROJECT COST (LINE 71) 2192954.45
MORTGAGE AMOUNT (LINE 75) 1973659.01
TOT.CASH REQUIRD (LINE 83) 129527.99
  
```

UNITS	AREA	RENT	TOTAL
30	750	175.00	5250.00
75	900	205.00	15375.00
15	1200	265.00	3975.00
0	0	0.	0.
0	0	0.	0.

The main output would be as follows: (line numbers correspond to the
FHA form 2013)

TYPE 1=PART C,2=PART F,3=PART G,4=PART H,5=TOTAL ,6=STOP

? 5

PART C (CONT.)

28.. 24600.00
30.. 175.00
31.. 24775.00
32.. 297300.00
33.. 130120.48
34.. 108000.00

PART F

30.. 297300.00
31.. .93
32.. 276489.00
33.. 102000.00
34.. 174489.00
35.. .37

PART G

41.. 1480131.12
42..(.020) 29602.62
43..(.020) 30194.67
45..(.040) 61597.14
46..(.013) 20532.38
47.. 11841.05
48.. 3000.00
49.. 127165.24
50.. 1636898.98
51.. 12.53
52.. 18.00
53.. 103628.94
54.. 10000.00
55.. 12000.00
56.. 19736.59
57.. 5920.98
58.. 9868.30
59.. 39473.18
60.. 0.
61.. 29604.89
62.. 6220.98
63.. 236453.84
66.. 11151.22
67.. 0.
68.. 188450.40
69.. 2072954.45

360000.00

.33

70.. 120000.00
71.. 2192954.45

PART H

72..2072954.45
73.. 120000.00
74..2192954.45
75..1973659.01
76.. 188450.40
77..2162109.41
78.. 30845.04
80...030 59209.77
81.. 39473.18
82.. 0.
83.. 122527.99

EXAMPLE 2

The builder concludes that he cannot build a semi-luxury apartment building for \$12.58 per gross square foot. In an attempt make the previous example feasible he decides to reduce the amount of rentable square feet area to 650 square feet for a one-bedroom, 850 square feet for a two-bedroom and 1100 square feet for three-bedroom apartment. He also decides he can build it in less time, in 15 months rather than 18 months and he can get more laundry income - \$300 per month rather than \$175 per month. The minimum cost per gross square foot which sounds reasonable is \$16.50, including architectural fees and overhead. What is the minimum rent which the builder must charge for these apartments assuming the remaining variables are the same as the preceding problem?

The data inputs (or variables) would be arranged as follows (which corresponds to the data input form on page 5)

```

10 221 PM COS PRO
20 30 75 15 0 0
30 650 850 1100 0 0
40 300 .93 850 15
50 10000 12000 120000 360000 3000
60 120000 .03 0 .83
70 16.50
80 1
  
```

The preliminary output would be as follows.

```

TYPE INPUT FILE NAME
? EXAMPLE
FHA SECTION 221
TOTAL STRUCTURES (LINE 41) 1792850.51
TOT. ALL IMPRMTS (LINE 50) 1982106.16
COST PER SQ. FT. (LINE 51) 16.49
TOT.PROJECT COST (LINE 71) 2594867.74
MORTGAGE AMOUNT (LINE 75) 2335380.97
TOT.CASH REQUIRD (LINE 83) 151267.85
  
```

UNITS	AREA	RENT	TOTAL
30	650	178.16	5344.77
75	850	232.98	17473.28
15	1100	301.50	4522.50
0	0	0.	0.
0	0	0.	0.

The main output would be as follows: (line numbers correspond to the
FHA form 2013)

TYPE 1=PART C,2=PART F,3=PART G,4=PART H,5=TOTAL ,6=STOP

? 5

PART C (CONT.)

28.. 27340.54
30.. 300.00
31.. 27640.54
32.. 331686.49
33.. 120180.72
34.. 99750.00

PART F

30.. 331686.49
31.. .93
32.. 308468.44
33.. 102000.00
34.. 206468.44
35.. .33

PART G

41.. 1792850.51
42..(.020) 35857.01
43..(.020) 36574.15
45..(.040) 74611.27
46..(.013) 24870.42
47.. 14342.80
48.. 3000.00
49.. 153398.64
50.. 1982106.16
51.. 16.49
52.. 15.00
53.. 102184.59
54.. 10000.00
55.. 12000.00
56.. 23353.81
57.. 7006.14
58.. 11676.90
59.. 46707.62
60.. 0.
61.. 35030.71
62.. 7306.14
63.. 255265.93
66.. 12507.68
67.. 0.
68.. 224987.98
69.. 2474867.74

360000.00

.33

70.. 120000.00
71.. 2594867.74

PART H

72..2474867.74
73.. 120000.00
74..2594867.74
75..2335380.97
76.. 224987.98
77..2560368.95
78.. 34498.80
80...030 70061.43
81.. 45707.62
82.. 0.

ROBERT L. FOREMAN, M.A.I.
REAL ESTATE ANALYST - CONSULTING APPRAISER
901 DOVER DRIVE, SUITE 220
NEWPORT BEACH, CALIFORNIA 92660
(714) 642-7860

February 7, 1973

Mr. H. R. Knitter
Educare Computer Network, Inc.
533 S. Segoe Road
Madison, Wisconsin

Re: Change of Address, User Number, and Password

Dear Bob:

As you can see from the letterhead, I have left the Shattuck Company and have opened my own office. I have a terminal and will be using the Educare network. Bob Steele and Larry Brown of the Shattuck Company are attending the current session of Educare and will be wanting a user number. The present deposits on Account BCE97019 belong to the Shattuck Company.

I would like to have a new user number and password, or if I am to retain the same user number, a new password. Under either condition, I would like the password to be JEAN with the E being a control E. Also please bill me for the necessary deposits.

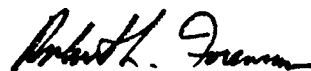
I had previously mentioned that we use a "tax disclaimer" in our limiting conditions whenever an after-tax investment analysis is included in our report. The wording is as follows:

"No representation is made that the assumptions relative to current tax provisions used in the investment analysis of this report will be acceptable to taxing authorities."

As for the source of higher quality paper for teletypes and high-speed terminals, we have found that in Los Angeles the Savel Commercial Stationery Company, 1216 Maple, Los Angeles, will supply almost any quality of paper in roll form if a sufficient quantity is ordered. We found that certain qualities are available only in a "10-ream" roll which does require re-rolling to smaller sections.

Give Jim Graaskamp and all the teaching assistants my best regards.

Cordially yours,



Robert L. Foreman, M.A.I.

RLF:le

MUSSETTER REALTY

INCORPORATED

POST OFFICE BOX 838

WILLIAMS COLUSA COUNTY CALIFORNIA 95987

(916) 473-2123

February 10, 1973

To: James Graaskamp, PhD ✓
H. R. Knitter, PhD

Educare, Inc.
P O Box 631
Madison, Wisconsin 53701

Gentlemen:

The following represents thought patterns evoked by two Old Granddads & water taken at 33,000 feet (flying home from the Educare conference, Feb 4-9, 1973). Incidentally, Bob, I made the 1:10 Northwest plane because it was 40 minutes late, so I was in Sacramento by 6:30 PST, Friday.

I commend you and the rest of the people who put on the seminar on getting maximum use of our time. This is a +++.

The spirit of courteous helpfulness on the part of instructors and grad students was very much appreciated by me and I'm sure by all.

Also, the pragmatic and inquisitive posture of all from the so-called 'ivory tower' was most refreshing.

I thought the substance and presentation of the lectures was on the right level and well planned.

The accommodations were excellent. I agree with the suggestion that prospective attendees should be advised in detail about these and also about Madison's prevailing temperatures and the mode of dress while attending. Also, it should be made clear that living quarters and class are in the same building and that a car is unnecessary.

It is evident that Madison is not only a beehive of advanced intellectual activity, but that it is also a place where politeness and honesty prevail.

Now that I have buttered you up with compliments, I have a few suggestions to offer.

First and foremost I believe more emphasis should be placed on regression and while warnings are certainly in order, I think too much time was spent on caveats and not enough on the other statistics which a good regression program produces. I can appreciate that statistics cannot be taught in 1 day, 1½ days, etc. However, it is my belief that the appraiser simply has to learn statistics and we are simply skirting the main issue until we tackle this problem head on. It is clear to me that application of statistical methods to appraisal data and problems is the way our business will become a true profession. This is for the estimation of V_p , Market Value. The other branch, investment analysis and forecasting, will have to be able to interpret and apply demographic

data that are available and already summarized statistically. Then, the programs of financial analysis will be applied through either sensitivity analysis or Bayesian density models for investors.

Perhaps it should be a requirement for admission to an advanced Educare Course that the prospective student take a one semester class or equivalent in introductory statistics at the University level within one year prior to attending Educare Course II.

If there is potential in Factor analysis and/or analysis of variance for solving some of appraisal's market data correlation problems, then we/you should get cracking on that too. Also, we need the fundamentals of time series analysis as applicable to business cycle influences on real estate markets.

Two. Data banks are necessary. Real estate submarkets should be defined. This is probably going to be done on the basis of competitiveness or substitutability between properties. But, what about the investor who just wants a real estate investment and doesn't care whether it is a shopping center, an apartment, or a free-standing commercial building? The larger the market size, the more important it is to have a national market data bank. I believe market size is a close function of total dollar size in the investment. Why not start today with a data bank of \$1 million dollar sales and higher? This would not require much storage. Then, if anybody wanted to, we could work downward to maybe \$500,000+.

For the 'everyday' property, appraisers are going to have to build their own data banks. In this connection, I suggest more disciplined sessions in the Course on selecting the critical variables which are to be included in the stored data. First, a compilation of variables could be developed via a brainstorming session using the matrix method. The original brainstormers should come from both the practicing appraisers and from the academic community. Out of this a logical ranking should evolve, for most major categories of real estate, e.g., single family residential, multiple, commercial retail, industrial, farm, ranch (i.e, grazing), mountain or wooded country, etc. It will be possible to group the variables, e.g., physical description variables such as square feet, age, soil index, legal aspects such as fractional interests, atypical title exceptions, financial variables including both the financing terms and the income, price variables to record total transaction price and to allocate that amount to real property, personal property, or other considerations, and time variables such as date of deal, date of recording etc. In addition, some might wish to consider a host of variables having to do with the characteristics of the buyer and seller. A further distinction or classification should be done on the basis of whether or not any variable is objective, subjective, or partly objective and partly subjective. A goal should be to minimize use and dependence on subjective variables.

Three. You should clarify the cost differential between external file storage and internal file storage. I have been told by SBC that internal files are not only much cheaper to store, but they are also processed 5 times as efficiently as are external files. I am not clear on what the difference is, other than the concept that language is compressed, but understand there is a difference. And, vive la differance!

Four. Give some thought to who is entitled to use market data banks, who will be entitled to use them, how to credit and debit each other automatically for accessing and contributing to data banks. Ideas - size of bank=(f)price of admission to latecomers, frequency of access=(f)monthly charge, try input tagged with initials of contributing user. Code degree of certainty of data, so tentative and unconfirmed data can be put in promptly and not lost. (There's another variable, really).

Five. Mr. Pennington from Nashville brought up another viewpoint to prediction, i.e., that it can and should be done on basis of expectations, rather than or in addition to historical indicators. This lines up with Ratcliff's statement that it is the appraiser's job to estimate how people will react to or with a property. What are the possibilities here?

Six. I hope the Chandler data bank (Memphis) will not be overlooked. This would seem to me to be a rich source for a graduate student. My thought is time series followed by regression and possibly other statistical treatments. Memphis has 750,000 people and Bill Chandler has a number of appraisers contributing to his bank so that all or nearly all single family residence sales are recorded (ranging from about 11,000 sales/year to 15,000/year). However, all sales recorded in the books do not contain all 52 variables collected by Chandler. I would estimate perhaps 25% of the sales are complete.

Seven. I believe it is clear that market data analysis is the best evidence of market value in the past or in the present or very near future. Wendt says it should be the central area of appraisal. Our problem as I see it has been subjectivity which presently is introduced at all levels of investigation, to-wit:

1. selection of variables to be measured and recorded
2. selection of the observations (sales) in the sample
3. adjustment procedure

Partial but very important answers to the problem of subjectivity are

1. stepwise multiple regression on carefully chosen variables
2. possibly set theory (Mktcomp) on selection of sales
3. multiple regression, factor analysis, or possibly analysis of variance for the adjustment procedure.

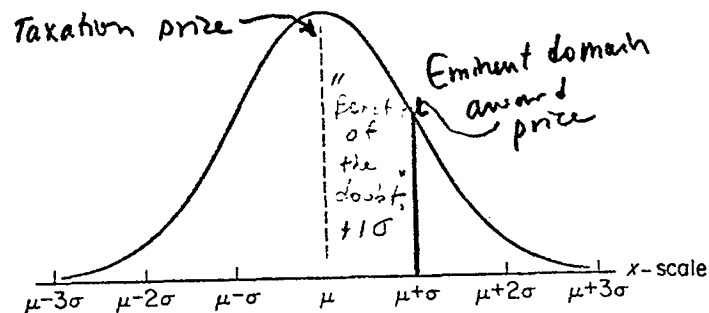
I will predict that it will wind up that 96% of real properties are amenable to scientific appraisal, i.e., use of statistical techniques. I think it is something like this: 80% of real properties are presently appraisable by multiple regression if we had the data banks on line; the remaining 20% in turn will be 80% mastered by relatively simple refinements of applications suggested above. This will leave a hard core of

about 4% of the real estate properties that will be very difficult or impossible to estimate as to value.

Eight. As for the objection that the standard error constitutes an admission by the appraiser of lack of certainty in his results, it is nevertheless the truth, and a mere claim that he can somehow on the basis of judgment or experience estimate closer than the standard error and the probability distribution indicate should not be allowed to stand.

This problem can be resolved by evolution of public policy, so that for purposes of taxation for instance, the policy will be to tax property on the basis of its mean predicted value, whereas, when taking property under eminent domain (when the shoe is on the other foot) public policy might be to pay a price equal to one standard deviation above the mean to give the benefit of the doubt to the owner who is losing irrevocably his right to the property. The foregoing is just intended as an example, not a recommendation as to what the policy determinations should be.

This would be a beautiful world for appraisers because then appraisers would just be called on to appraise, and it would be for the judge and/or jury to decide what part of the curve was morally right to select.



Academic skepticism as to appraisers' ability to produce regressions is not justified. I have a useful regression which relates three variables to selling price with 20 observations (sales), $R^2=.95$, F level = 107, t-values of 2, 7, and 16 for the three variables, and a standard error of $\pm\$48$ for a range of selling prices from \$425 to \$1167. I began with 7 sales and built up to 12, then 17 and now 20. The sales are from a subset of the local farm market. It is a useful regression because there are many similar properties to those in the sample that need to be appraised.

Now, I have some questions.

1. Would you ask the Network Educare users if they would be interested in a program which focuses income tax shelter + residual gain on Class A investors while it concentrates the current ordinary income on Class B investors in the same Limited Partnership (syndication)? This type of vehicle has become quite popular for both apartments and orchards in California. There was an excellent article by Sheldon Schwartz in Real Estate Review, Summer, 1971, describing the Limited Partnership vehicle for tax shelter investors. I enclose a brochure on an apartment with the A & B division of benefits among the Limited Partners.

2. How do I obtain the Investment Credit option in A. I. P.? Does the program permit insertion of the 20% first year bonus depreciation allowance? How/?

Please answer question #2 on the preceding page (how to get Investment Credit into AIP) as soon as possible.

Enclosed find check for \$65.00 representing first month's fee of \$15 plus deposit of \$50.00. Also find executed Contracts for Educare service.

I think your Course was well worth the expense of time and money, and I even look forward to attending an advanced Course some time in the future.

My best regards to you all.

Yours very truly,

MUSSETTER REALTY, INC.

A handwritten signature in cursive script that reads "Bob Mussetter". The signature is written in dark ink and has a long, sweeping horizontal line extending to the right from the end of the name.

Robert Mussetter

Enclosures:

- 1) Apartment brochure, Montecito North
- 2) Prospectus, Tejon Agricultural Partners, containing a number of interesting points. See in particular pages 28-30 in which appraisal procedures are described and in which designations of appraisers are specified (p.30). The A.R.A. designation is 'Accredited Rural Appraiser' which is given by the American Society of Farm Managers & Rural Appraisers.

SHATTUCK COMPANY



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CHAS. B. SHATTUCK (1900-1964)

KURT S. SHELGER
ROBERT A. STEELE

MEMBERS
AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS
AMERICAN SOCIETY OF REAL ESTATE COUNSELORS

ROBERT L. FOREMAN
ROLLAND R. STEPHENS

MEMBERS
AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS

March 26, 1973

Dr. James A. Graaskamp
Associate Professor in Business
Graduate School of Business
University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Jim:

I did not realize that Bob Filley was also requesting to attend the April 8th through 13th EDUCARE Seminar. I would be delighted to serve as his sponsor.

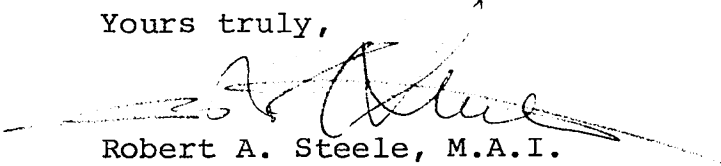
As you know I sent you a previous letter indicating my willingness to sponsor Clem Glass of the W. Ross Campbell firm. By this correspondence I assume that both men now intend to attend the course and I think that is a good thing.

Rolland Stephens and Jim Hammock of our office will also be at the April 8th through 13th Seminar. I hope that they get as much out of it as Larry Brown and I did. It was certainly a great pleasure.

By the way, I have sent the article I showed you to the Institute and have been told that it will appear in the next issue of the Appraiser.

Hope this letter finds you in the best of health.

Yours truly,



Robert A. Steele, M.A.I.

RAS:cr

MUSSETTER REALTY

INCORPORATED

POST OFFICE BOX 838

WILLIAMS COLUSA COUNTY CALIFORNIA 95987

(916) 473-2123

April 27, 1973

Professor James A. Graaskamp
School of Business
University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Jim,

I am enclosing the article because I think two points are interesting. On page 3, see the discussion of equity build-up and appreciation.

On the front page, my hand-written note reflects the author's remarks that, the rate at which cash proceeds spun off during the holding period are reinvested makes no difference to the determination of the rate of return from the investment we are considering. This is in contradiction to many statements in scholarly journals. I can see that this is the correct position, because cash spun off is your return from the subject investment, and how you then reinvest the cash is another question.

Achtenhagen told us many textbooks are being re-written to correct this error, including Professor Van Horne's Financial Management & Policy.

How now, brown cow?

MUSSETTER REALTY, INC.

Best Regards,

Bob

THE EDITED AND REVISED VERSION OF
THIS PRELIMINARY DRAFT BY PROFESSOR STEPHEN H. ACHTENHAGEN
CAN BE FOUND AS:

<u>PHD DISSERTATION TITLE:</u>	<u>An Investor-Based Marketing Plan for Sales of Real Property Investment Securities to Individuals.</u> Copyright 1974
<u>CHAPTER FOUR:</u>	The Rate of Return for Real Estate Limited Partnership Syndications. Pages 89-152 inclusive.
<u>TABLE 4.8:</u>	Computed IRR for Closed Out Syndications. Page 138.

SURVEY = decision criteria in order →
 \$5-10,000 equity input

- 1 reputation of promoters
- 2 long-term wealth building
- 3 safety
- 4 inflation
- 5 current cash income
- 6 tax shelter

SYNDICATIONS : ,WHAT IS THE RATE OF RETURN FOR A PRIVATE INVESTOR?

Stephen H. Achtenhagen*
 Graduate School of Business
 Stanford University

What objective should an investor seek to maximize with his investments? The answer, of course, is up to each individual investor. Also, of course, we recognize that investments in real estate may be structured financially to accentuate cash flow, tax shelter, long term gain, etc. individually or in some combinations. For younger investors, emphasis on long term gain might seem to be appropriate; for persons near or at retirement age, emphasis on cash flow might be more appropriate. But most investors will probably agree that they would like to maximize the "rate-of-return" on their investments.

Rate of return, however, is a rather elusive concept. In the real estate industry, we hear of the accounting rate of return, the broker's rate of return, first year return, etc. Recently, the terminology "internal rate of return" ^{IRR} and "discounted cash flow rate of return" ^{DCFR} has begun to be used ^{recommended}

For common stock, Professor Van Horne¹ has stated that "The appropriate ex post measure of return on investment in a common stock is the discount rate that equates the present value of actual dividends received, as well as the present value of the price realized on the sale of the stock, with the original price paid for it. If the stock were purchased at time zero, the return for a holding period of "n" periods would be found by solving the following equation for "i".

$$P_0 = \sum_{t=0}^N \frac{D_t^*}{(1+i)^t} + \frac{P_N^*}{(1+i)^N}$$

where D* and P* are the actual dividend and actual market price at the respective periods." Note that the true rate of return calculation would require that the formula be amended to provide for personal income taxes paid on the dividends, the transaction costs of the sale in period "N", and the capital gains taxes on the sale. This formula has been applied to many common stock holdings over many different holding periods with rates of return approximating 9% resulting. Note that this 9% represents the return before taxes; stock market people generally do not talk about after-tax return. Similarly, if we applied the formula to a \$1000 deposit in a savings and loan today, we'd find that the discounted rate before taxes was 5% in the usual type of account.

But, what about real estate syndications? Isn't the nature of the returns on real estate too complicated to use Professor Van Horne's formula? Of course not! All that is necessary is to take cognizance of the investor's tax position for each time period in the evaluation. Appraisers and brokers both are willing to make assumptions about a property to arrive at its valuation - such as gross rents multiplier, capitalization rate, and the investor's required yield rate, etc. Therefore, as one additional short step in providing the clients of appraisers and brokers with additional useable information, the investor's marginal tax rate may be either assumed or verified by asking the investor directly.

Professor Van Horne's method of calculating the rate of return, shown above, is called the "Internal Rate of Return", or IRR, for short. To be useful on an

* Acknowledgement is given for assistance given by Steve Munson in the rough draft stage of portions of this paper.
 1. Footnotes at the end of the paper

Real investment rate makes no difference
 Not cash/cash IRR

ex ante basis (before the investment is made), there are only a few numbers that the appraiser or broker needs to supply. An estimated operating statement for the property needs to be made out for each year of the anticipated holding period, the yearly cash flow and tax benefit or cost tabulated, and the terminal distributions of cash and tax benefit or cost calculated for one or several sales prices. Given this set of yearly figures, the net cash position of the investor may be calculated for each year. This is the basic data from which the IRR calculation is made. It cannot be overemphasized that inclusion of income tax benefits and costs is of paramount importance. As will be seen in data presented later in this paper, including the tax effects can (and does!) do strange things to the actual rate of return realized by the investor in real estate syndicates.

Seldin and Swesnik² emphasize this point in their book by stating, "The situation is complicated in real estate because you really do not know how much you are earning until you have all the benefits, including proceeds of sale. You hear the terms "yield", "rate of return", "earnings," and "profit." These terms as applied to real estate are ambiguous. You cannot really know the (rate of return) until all monies are in the hands of the investor." And, remember, here we are speaking about net monies after taxes.

A small example will serve to illustrate the simplicity of the method. It is assumed that real estate professionals are thoroughly familiar with the calculation of an estimated operating statement for an income property showing both the cash flow and the tax loss (or cost) yearly to the investor, as well as the terminal distributions statement showing cash and tax costs distributed when a property is sold. From this information, set up the table shown below (which is obtained from a case that was written by the author for the Stanford Graduate School of Business.)

<u>LUXURY APARTMENTS - CASH FLOWS</u>				
<u>Year</u>	<u>Cash Flow</u>	<u>Taxes Saved</u>	<u>Net Net Cash Benefit</u>	<u>Assumptions</u>
0	-36843		-36,843	1. Investment in year 0
1	5712	3524	9,236	2. 50% marginal tax rate
2	6624	2301	8,925	3. Tax effect occurs in year following accounting effect
3	7689	1488	9,177	
4	8708	611	9,319	
5	(9786	-228	(9,558	4. Ordinary (50%) tax rate applies to re-capture depreciation
	(44416		(44,416	
6		-1086)		
		-23780)	-24,866	

Now, given the right hand column of the table above, either manually calculate the IRR (examples of the calculation may be found in reference #3), or enter it in a computer programmed to calculate the IRR (see below)

```

NUMBER OF PERIODS AFTER PERIOD ZERO?      6
+ REPRESENTS A NET INFLOW, - REPRESENTS A NET OUTFLOW
INITIAL CASH FLOW IN PERIOD ZERO?          -36843
CASH FLOW IN FIRST PERIOD?                 9236
ARE ALL THE REST OF THE FLOWS THE SAME? NO
PERIOD 2      FLOW?      8925
PERIOD 3      FLOW?      9177
PERIOD 4      FLOW?      9319
PERIOD 5      FLOW?      53974
PERIOD 6      FLOW?     -24866

WHAT NEXT (IRR, PV, NEW OR STOP)?      IRR
THE INTERNAL RATE OF RETURN IS      20.24      PERCENT

```

It probably should be mentioned, in passing, that if re-financing occurs during any year of the holding period, the cash obtained in this manner is merely added to all other cash for that year so that the right hand column again represents the total cash received by the investor in any one year.

Also, in regard to the so-called "equity income" - that so-called income supposed to be derived from the equity build-up in the mortgage payments - there is no argument that amortization occurs. But the equity is not available to the investor until the property is sold, and even then, he may not get it all due to capital gains taxes. Further, using the present value techniques, any equity buildup today is not worth as much several years hence when the property is sold. Thus, the position is taken that it is just plain misleading the investor to show equity build-up as a yearly type of income for rate-of-return calculation purposes. The only legitimate method to handle this situation is to let the equity build-up automatically show up when the terminal (at time of sale) cash flow and tax calculations are performed.

The same comments that were made above in regard to equity build-up also apply to yearly appreciation, or growth in market value year-by-year. This, too, will automatically show up in the terminal calculations. A rate-of-return must not be imputed to it on a yearly basis.

What are the advantages of using the Internal Rate of Return? For real estate calculations, the IRR can show, according to Victor Lyon³:

1. Cash is more valuable than mortgage reduction
2. Cash flow received in early years is more valuable than in later years
3. Higher interest rates on mortgages may be more beneficial than a lower rate
4. A purchase price above market and resale loss may be more beneficial than a purchase price below market and lower interest rate.
5. "First users" benefit greatly by expensing construction costs and by use of accelerated depreciation under some conditions
6. A high bracket investor may find it better to sell and pay the tax in order to obtain higher present value of tax losses in the new project due to the new project's higher basis.

Also, and by far the major advantage of using IRR on an ex ante basis, is the fact that IRR can and does give the investor a rational basis for deciding between alternative investments, given that he does not (or cannot) wish to invest in all alternatives simultaneously. IRR gives a valid yardstick for evaluating the relative "goodness" of various property investment alternatives on a rate-of-return basis. There are some shortcomings to the use of IRR, to be sure. Principal shortcomings are that if the estimates lives of the alternative properties are different, use of IRR may give a different selection rule for the alternatives than does the manual present value method. Also, when using the computer, multiple rates of return may be inherent in the data but may not be calculated by the computer (this may occur when there is more than one change of sign from plus to minus over the years in the cash flows)

IRR FOR ACTUAL SYNDICATIONS

The approach that was taken in the calculation of the internal rate of return for the various real estate syndications was quite simple. The first step, and not by any means the easiest, was to identify those properties that had been resold or closed out. That is, a real estate syndicate was formed for the purpose of holding a particular piece of property, but at some point in time, it was sold by the partnership syndicate to another party, and after the sale, the cash proceeds of the sale were distributed to the syndicate members. In some cases, the syndicate not only received cash, but also a note, and, in those cases, the analysis was performed assuming both a holding of the note for its term and also

the sale of the note for its face value at the time of the closing. After determining that the property had been resold, the syndicator, usually the general partner, was contacted to obtain financial information. The only information that was required was the following:

1. The annual cash flow into or out of the investor's hands. This includes his original contribution as well as subsequent cash distributions.
2. The terminal distribution of cash to the investor resulting from resale of the property.
3. The annual "tax loss" or taxable income. If this figure is negative, then all of the cash distribution in item #1 above is non-taxable; if the figure is positive, then there is some income which is taxable to the investor.
4. The tax obligations of the investor as a result of the resale. Under this heading, we must know the amount of the recaptured depreciation which will be taxed at ordinary income tax rates of the investor, as well as the amount of capital gains which will be taxed at the capital gain rate of the investor.

Items #1 and #2 are the cash distributions while items #3 and #4 are the tax considerations. For the purpose of this paper, items #3 and #4 were manipulated using the assumptions shown below. The result was that a stream of net net cash flow was obtained, and from this cash stream the internal rate of return was calculated.

The following assumptions were made:

1. Cash flow, either positive or negative, was applied in the year in which it was received or spent by the investor without regard to the month of the year.
2. Tax shelter and taxes paid were always recognized in the year following the accounting recognition. That is, if an investor received tax shelter as a result of property operations and depreciation in one year, the tax benefit thereof would be available to him in the following year when he filed his tax return.
3. The marginal tax bracket of the investor was assumed to be 0%, 15%, 30%, and 50%. Thus, when taxes were due, they were calculated at, say, the 50% rate, and the investor credited with only half of the tax shelter as a cash benefit. Further, when tax losses were allocated to the investor, it was assumed that he had other, outside income to be sheltered at the respective tax rates used.
4. All capital gains were taxed at a 25% rate, except those subject to recapture, which were taxed at ordinary rates.

The table on the following page gives the internal rate of return percentages for fifteen actual syndications. Note the wide variation in percentages, as well as the fact that in some cases, the high bracket investor did not do as well as the low bracket investor!

Footnotes:

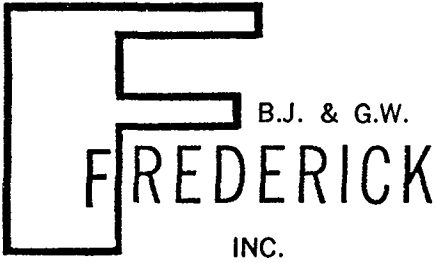
1. Van Horne, James C., Financial Management and Policy. Englewood Cliffs New Jersey: Prentice-Hall, Inc. Chapter 3, pp. 23-57. 1970.
2. Seldin, Maury, and Richard H. Swesnik, Real Estate Investment Strategy. New York: Wiley-Interscience, 1970. pp. 84-5.
3. Lyon, Victor L. (M.A.I.), "DCF or IRR: A Better Yardstick," Real Estate Today publ. by NIREB, November, 1972, Volume 5, Number 6, pp. 40-53.

VARIOUS PROJECTS

INTERNAL RATE OF RETURN

(1) PROJECT NUMBER	(2) YEARS HELD	(3) IRR @	(4) Fed + State	(5) marginal income tax rate	(6) VARIOUS TAX RATES	(7)
		0%	15%	30%	50%	
1A	CASH-OUT	17.21%	16.27%	15.39%	13.88%	↓
1B	LOAN	15.05	12.97	11.94	11.27	↓
2	9	8.55	9.91	11.64	16.73	
3	5	70.38	74.36	77.87	82.42	
4	3	15.07	24.14	33.17	45.20	
5	6	30.12	39.47	51.01	68.76	
6	8	13.64	13.51	13.37	13.17	↓
7	16	11.33	11.48	11.63	11.89	
8	14	11.98	11.94	11.90	11.84	↓
9	9	8.61	9.57	10.68	12.74	
10	7	5.22	4.15	2.80	0.25	↓
11	8	13.15	14.25	15.48	17.34	
12A	CASH-OUT	52.16	51.47	50.75	49.73	↓
12B	LOAN	37.95	36.55	35.01	32.70	↓
13	16	11.16	11.24	11.34	11.49	
14	10	1.61	1.22	0.72	-0.27	↓
15	5	33.69	34.08	34.48	35.06	
COLUMN MEAN, \bar{x}		14.54%	15.70%	17.04%	19.16%	
COL. STD. DEV., σ RISK		9.52	10.97	13.61	18.37	
RETURN/RISK, \bar{x}/σ		1.52	1.48	1.25	1.04	

Acknowledgement is given for the assistance of Bill Potts in the calculation of figures appearing in this table, although the basic data was provided by the author and responsibility for its accuracy rests with the author alone.



BENEDICT J. FREDERICK, JR., M.A.I., S.R.A.

LAWRENCE J. FREDERICK, C.P.M.

H. EDGAR HAMMAN, C.P.M.

GEORGE W. FREDERICK, JR.

THOMAS J. GOUCHER, M.A.I.

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Realtors

115 West Saratoga Street / Baltimore, Maryland 21201

November 26, 1973

T.J. Goucher

Mr. H. Robert Knitter
Educare Computer Network
533 South Segoe Road
Madison, Wisconsin 53711

Re: Land Development Model

Dear Bob:

I only recently had occasion to use this model, and therefore the delay in reply to your request for suggestions. The model was unusable in my problem due to the lack of consideration of the following:

1. Cost of sales. *_____ ?*
2. Settlement expenses. *_____ 7*
3. Provision for profit. *_____ 50 - 100 - 150 - 200*

It would also be desirable to include an Internal Rate of Return output. *_____ 100 - 150*
Also a modified version of the program providing for an unknown raw land value with the model working towards the land value indicated by various rates of return. *_____ 100 - 150*

Also while I have your attention, a Cash Flow Analysis program with an output similar to that provided by the "Tap." I can see a real advantage to having a concise one page output to include in reports.

Keep up the good work.

Sincerely,

Benedict J. Frederick, Jr.

BJF:dh



Public Works
Canada

Travaux publics
Canada

Ontario Region

Région de l'Ontario

Your file
Votre réf.

In reply quote:
Réf. à rappeler:

For further information please contact:
Pour de plus amples informations, prière de
communiquer avec:

D. G. Dycke

Tel. 966-5685

March 11, 1974

Professor James A. Grasskamp,
School of Business,
1155 Observatory Drive,
University of Wisconsin,
Madison,
Wisconsin 53706

Dear Sir:

We refer to the attached schedule and would appreciate receiving
further details concerning Educare Computer Applications Courses.

At the same time we would like to receive information on any other
Real Estate Seminars which may be available.

Yours truly,

D. G. Dycke,
Manpower Planning and Development Officer.

1974 Schedule

EDUCARE
COMPUTER APPLICATIONS

1974 Schedule of EDUCARE Course 1

Jointly Sponsored by:

American Institute of Real Estate Appraisers

Society of Real Estate Appraisers

Society of Real Estate Counselors

Course Description:

Course 1 has two objectives: first, it provides training in the use and application of a time-sharing computer terminal to the appraisal and counseling office. Secondly, it suggests the potential of the computer terminal to effect the practice of real estate over the next decade so that professionals can begin to modify the educational policies, programs, and accreditation standards in their professional organizations.

Eligibility:

Preference is given to those with the MAI, SRA or CRE professional designations, or who are sponsored by an employer who has one of these designations.

Locations:

March 17-22

University of Wisconsin, Madison

March 31-April 5

University of Wisconsin, Madison

For details write Professor James A. Grasskamp,
School of Business, 1155 Observatory Drive, University
of Wisconsin, Madison, Wisconsin 53706

May 19-24

Southern Methodist University, Dallas, Texas

For details write Professor Sydney C. Reagan, School of
Business, Southern Methodist University, Dallas, Texas
75222.

Each course will begin at 6:00 p.m. on Sunday and end at
12:00 n. on Friday

FACULTY: Professor Robert Knitter
Professor James A. Grasskamp
Professor Richard Mortenson



COUNTY OF MONTGOMERY
COURT HOUSE
NORRISTOWN, PENNSYLVANIA
19404

BOARD OF ASSESSMENT APPEALS

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8 August 1974

Professor James A. Grasskamp
School of Business
1155 Observatory Drive
University of Wisconsin
Madison, Wisconsin 53706

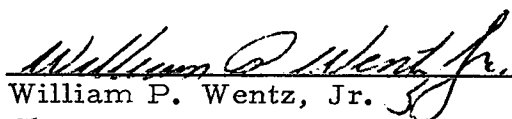
Dear Professor Grasskamp:

During my recent introduction to Course 6 at the University of Delaware, Ron Brown, M. A. I., our instructor, informed the class of the availability of Educare and its worth to the appraisal profession.

Because of the modern approach to the assessment field being undertaken in Montgomery County, it is my opinion that Educare would have much to offer.

Therefore, I will appreciate any information that you can give me relating to the scope and cost of the program.

Very truly yours,


William P. Wentz, Jr.
Chairman

WPW, Jr. :meg

EDUCARE

educational foundation for computer applications in the real estate industry, inc.

EDUCARE Course I, a product of the corporation that is jointly sponsored by the Society of Real Estate Appraisers, the American Society of Real Estate Counselors, and the American Institute of Real Estate Appraisers, helps the appraiser in several ways, according to Professors Graaskamp and Knitter.

"Computer power simply places comprehensive information and data processing methods in the appraisal office with a quality and at a cost which overwhelmingly favor the appraiser," they state.

"On the first day, Course I teaches the student to sign on and off the system via telephone-handly time sharing system, and to gain access to the library of programs freely available on the General Electric Mark-II System from almost any point in the United States.

"On the second day the program proceeds to teach both statistics and terminal use of statistical programming, as well as the process of building property sales files for use of an automated market comparison system. EDUCARE presumes no particular knowledge of algebra and assists the appraiser to use techniques that he has feared to try because his mathematics might betray him.

"On the third day EDUCARE teaches both modern capital budget theory and the use of internal rate of return programs, cash flow investment programs, and a valuation program designed for appraisers by M. B. Hodges, Jr., SRA, MAI, and Thomas Prince.

"On the fourth day EDUCARE introduces several sophisticated services for real estate analysis such as Realmetrics and Omnimetrics, plus current developments in cost estimating, property management accounting, aerial photography and model building.

"On the fifth and last day of the program, the dollar costs of terminal rental and usage are presented, together with discussion of equipment choices, the appropriate application of electronic calculators, and new developments in hardware which will reduce further the cost and expand the applications of time-sharing techniques in the next few years."




Some other common questions about the course are answered by Professors Graaskamp and Knitter, as follows:

Must one be a programmer to attend or appreciate EDUCARE? It is unnecessary to know programming to use a terminal to advantage, and Course I will in no way prepare its attendees to be programmers.

Will the course teach nothing but computer usage? Within 30 minutes of the start of class on Sunday night, the student will be doing Ellwood complete with the J factor and more points for the Ellwood chart than he may be prepared to graph. Course I necessarily introduces modern theory of capital finance before introducing cash flow models and demonstrates statistical theory, information process and other subjects before showing quick and easy ways to execute these techniques.

Why is Course I so expensive? In paying \$475 for a one-week course, the student should remember that the price includes room and board, and the expensive cost of technical support. With at least one teletype and one telephone line for every two students and computer time for each student, the cost amounts to \$100 per student despite educational discounts. Including the staff and lab instructors, the costs are substantial enough to require 25 students to break even.

What benefits and help result after the course? Computer time-sharing services are available throughout the country through a host of computer time-sharing vendors. An attendee at an EDUCARE course has exclusive access to all of the programs of a newly-formed subsidiary of EDUCARE and of G. E. Mark II. The G. E. programs are available without the corporation's usual \$100 minimum charge. The EDUCARE Computer Network system offers a number of programs which are typically used by appraisal offices but not always available from other vendors—for example the complete Ellwood model. Several cash-flow models, a market comparison model, some basic statistical linear regression models and others are available.

appraisal briefs

WEEKLY NEWSLETTER OF THE SOCIETY OF REAL ESTATE APPRAISERS

Convinced Registrants Hail EDUCARE Course As Source of Progress

Reactions to EDUCARE Course 1 by the capacity enrollment at the final 1972 presentation suggest that this program may have an unprecedented impact on the appraisal and counseling professions.

"I don't know anywhere that the superstitions of the profession are broken as logically as here," Joseph W. Marshall, ASA, president of Marshall and Swift of Los Angeles commented. "The whole profession is to be congratulated for sponsoring this very forward-looking program. This is exactly what our profession needs—a multi-disciplinary view of all that affects our field."

"I'm a believer," said Edward F. Heberger, SRPA, MAI, of Bristol, Connecticut. "We try to be progressive in our office, and while I am here at the EDUCARE course, my partner is at the Society's 301 Course in Maryland. These are the places the profession can go now to get the most important information currently available."

"Several years down the road, I think the one-man office will be obsolete, except in rare cases," Mr. Heberger added. "Once an appraiser comes here and learns this system well, he can train someone in his office to do the basic input. One of the great things about the Course is Dr. (James) Graaskamp's insight into the future of the profession—and his realization that appraisers have to learn these things or others will take over their functions. The members of our profession who are progressive *have to come here.*"

"This is really a good Course in which to understand the transition from the old traditional approaches to the new," said Ralph A. Pifari, SRPA, MAI, of Boise, Idaho. "It bridges that gap, and does the additional important thing for the appraiser of building his image of staying abreast of the latest that is going on in the profession. Though the immediate application to his practice might be somewhat limited, these techniques will be

(Continued on page 4)

Additional Information Urgently Needed For Expanded '73 Directory of Members

A much expanded Directory of Designated Members will be published by the Society of Real Estate Appraisers in 1973, and the cooperation of the members is urgently requested to accomplish this upgrading of the Directory service.

The members title, business and home addresses and telephone numbers, typically will be included.

Cards have been mailed to each designated member to obtain the additional information needed for 1973 listings, and they should be returned by November 1, 1972, in order to assure both a complete listing and an earlier publication date for the Directory.

The Society's Directory automatically is provided to several thousand users of appraisal services, and is available for purchase by members to provide to clients and other interested parties.



EDUCARE Schedules 6 Courses in 1973

A growing appreciation for the quality and practical benefit of the courses of the Educational Foundation for Computer Applications in the Real Estate Industry, Inc. (EDUCARE) indicates a considerable interest in the six 1973 courses that recently have been announced by the co-sponsors.

The Society of Real Estate Appraisers is a sponsor of the University of Wisconsin (Madison) program, along with the American Society of Real Estate Counselors and the American Institute of Real Estate Appraisers.

EDUCARE courses have two objectives: first, to provide primary training in the use to the appraisal and counseling office and application of a time-sharing computer terminal; and secondly, to suggest the potential of the computer terminal to reshape the practice of real estate over the next decade.

Registration is limited to 30 per course, and the \$375 fee includes "hands on" computer terminal training time, and instruction by a staff of 10 professors and teaching assistants at Wisconsin's School of Business. The courses are held at the new Lowell Hall Conference Center, where a single room with meals costs an additional \$100.

To be eligible, a registrant must have earned either the SRA, SRPA, SREA, MAI or CRE professional designation, *or be sponsored by an employer who is so certified.*

The EDUCARE Course schedule for 1973 is as follows:

- | | |
|------------------------|------------------------------|
| 1. February 4-9 | 4. April 8-April 13 |
| 2. February 25-March 2 | 5. September 16-September 21 |
| 3. March 25-March 30 | 6. October 7-October 12. |

A registration form, to be returned to the University of Wisconsin is provided on page 3.

Market Data Center's Total Membership Grew Over 100% Last Year

An increase of more than 100% in the total membership of the SREA Market Data Center marked the period ending July 15, 1972, according to the Center's President, Joseph A. Nowicki of Chicago.

The figures for Class B members increased from 282 to 516 on a year-to-year basis, while the number of Class C members went from 316 to 707 in the same period.

Established nationally in 1968, the Market Data Center has demonstrated an exceptional rate of growth as a source of market data to subscribers. Eighteen centers now are in operation with the recent activation of centers in Philadelphia, New York City and North Carolina.

The most important expansion of the Center's program will occur around the first of the year 1973 with the national publication of data on industrial and commercial properties.

The Center's growth is indicated by the following figures, presented to the Center's Board of Directors at the recent meeting in San Francisco:

PAID MEMBERSHIP MEMBERSHIP CLASS

Period Ending	Cumulative		
	B	C	B & C
12-31-69	291*	172	463
7-31-70	371*	264	635
1-31-71	259	245	504
6-30-71	282	316	598
1-15-72	426**	548	974
7-15-72	516**	707	1,223

* Includes lessee members.

(c) Southern & Central Southern Calif.

** Includes all members of the California Corporation, SREA Market Data Center, Inc. These members transferred to Illinois Corp., SREA Market Data Center, Inc. July 1, 1971

News Briefs

SEC Head Demands Better Information on Risk

The sales literature of real estate syndicators usually omits the more significant information needed to assess the investment risk and the sponsor's profits, William J. Casey the Chairman of the Securities and Exchange Commission recently charged.

"Uniform standards for disclosure and analysis must be developed and the complications must be simplified to allow an informed investment decision in a product which is commonly being offered to the public," Mr. Casey said. "Without such an approach, disillusionment will again set in and the real estate limited partnership security will fade away for another 30 years. We're all too old to wait for the cycle to bring it back again."

Mr. Casey's warning would seem to be a call for the syndicators to use objective appraisals and analyses of the investments they were offering. "More often than not, the sales literature contains optimistic projections of the economic return anticipated from the investment without disclosing the assumptions on which the projections are made," he said.

"Real estate syndicators should be aware of the considerable liability they risk by the use of such literature," he warned.

Magazine Warns Condominium Buyers on Pitfalls

"Don't bank too heavily on rental income to help finance your unit," *Business Week* warns purchasers of condominiums, in resort areas.

"You may be able to rent it in the winter—and even take depreciation on it for that part of the year. But finding suitable tenants in the summer may not be all that easy. Some communities will help you find tenants, but others will positively discourage it. Renters don't care what happens and this can run down the property in a hurry."

It is also essential to evaluate properly the size of the rental market, *Business Week* says. "Obviously, as more and more condominiums are built in an area, it becomes harder and harder to find desirable tenants."

The generally negative report on condominiums advised that vocal minorities could push through assessments for extras that might be excessive or hold down assessments to a point that the property begins to deteriorate, or hire a management firm that does not maintain the property adequately. "I recommend that anyone buying a condominium get an attorney," the head of the Florida Condominium Commission told the magazine.

Registrants' Reactions to EDUCARE



(Cont.)

useful on the more important assignments, and will become increasingly important in the near future."

Mitchell R. Shell, SRPA, MAI, of Manassas, Virginia, observed that "Some of this has been around for years, but appraisers have ignored it. I don't think they can anymore. These techniques are not hard to understand, though they are hard to program. However, you have technical

people to do that for you. And the cost of using this equipment is very reasonable. We had an example today of a \$2,000 appraisal report that only required about \$25 of computer-related cost. If appraisers don't learn these techniques, mortgage bankers and others will supply the services we now are called upon to supply."

**appraisal
briefs**

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NEWSPAPER TREATMENT

Business Wisconsin State Journal Finance

SUNDAY, MARCH 4, 1973

SECTION 2, PAGE 1

Realtors Learn Computer Use to Ask New Kinds of Questions

By ROGER A. GRIBBLE
Of The State Journal Staff

At the University of Wisconsin School of Business, realtors are learning to use computers to ask new kinds of questions.

Through a series of seminars, they're getting first-hand experience in the mechanics of computer terminal use and learning to use them creatively in their business.

"UNLIKE OTHER professions such as engineering, where computers are used to do things faster, the real estate profession isn't doing anything worth doing on a computer," contends Real Estate Prof. James Graaskamp.

"We have to suggest, 'Here is a tool,' and provide examples of how to use it," adds Graaskamp, one of the two professors teaching the seminar.

The week-long seminars, one of which is now in progress at Lowell Hall, are conducted in a workshop-lab kind of setting. Participants get first-hand experience by actually using the 15 computer terminals and specialty terminals.

"We teach for a half-hour and they then use the computers," Graaskamp explained. "Then we critique their use."

"THE REAL estate profession gets paid for time, so when people take time off, they lose time and pay," Graaskamp notes. "Because of that, we feel that for a majority of the time we should work on very practical techniques."

In the real estate profession, computers can be used for



FIRST-HAND EXPERIENCE — William Forrest of Dallas, Tex., right, gets first-hand experience at a computer terminal which he can put to use in his real estate practice. Prof. Robert Knitter, left, director of the

School of Business Data Processing Center, offers some practical advice. Alan Hayes, center, a program coordinator, also assists in the instruction.

—State Journal Photo

such things as on tax assessments, land use studies, and the determination of consumer behavior.

"The number of questions being asked of the real estate

amount of data available to the profession has exploded. You have to edit it and use it profession are expanding," says Graaskamp. "Also, the

THE SEMINARS, six of which are scheduled this year, are sponsored jointly by the American Institute of Real Estate Appraisers, the Society of Real Estate Ap-

praisers, and the Society of Real Estate Counselors.

In 1970, the three organizations banded together to form the Educational Foundation for Computer Applications in the Real Estate Industry (EDUCARE), a non-profit corporation.

According to the foundation's by-laws, one of its purposes is "the improvement of the real estate profession through the study of and research in the application of modern developments and technology to real estate practice."

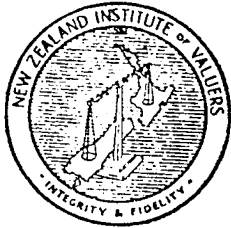
EDUCARE has established a computer network which provides minimum cost access to its continually-expanding library of programs. Realtors completing the seminar are eligible to subscribe its services.

GRAASKAMP estimates that about 65 firms in the nation are now on the computer terminals, with four-fifths of them using them regularly.

The three organizations in EDUCARE got together to provide the capital for the seminars, which are a joint venture of the School of Business, UW Extension, and EDUCARE.

"With the revolution in information," Graaskamp said, "we need to find new models the profession is being asked."

THE NEW ZEALAND Valuer



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PAGE: CONTENTS:
 NEWS/COMMENT

- * * 141 EDUCARE — The shape of things to come — by R. L. Jefferies.
146 MEMBERSHIP.
147 7th PAN PACIFIC CONGRESS — Report by R. S. Gardner, President.
148 LETTER TO THE EDITOR.
149 1974 VALUATION SEMINAR — Massey University.

ARTICLES

- 151 ASPECTS OF INVESTMENT IN URBAN REAL ESTATE IN NEW
 ZEALAND — by M. R. Hanna.
154 A COMPUTER ASSISTED MASS APPRAISAL PROGRAM.
 — by James E. Reinmuth.

Editor:
R. L. Jefferies, Dip.U.V., B.C.A., A.N.Z.I.V.
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Council Office: Braemar Flats, 32 The Terrace,
P.O. Box 10322, The Terrace,
Wellington.

General Secretary:
M. Aldred, A.C.A.

Statistical Officer:
G. W. Hopkinson, L.L.B., A.C.A.

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Opinions expressed by the Editor and contributors are not necessarily endorsed by the New Zealand Institute of Valuers.

Business letters, subscriptions and advice of changed address should be sent to the General Secretary.

EDUCARE

THE SHAPE OF THINGS TO COME

by *Rodney L. Jefferies, Dip. Urb. Val, B.C.A., A.N.Z.I.V.*

INTRODUCTION:

"It is not a question of **whether** this (computer) will ever be appropriate to real estate, it is now only a question of whether you will use it **now** or wait till 1975 or 1976. The question is **no longer will** it be useful—the question is only a matter of when you are going to adapt. Some may never adapt—but anybody under the age of 35 will be obsolete by the time he is 45, unless he does adapt."

This quote from Professor James A. Graaskamp PHD, CRE, CPCU, which I recorded during the opening Sunday evening session of an Educare I Course at The School of Business, University of Wisconsin, sums up the basic thesis of and reason for attending this week long intensive course, in September of this year.

EDUCARE (Educational Foundation For Computer Applications In The Real Estate Industry, Inc.) is jointly sponsored by The American Institute of Real Estate Appraisers, the Society of Real Estate Appraisers, and the Society of Real Estate Counselors. It has established a number of real estate computer programs in its library, available through the General Electric International Time-Sharing Network, requiring only a telephone, an "acoustic coupler", and a teletype terminal in an appraiser's office to operate these modern appraisal techniques.

The Educare I Course, run by the Foundation, has two objectives: First it provides primary training in the use and applications of a time-sharing computer to the appraisal and counseling office. Secondly, it suggests the potential of the computer terminal to reshape the practice of real estate over the next decade so that professionals can begin to modify their educational policies, programs, and accreditation standards in their professional organisations

The Course:

To a "Kiwi" attending this course, I considered they did a fine and efficient job achieving the first objective—but alas the G.E. Network is not (yet) available in New Zealand. Also, because of our differing real estate tax, depreciation, and financing methods, some programs would need significant rewriting to be applicable here. The second objective, for me, had the most impact, as it is in

This Article replaces the normal Editorial Comment appearing in this Journal, as the writer attended an Educare Course at the University of Wisconsin during 16/21 September 1973. A grant of \$200.00 from the N.Z.I.V. towards the cost of attending was made, one of the conditions being that an article be published giving views on the value of such courses to a New Zealand valuer and the possibility of applying any of the techniques or theories to New Zealand practice.

this very area of reshaping our valuation methods, and adapting ourselves to utilise the potentials of the computer, that I am sure attendance at this course will prove beneficial. To me it was a walk into the future, to see in very practical terms the areas in valuation methods, and potential applications in investment analysis, which the computer will revolutionise. Provided we do the research and educational training to prepare the profession for the time (which is fast approaching) when the technical means, through over the phone time-sharing computers, becomes economically viable, we here in New Zealand will see computer power placing comprehensive information and data processing methods at the disposal of the small private valuing office. Computers are not just for mass appraisal government use. In fact, Educare I dealt solely with applications suitable for the one, two, or three man band or small office set up. It did not take many hours at this course to put kaput to many of my pre-conceived ideas about the potentials for computers.

Because of the heavy concentration of "hands on terminal training", the courses are limited to 30 registrants, although for various reasons, only 21 were at the course I attended. There were 12 terminals and separate phone lines in the teaching lab, and instruction consisted of a fast moving pace of alternating lecture followed by on-line terminal exercising, running the various "programs". There were four main lecturers, and numerous teaching assistants while on the terminals. Teaching methods included a good mix of films, audiovisual slides, as well as long highly sophisticated and absorbing lectures by Professor Graaskamp. Fortunately I recorded these on cassette tape for later reabsorption. A large and detailed instruction and course material manual was given to us, and there was not time to read it! On-line terminal, training was exciting and a learn as you go process. No programming tuition was given, or necessary, as many programs were of a "conversational type", where the computer typed out brief and often coded questions, to which the user was expected to respond by typing in the requested data or items. A faster method employed in the later part of the course was to prepare a "file" of the input data (i.e. costs, rents, expenses, rates of return, time periods, tax rates, etc.) for the project, to be run on a program. This was prepared on the teletype on paper tape, and fed into the computer at the maximum speed of the teletype terminal once "on-line", significantly reducing connect time and thus the cost components of a time-sharing system.

Course Outline:

It is not possible to give details of the various programmes run during the course, but a brief outline of the activities of the week will give some idea of the ground covered.

The course started on a Sunday evening with introductory sessions by the principal lecturers, Bob Knitter and Prof. James Graaskamp, covering an outline of the course, followed by running a conversational programme called P.V. ELWOOD. This program gave a valuation (and tables of proof) based on the Elwood mortgage-equity method. Also we ran a programme SIGNIN, where we all recorded our names, address, etc., in an amusing talk-back type program. I fed in some data on a commercial property that I'd recently valued, on the P.V. ELWOOD program and was surprised at how this program could be used for New Zealand situations. It is, however, one of the least sophisticated programs and subject to constraints which limit its usefulness. The evening concluded with a lecture on the limitations of the Elwood Method and the challenge of the computer to the appraisal business.

Monday brought some hard work on the computer terminal learning the mechanics of ringing in, getting on-line, learning to feed in data, correct mistakes, preparing a "file", etc. We ran a number of practice programs especially prepared for training purposes and during the day I made up some conversational programs of my own, one being a very simple program for determining the capital value of a proposed office building by putting in the gross floor area, efficiency ratio, expected rentals, expense ratios, and nett capitalisation rates. These exercises gave us some confidence in the computer and how to handle data. The day concluded with a long evening lecture on investment analysis and Capital Budgeting Theory including discussions of internal rates of return and including running a program called RATES, determining the internal rate of return from any series of inputs and outputs over a future period. This was a kind of sophisticated discount cash flow program. Tuesday was dealing mainly with Cash Flows and running various programs such as MINIMOD (an investment analysis cash flow program on a before and after tax basis); T.A.P. (after tax equity yield program determining investment market value of an income property); A.I.P. (An Income Property Analysis Program providing a cash flow analysis, loan summary, depreciation summary, loan amortization schedule, cash flows and financial analysis on Income properties); and other sophisticated programs.

Wednesday started with a lecture on statistics starting from the simplest of discussions of averages and modes progressing to an understanding of multi linear regression. We then ran programs used in market comparison valuation techniques including a program specially compiled by Educare called MKT-COMP (a market comparison program in which an appraiser can combine his insight, experience and judgment with a semi-automatic, mathematical technique in order to arrive at market values from a set of comparable sales). This program, without any need for adaption, could be used by a valuer under New Zealand conditions. The day concluded with a lecture on the manipulation of market data and the application of computer programs in this field.

Thursday saw us being introduced to some new techniques, some still in the laboratory stage and we had an introduction to the applications of the computer in land use planning, feasibility analysis, and environmental impact studies.

On the last day came the soft sell on the dollar costs of terminal rental and useage as available throughout the United States by becoming a member of the Educare Computer Network whereby a subscriber can have the benefits of the computer service in his own office. The low dollar costs of terminal rental and useage were presented together with discussion of equipment choices, the appropriate application of electronic calculators, and new developments in hardware which will further reduce costs and expand the application of time-sharing techniques in the next few years particularly as related to the United States scene.

Technical Feasibility for New Zealand:

The question I which must answer now is to what extent does the computer have potential for application in New Zealand. I restrict this to consideration of non-government use. The main current restraint on the potential for application in our Country is the non-availability of on-line computer services as are provided as user/pay utilities in the U.S.A. A very large market is required to support these facilities and in fact the whole of the United States under the G.E. Network is tied in to one centralised computer. It is probable that as

computers become smaller in size and of greater storage capacity, we may find a New Zealand or TransTasman time-sharing computer facility becoming available in the future. The most likely application in New Zealand in the next few years would be by buying time on a computer operated by a Bureau, but this would not be available over the phone. It is technically feasible for a New Zealander to use the G.E. Network by putting a toll call through to the nearest terminal which is in Honolulu but the costs of the toll call would make its use prohibitive.

Practical Applications:

A number of the programs available through the Educare Network would not be applicable here due to the differing tax laws in particular, though a number of them could be used with some modifications. Ideally, we need our own indigenous applications, programs written for New Zealand conditions of finance, depreciation methods, and tax situations. Some of the statistical programs would be quite useful without modification.

This brings us back to the old need for indigenous research followed by education of valuers in new methods on the local scene. I consider that in the future there will be a need to have a greater emphasis on statistics and quantitative methods in the valuers education, to give an understanding of what processes are involved in such modern methods as Multiple Regression Analysis. I see this as essentially a post-qualifying education initially, which may ultimately become part and parcel of a valuers normal education as these new methods become accepted over time. As to timing, I would see the research work for these methods and applications to be made over the next five years and within 10 years the mystique will have disappeared and valuers will frequently be using these new techniques and tools. It is dangerous to say humbug to these ideas and sweep them aside as being the product of ivory towered people who have crazy ideas about the future. I might agree that at present we have little client demand for the services which valuers can provide through the application of these modern techniques but this is just a communications problem. If the doctors had waited until the patients asked for penicillin then penicillin would probably never have been discovered. Ralph Nader made a significant point in stating that to him the most important single function of a profession is to have the ability to pioneer new policies that are not brought into effect by market incentives and to introduce better ways of doing things before the customer has necessarily asked for them.

The Value of attending EDUCARE 1:

As to the usefulness of a New Zealander attending such a course as Educare, I consider that to me personally it was and will be most rewarding. I treat the cost of attending (the course fees and accommodation alone for the week amounting to \$580.00 plus travel), a high but worthwhile investment. As for other New Zealanders, I would say that it would be well worthwhile if they could see their way clear to having access to computer time and programing assistance in New Zealand, on their return, to put the knowledge gained into research and development of New Zealand programs. A knowledge of programing or statistics is not a pre-requisite to attending, but some knowledge of these fields would assist in being able to pilot applications in New Zealand and get more out of the course as well as being able to talk to and learn from the instructors and those who developed the Educare Library.

The travel costs merely to attend this course and not combined with any other study or travel, would probably be so expensive as to be unwarranted. I was fortunate in being able to study appraisal methods in Philadelphia, New York, and Chicago as well as attend the Pan-Pacific Congress in San Francisco. There are a number of other courses mainly of two weeks duration which cover a wide range of real estate appraisal techniques and practices offered by both the American Institute of Real Estate Appraisers and the Society of Real Estate Appraisers which could well warrant attendance by New Zealanders either separately or possibly in conjunction with attendance at an Educare Course.

RESULTS OF EDUCATION

“Perhaps the most valuable result of all education is the ability to make yourself do the thing you have to, when it ought to be done, whether you like it or not . . . however early a man’s training begins, it is probable the last lesson that he learns thoroughly.”—Thomas Henry Huxley.

Adjusting Land Comparables for Size Variation: Another EDUCARE Application

by Theodore Reynolds Smith

INTRODUCTION

Appraisers are fortunate to have several professional educational opportunities of which they may avail themselves to learn more about new technological developments in their field. The most renowned of these professional educational efforts is the EDUCARE course, sponsored jointly by the American Institute of Real Estate Appraisers, the American Society of Real Estate Counselors, and the Society of Real Estate Appraisers. The majority of appraisers who are presently using a time-sharing mode of computer assistance in their offices have participated in EDUCARE and possess access to the EDUCARE network.

One of many options available to the EDUCARE user is the complete library of statistical routines on the General Electric computer system. We have attempted to demonstrate in the following example one in-

This paper is based on a presentation by the author before the 7th Annual Pan Pacific Congress, September, 1973, San Francisco, California.

The author would like to express his appreciation to the Lincoln Foundation for support of his research into land valuation techniques.

Theodore Reynolds Smith is a Research Associate at the International Tax Program, Harvard University Law School, Cambridge, Massachusetts. He received his A.B. and M.A. degrees in International Relations from the University of Southern California, and Ph.D. degree in Economics from the Claremont Graduate School. A former real property appraiser with the State of California Departments of Investments and Water Resources, Mr. Smith is currently a candidate for the MAI designation of the Institute.

stance where the appraiser may utilize this wealth of analytic capability available to him when he undertakes the adjustment of comparable sales as part of a land valuation assignment.

THE PROBLEM

A major problem confronting the appraiser when valuing suburban acreage is the comparison of parcels comprised of varying sizes. It is seldom that he encounters uniform parcel sizes when appraising land at the urban fringe, or for that matter, land in general. Table 1 depicts 12 acreage sales which are similar in all respects with the exception of the number of acres included in the transaction. Prices per acre range from \$450 for 45 acres to \$3,000 for three acres. The experienced appraiser is aware that the wholesale discount for land sales (negative plottage) tends to increase as parcel size increases, but not on a directly proportional or linear basis. The difficulty which he must deal with is that the discount for purchasing more acres at one time is not what statisticians would term a "linear function" of size. In other words, the appraiser cannot merely reduce the price per acre by a constant dollar amount based upon the number of acres comprising the sale.

Table 1
SUMMARY OF ACREAGE SALES

Sale Number	Number of Acres	Price per Acre
1	3	\$3,000
2	3	2,600
3	6	2,500
4	14	1,700
5	45	450
6	30	700
7	17	1,300
8	23	1,200
9	4	2,500
10	8	2,000
11	30	500
12	26	1,100

CREATION OF THE FILE

Based upon our previous experience with acreage sales, we decided to explore the relationship between price per acre and total number of acres through the use of our time-sharing terminal and the EDUCARE system. As a preliminary step, we prepared a paper tape which included the information summarized in Table 1 with respect to price per acre and parcel size. We instructed the computer that the price per acre is dependent upon parcel size; therefore, the price becomes the dependent variable and the parcel size becomes the independent variable.

Table 2 depicts the procedure followed once we gained access to the computer network through our EDUCARE user number. Our first step was to create a file which we termed LAND. This new file is established by informing the computer of its creation by typing NEW LAND. After the computer accepts this instruction and informs the user that it is READY, it is instructed that a TAPE will be used to enter the data file. The computer once again responds that it has accepted the command and is READY. Table 2 shows that the data were entered into the computer and the file was saved.

Table 2

```

NEW LAND

READY
TAPE
READY

100 3000,2600,2500,1700,450,700,1300,1200,2500,2000,500,1100

200 3,3,6,14,45,30,17,23,4,8,30,26
SAVE

READY
OLD STATSYST***

READY
RUN

STATSYST 14:38CDT 01/25/74

VERSION 14 JAN 74-LIST STATINF*** FOR UPDATES

READY
?READ(PRICE,ACRES)FROM LAND BY VARIABLE

ENTER NO. OF CASES/VARIABLE FOR DATA BEING READ?12

```

THE STATISTICAL SYSTEM

Once the file is established, we instruct the computer that we would like to use the General Electric package of statistical analysis programs. The existing statistical system is accessed by typing OLD STATSYST***. The computer accepts this command and is instructed to RUN. After the computer replies that the statistical system is READY for use, we must instruct the computer to go to its storage area and bring forth the LAND file which we created previously. Up to this point we have named only the file and not the two variables. The variables are named at the time the computer is instructed to READ (PRICE, ACRES) FROM LAND.

The first data entered in line 100 was our price per acre, while the data entered in line 200 was the corresponding parcel size in acres for each sale. The first entry for sale price and the first entry for parcel size should be a matched pair (i.e., data from the same sale), just as the remaining data should be matched pairs.

We have instructed the computer to read the data from our file BY VARIABLE. This means it reads all information from one variable first, and then reads all of the information from the second variable. Because the computer reads continuously without stopping, it must be told where the first variable ends and the second variable starts. This is accomplished by answering the question: ENTER NO. OF CASES/VARIABLE FOR DATA BEING READ? Because we have 12 sales in the present example, we responded that there were 12 cases for each variable.

FITTING AN EQUATION

Once the file has been brought from storage and the variables named, we can instruct the computer to run one of the many programs available in the statistical systems package. Because our intention was to explore the relationship between price per acre and the parcel size, we decided to run a statistical program which fits six separate curves to the sales data and then informs us how well each of the six estimated equations fits. In other words, the program provides us with six equations which may be used to estimate sale price based upon parcel size. If price is calculated for a series of possible acreage sizes, we would be able to plot a line on a graph. At a later point, we will, in fact, calculate such a graph relating estimated sale prices with actual sale prices per acre.

The program we select is termed CURVILINEAR-FIT, and it has been instructed to run at the top of Table 3, using the variables PRICE and ACRES. The first thing the computer informs us is that price has been entered as the dependent variable, or Y, and acres have been entered as the independent variable, or X.

FLOATING POINT NUMBERS

Our second element of output is the mean (average) value for X (acres) and Y (price). For the purpose of internal economy of operation, the computer prints its numerical responses using a "floating point" system. Thus, the mean value of X may appear strange at first glance, in that it reads 1.741667E+01. Most of us will not have any trouble with the 1.741667 portion of the number; it is the E+01 which no doubt creates a problem. The E tells us we are dealing with a floating decimal point. Under these conditions, the decimal point always will be initially printed one place to the right of the first digit (as we read the number from left to right); just as in this case, it came after the 1 and before the 7 in 1.741667.

Table 3

READY
?RUN CURVILINEAR-FIT (PRICE,ACRES)

Y VARIABLE: PRICE
X VARIABLE: ACRES

XMEAN: 1.741667E+01 YMEAN: 1.629167E+03

NUMBER	CURVE	INDEX	A	B
1	Y=A+B*X	0.89680	2.70721E+03	-6.18970E+01
2	Y=A*EXP(B*X)	0.93759	3.10707E+03	-4.68996E-02
3	Y=A*(X^B)	0.86010	6.56999E+03	-6.27739E-01
4	Y=A+(B/X)	0.82676	7.72331E+02	6.81194E+03
5	Y=1/(A+B*X)	0.86763	1.20821E-04	4.45875E-15
6	Y=X/(A*X+B)	0.45178	1.36126E-03	-3.68783E-03

FOR WHICH CURVE ARE DETAILS DESIRED (NUMBER OR NAME) ?

COEFFICIENTS:

	EXPECTED VALUE	95 PCT CONFIDENCE LIMITS	
A:	3.10707E+03	2.58127E+03	3.73997E+03
B:	-4.68996E-02	-5.54445E-02	-3.83546E-02

TYPE 1 FOR CONFIDENCE LIMITS ON ESTIMATED Y,
OR 2 FOR PREDICTION LIMITS ON OBSERVATIONS OF Y.
WHICH ?

X-ACTUAL	Y-ACTUAL	Y-ESTIM	95 PCT CONFIDENCE LIMITS	
3.00000E+00	3.00000E+03	2.69927E+03	2.28749E+03	3.18518E+03
3.00000E+00	2.60000E+03	2.69927E+03	2.28749E+03	3.18518E+03
6.00000E+00	2.50000E+03	2.34499E+03	2.02351E+03	2.71755E+03
1.40000E+01	1.70000E+03	1.61137E+03	1.43726E+03	1.80658E+03
4.50000E+01	4.50000E+02	3.76514E+02	2.90213E+02	4.88478E+02
3.00000E+01	7.00000E+02	7.60859E+02	6.52117E+02	8.87734E+02
1.70000E+01	1.30000E+03	1.39988E+03	1.25329E+03	1.56362E+03
2.30000E+01	1.20000E+03	1.05653E+03	9.36669E+02	1.19173E+03
4.00000E+00	2.50000E+03	2.57560E+03	2.19638E+03	3.02029E+03
8.00000E+00	2.00000E+03	2.13504E+03	1.86217E+03	2.44789E+03
3.00000E+01	5.00000E+02	7.60859E+02	6.52117E+02	8.87734E+02
2.60000E+01	1.10000E+03	9.17861E+02	8.03816E+02	1.04809E+03

The +01 informs us that the decimal point should be moved one place to the right of its initial position; or, it should read 17.41667, rather than a mean X value of 1.741667. Our average parcel size is therefore about 17.4 acres. Concomitantly, we would move the decimal for the mean Y value of 1.629167E+03 three places to the right, yielding an actual mean Y of \$1,629.167.

Other instances will be encountered where the floating decimal point must be moved to the left. For example, the value of A for equation number 5 is 1.20821E-04. In this instance, we would move the decimal four places to the left of its initial position between the 1 and 2, indicating a value for A of .000120821. The reader should be able to see that when large numbers are encountered, the floating point approach does provide a significant space economy.

SELECTION OF THE BEST EQUATION

The computer printout depicted in Table 3 indicated the six equations tested on the sample data and estimated values for each equation's constant (A) and regression coefficient (B).¹ Equations of the type we are considering have a starting point, known as the constant, and a regression coefficient, which indicates the bases of calculating changes in the dependent variable attributable to changes in the independent variable. The computer routine performs a series of mathematical computations, using the material provided in the data file, to calculate specific values for A and B.

The expression which most of us probably are acquainted with in some form is the linear relationship where $Y=A+BX$; this appears as the first equation tested in Table 3. In the use of a linear equation, the line which is drawn would be straight, with the value of Y increasing at a constant amount for each corresponding increase in X. It was indicated above that we did not feel a linear relationship existed between sale price per acre and the number of acres sold. Our objective is to find an equation which would enable us to draw a line through our data in such a manner that the line we select would fit the data better than any other possible line we might draw. One way of testing each of the suggested equations is to determine which expression explains the greatest proportion of variance in the dependent variable, or in the present case, which expression best explains sale price per acre. A statistic which is commonly used for this purpose is formally termed the Coefficient of Determination and is referred

1. For a discussion of the basic statistics involved in this example, see: Ron Brown and Karl J. Clottenberg, "Statistics: Some Applications for the Real Estate Analyst," *The Appraisal Journal*, Vol. XL:4, October, 1972. We attempt to go slightly beyond the linear regression technique discussed by Brown and Clottenberg and show how a nonlinear equation may be used by the appraiser.

to generally as r^2 . Our computer program calculates this same statistic, but it is called an INDEX on the computer printout. We can compare the performance of each of our six possible equations by looking to find which estimated expression explains the greatest percent of variance in sale price.

Looking at the calculated INDEX in Table 3, it will be seen that the basic linear expression explains 89.6% of the variance in sale price per acre. This linear expression is only second best when compared to the other estimated expressions. The expression which fits the data best and explains the highest percentage of variance of sale price is equation number 2, with an INDEX of .93759 (it explains 93.7% of the variance in sale price).

A NONLINEAR RELATIONSHIP

As we had hypothesized, the relationship between sale price per acre and parcel size was nonlinear. The form of the equation is stated in our computer output as: $Y=A \cdot \text{EXP}(B \cdot X)$. To those unfamiliar with mathematical notation, it is likely that the equation appears frightening and certainly not worth struggling over. Although the appraiser is encouraged to learn the foundation of the equations used, he need not necessarily become conversant with mathematical notation. At first glance, the Ellwood formulations tend to boggle the minds of most of us, yet most appraisers today are thoroughly versed in concepts of mortgage-equity capitalization.

The expression we have selected as "best fitting" our sales data comes from the classification termed exponential functions. This form of exponential function uses as its base a number generally represented by the letter e . Most appraisers have used the expression πr^2 to assist themselves when calculating the area of a circle. It will be recalled that we probably accepted, without too much argument, the statement that π was equal to the number 3.1417 . . . , although there did exist an explanation based upon radians with which we were not concerned. In the case of e , it is equal to the number 2.7182 The symbol e possesses several unique mathematical properties which enable it to function well as a base for exponential expressions and for natural logarithms.² Because the origin of e is found in the study of calculus, it is beyond the scope of our present discussion. Rather, we will concern ourselves with how the expression may be used.

MANUAL CALCULATIONS

The standard way of writing expression number 2 would be as follows: $Y=Ae^{BX}$. When written in this manner, it is presumed that the sign preceding the term BX is positive. If, however, we look at the value of B

2. Chester G. Jaeger and Harold M. Bacon, *Introduction to College Mathematics*, Second Edition (New York: Harper & Brothers, 1962), pp. 223-24.

corresponding to expression number 2, we will see that $B=-4.68996E-02$, or $B=-.0468996$. For our purpose, it would be all right to round off the value of B so that $B=-.047$. The exponent BX will become $-BX$ if we insert our estimated value for B .

One rule we should learn is that if an exponent possesses a negative sign, the exponent and its base may be given a positive sign by placing them in the denominator. When we do this and insert the estimated values for A , B , and e , our equation becomes:

$$Y = \frac{A}{e^{BX}} = \frac{3107}{e^{.047(x)}} = \frac{3107}{2.7182^{.047(x)}}$$

We are fortunate that our computer program possesses the capability to provide us with the estimated sales prices per acre, upon request. Nevertheless, we will calculate some estimates of Y for the reader to use as a guide in the event the necessity presents itself in the future. This appraiser has found that his Hewlett-Packard HP-80 is exceedingly helpful when performing this type of calculation.

The one term which changes each time a new parcel is used is the exponent. Table 4 depicts a breakdown of the steps followed when calculating our estimates of sale price per acre.

Table 4

CALCULATION OF ESTIMATED SALE PRICES

(1)	(2)	(3)	(4)
Acres	.047(x)	2.7182 ^{.047(x)}	$\frac{3107}{2.7182^{.047(x)}} = Y$
1	.047	1.04812	2964
2	.094	1.09856	2828
3	.141	1.15142	2698
4	.188	1.20683	2574
.	.	.	.
.	.	.	.
.	.	.	.
20	.940	2.55991	1213

Column 2 depicts the calculation of the exponent corresponding to each parcel size considered. These exponents then are used in raising the base e (2.7182) to its appropriate level. This procedure is best accomplished using the HP-80 calculator. Because the value of e is used repeatedly, the appraiser may decide to store the number 2.7182 in the calculator and recall the number when needed. If 2.7182 is stored in the calculator, it is first recalled and then saved. Next, the appraiser enters the exponent and then presses the y^x button. For example, in the case of 3 acres, the value of $.047(x)$ is equal to $.047(3)$, or .141. The appraiser enters the base value

2.7182 and presses the *save* button. Next, the exponent .141 is entered and the y^x button is pressed, yielding the value 1.15142. To calculate the estimate of Y, the appraiser need only divide the values calculated in column (3) into the constant, i.e., 3107. This last procedure has been completed and entered in column (4).

COMPUTERIZED CALCULATIONS

After presenting us with an INDEX from which we may select the equation with a "best fit," the computer program inquires whether further information is desired for one of the estimated equations. Because equation number 2 did the best job of fitting our data, we have responded in Table 3 by entering the number 2.

The computer once again prints the values for A and B, as well as the range we might expect A and B to assume 95% of the time if they were subjected to repeated samples of sales taken from the same population.³ We are instructed further to type 1 for the confidence limits on estimated Y, or 2 for prediction limits on observations of Y. We have responded in this example by entering a 1. This provided us with the values of X, the values of Y, and the estimated values of Y, plus 95% confidence limits for our estimated value of Y, as depicted at the lower portion of Table 3.

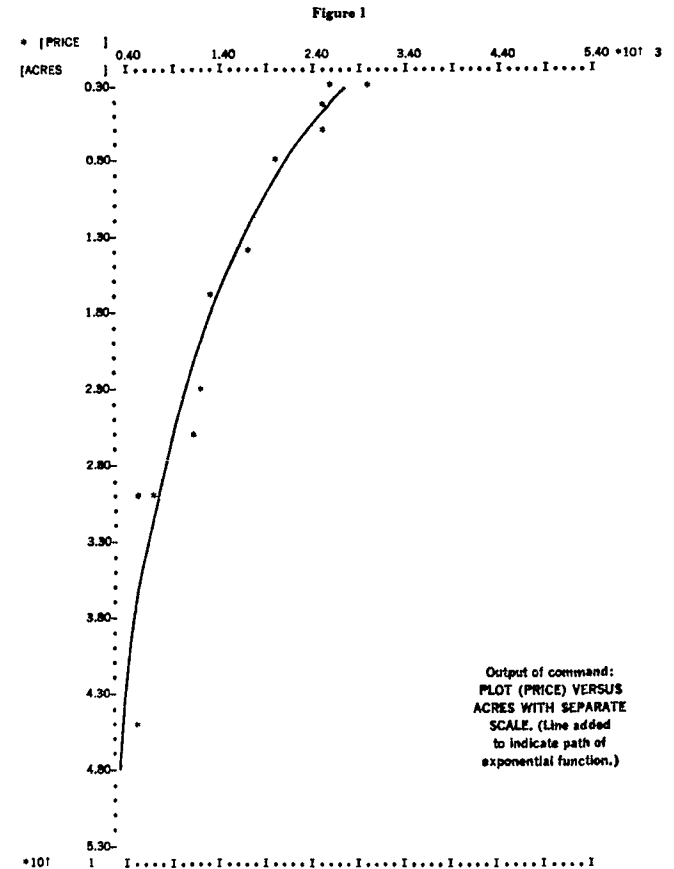
GRAPHIC ANALYSIS

Once we have the estimated values for Y, we are ready to proceed with adjusting our acreage sales. However, before terminating our computer run, we have instructed the machine to use the program for plotting data. In order to accomplish this command, we merely entered the following command: PLOT (PRICE) VERSUS ACRES WITH SEPARATE SCALE. Our output is depicted in Figure 1. This particular computer program is designed to fit an 8½ x 11 sheet of paper, and, therefore, it may be included easily in an appraisal report. We have drawn a line which represents the path of our exponential function. The reader will observe that for the lower number of acres, the price per acre is higher than for the larger size parcels. The line of "best fit" declines, however, at a decreasing rate. As we greatly increase the parcel size, the line of "best fit" asymptotically approaches our axis.

AN ACREAGE ADJUSTMENT FACTOR

The original purpose for calculating the regression equation was to evaluate the relationship between sale price per acre and the parcel size. Once this relationship was understood, it was felt that greater insight would exist

3. For an explanation of confidence intervals, it is suggested the appraiser again refer to Brown and Clettenberg, *op. cit.*



into the proper adjustment of sales data with regard to variations in size.

One technique which we have found to be helpful is the creation of a series of acreage adjustment factors. To compute them, it is first necessary to estimate the value for each acreage sale using the regression equation. This has already been done for us on the lower portion of Table 3. These estimated prices per acre may serve as a basis for determining the acreage size adjustment factor.

The appraiser should establish the estimated price per acre for the size parcel being appraised as the base value in the adjustment factor. For example, we shall presume that a subject parcel of 20 acres is being appraised; the estimated regression valuation for 20 acres is \$1,213 per acre. A table of acreage adjustment factors may be prepared by dividing the other estimated values by the estimated value for a 20-acre parcel. An example is the

acreage adjustment factor for 14 acres; using the estimated price per acre for 20 acres as a base, it is divided into the estimated price per acre for a 14-acre parcel: $\$1,611 \div \$1,213 = 1.328$. Table 5 summarizes acreage adjustment factors for all of the estimated sale prices. It will be noted that the adjustment factor for 20 acres—the base value—is 1.000; i.e., there need not be an adjustment if the parcel is already the size of the base lot. Stated another way, if we divide the estimated price per parcel for 20 acres by itself, the result would be 1.000.

Table 5
ACREAGE ADJUSTMENT FACTORS

Acres	Estimated Value	Adjustment Factors	Actual Price Per Acre	Adjusted Price Per Acre
3	\$2,699	2.225	\$3,000	\$1,348
3	\$2,699	2.225	\$2,600	\$1,168
4	\$2,576	2.124	\$2,500	\$1,177
6	\$2,345	1.933	\$2,500	\$1,293
8	\$2,135	1.760	\$2,000	\$1,136
14	\$1,611	1.328	\$1,700	\$1,280
17	\$1,400	1.154	\$1,300	\$1,127
20	\$1,213	1.000	SUBJECT	SUBJECT
23	\$1,057	.871	\$1,200	\$1,377
26	\$ 918	.757	\$1,100	\$1,453
30	\$ 761	.627	\$ 700	\$1,116
30	\$ 761	.627	\$ 500	\$ 797
45	\$ 377	.311	\$ 450	\$1,446

ADJUSTING THE SALE PRICES

The acreage adjustment factors are used to bring the comparable sales closer to reflecting the size of the subject property. A series of adjustment factors based upon a subject parcel of 20 acres has been calculated in Table 5. In order to adjust the sale prices per acre, the appraiser would merely divide the actual sale price per acre by the corresponding acreage adjustment factor. A list of the adjusted sale prices is provided in the far right column of Table 5. The range of these adjusted sale prices is much narrower than before: \$797 to \$1,453.

Even more important is that most of the sales are now grouped in the range \$1,100 to just over \$1,300. This provides the appraiser with a much better foundation from which he may prepare his estimate of value.

CONCLUSION

The case we have presented is special in some respects. Most notably, we have not concerned ourselves with some very important items, such as locational variations, zoning, soil characteristics, or timing of the sales. We have

implied that the parcels being considered are uniform in all respects with the exception of the parcel size; this caveat need not be observed. When our sales data are not as pure as those presented in our case study, we may elect to make our other adjustments first and then attack the problem of size variation.

The problems of vacant land valuation can be enormous, and it has not been our intent to minimize these difficulties. Rather, we have attempted to deal directly with one small aspect of an acreage valuation assignment through the application of newly developed tools of analysis available to appraisers. There is no reason to believe that this approach could not be used in the valuation of land in general.

Our purpose in this undertaking has been twofold. First, it is our opinion that the approach to acreage size adjustments used in this case study significantly improves the valuation results. Hopefully, the demonstration presented herein will be of some assistance to appraisers in land valuation assignments. Second, this article was intended to show appraisers the potential for new applications of knowledge they have gained through EDUCARE and other educational programs.⁴ Our goal has been to encourage appraisers to develop further uses for many of the valuable tools they now have at their disposal.

4. It should be stated that the companies mentioned in this article are by no means endorsed by the author or any organization with which he is affiliated. There are many fine firms offering comparable services. We have mentioned specific company or brand names where it was felt the appraiser would be familiar with the equipment or service available.

October 10, 1973

Professor Fred Case
School of Business Administration
Univeristy of California, Los Angeles
Los Angeles, California 90024

Re: EDUCARE Proposal

Dear Fred:

In line with our previous discussion, I'd like to spell out further details on presentation of a one week EDUCARE seminar on your campus in 1974. It appears that we have concluded arrangements with SMI for the last week in May, that is the evening of Sunday, May 26 - Friday, May 31. Since our conversation relative to an EDUCARE session on your campus in September, I have talked with Bob Knitter and Dick Mortensen, my associates, and they both feel that date would be impossible due to scheduling conflicts with our classes which begin in August. The University administration has just published rules in regard to outside assignments which must not conflict with regularly scheduled University assignments. Thus, we wonder if the first week in June in Los Angeles would represent too great a conflict with your final exam schedule. Here at Wisconsin, we have graduation on May 18 so we are then free to travel. I did talk with Bob Steele who is the president and education chairman of the MAI group and he felt the June date was feasible and his group would take an aggressive role in generating enrollment.

Essentially EDUCARE would provide the instructors, workbooks, and computer time-sharing time required to put on the program and provide for the instructor's transportation, room and board expense, and national advertising through the various appraisal organizations which are its sponsors. EDUCARE would provide a manual detailing our sources, arrangements, and setup procedures so that the host University could administer the rental and installation of necessary terminals and phone lines.

The University host of EDUCARE would have to provide a classroom facility for 30-35 students workshop style or cluster of small rooms with 12-15 phone lines for computer terminals. (Several small rooms reduces noise level as opposed to one large room). Preferably classroom should be convenient to room and board facilities for the EDUCARE instructors and any of the attendees from out of town. We need visual aid equipment such as two carousels and an overhead projector. The EDUCARE format favors the attendees having lunch and dinner together as the workshop sessions run from 8:30 in the morning to 9:30 in the evening. The University host would subsidize the cost of installing the phone lines and the installation charge on the teletype terminals. (Here in Madison we pay one installation charge for the year and a monthly rental charge for the terminals and following each EDUCARE presentation the terminals are subleased

to other University Extension programs. A major additional cost of putting EDUCARE on the road is the fixed cost of phone lines and terminal delivery we are able to amortize over more presentations here in Madison). Finally, the host University would be responsible for advertisement and promotion in its own state and for course administration. Of course, the local appraisal groups would be willing to undertake part of the promotion activity within their own groups.

In addition to Bob Knitter, Dick Mortensen or myself as instructors, the program could probably use one or two of your graduate students who would be basically familiar with terminal operation as T.A.'s and several of the EDUCARE alumni on occasion such as Bob Steele and Bob Foreman or others at Shattuck and Company as teaching assistants. The host University should handle the scheduling of these T.A.'s according to our manual of course loading and setup.

Two alternative methods for sharing the financial risks of the seminar present themselves. One approach would be to have EDUCARE give you a fixed cost that would represent a tuition fee for 25 students and the host University would receive the balance of tuition above such a breakeven point up to a maximum enrollment of 35 students which would be about 2 1/2 students per operating terminal. Room and board charges would of course be separate. An alternative may would be to provide for priority of coverage from gross receipts, something like this:

1. Room and board charges
2. EDUCARE faculty fees and travel expenses
3. Computer terminal rental
4. Time-sharing time expenses
5. Advertising costs
6. EDUCARE manuals
7. Host University administration

I have enclosed our present EDUCARE folder to indicate a tuition charge of \$425 plus \$50 for non-members of the sponsoring group. Room and board is extra.

With your written permission we would include in the course schedules to be published by the Institute for which October 15 is the copy deadline, an indication that EDUCARE will be held at UCLA in 1974 with the date to be announced.

Please let me know at your earliest convenience other administrative points you would like to cover prior to selection of the date.

Best regards,

James A. Graaskamp
Associate Professor of Real Estate

JAG/db



HOUSING, REAL ESTATE AND
URBAN LAND STUDIES PROGRAM
GRADUATE SCHOOL OF MANAGEMENT
LOS ANGELES, CALIFORNIA 90024

October 15, 1973

Professor James A. Graaskamp
Educare
School of Business
University of Wisconsin
1155 Observatory Drive
Madison, Wisconsin 53706

Dear Jim:

Regarding your interest in the University of California Los Angeles hosting the EDUCARE seminar on our campus, I regret that I have not been able to get a positive response on the matter and, therefore, will have to decline participation in the program. Budgets have been tight and this, undoubtedly, is the reason, or one of them, for lack of interest at this time.

Best regards.

Cordially yours,

A handwritten signature in cursive script that reads "Fred".

Fred E. Case

FEC:ra



November 20, 1973

Thomas Ervin, Vice President
Realtron Corporation
24065 Five Mile Road
Detroit, Michigan 48239

Dear Mr. Ervin:

Over the past two years a misunderstanding has arisen which suggests Realtron and EDUCARE are competitors and that is unfortunate. The prime objective of EDUCARE is to introduce real estate professionals to all of the opportunities that are available on time sharing services for real estate problems.

Therefore, in planning for the 1973 EDUCARE seminar program (schedule enclosed) we wondered if Realtron Corporation would care to have us include in the EDUCARE packet a brochure on the current state of Realtron services and charges together with a sample contract so seminar participants could subscribe should they care to do so.

We wondered whether the EDUCARE Teaching program could acquire a subscriber number so that students might try the program during their one week of training here on campus at the keyboard of various terminal units. If we might subscribe, what would be the billing costs and contract terms?

Professor Robert Knitter and I feel it is our function to alert EDUCARE participants to all time sharing opportunities and to provide an objective course which permits the students to make their own evaluations. We are not aware of what attitude your management may have towards the EDUCARE program but we do know our directors want to see our program retain as much scope and as little advocacy as possible.

Please feel free to call Bob Knitter at (608) 262-3816 or me at 238-8452 to discuss the possibilities of the advantages or disadvantages of some cooperation during 1973.

Sincerely yours,

James A. Graaskamp
Associate Professor of Business



April 10, 1975

Members of Educare and
Messrs. Bob Knitter and Jim Graaskamp

Re: Pre-Annual Meeting Considerations

Dear Members:

The purpose of this letter is to continue the thinking on whether or not EDUCARE should continue with General Electric as our computer vehicle or whether a change should be made to TYMSHARE. I have done a lot of research on this. Some of this research has been sent to you. This week I have made some phone calls to supplement letter responses that I previously requested.

The following is the general consensus of the members of the Board of Directors as to whether a change should be made or not. If I have misinterpreted anyone, I would request that they immediately send out a correcting letter.

Roy Fisher has indicated some hesitancy on the change over because it might generate some problems for Bob Knitter or Jim Grasskamp in terms of communicating with them. However, I think this problem is answered by the fact that TYMSHARE said that they will make a toll-free 800 watts line available to anyone who is within an area not now served by them.

Bill Coyle has said that he is in favor of the transfer providing that the minimum annual billing of \$36,000.00 does not have to be prepaid. It is my understanding that we would pay our bills to TYMSHARE in the same manner that we do to General Electric. The only time that the minimum service charge of \$36,000.00 becomes significant would be at the annual end of the year audit. It should also be kept in mind that TYMSHARE is also going to pay all of the expenses to convert our program to their system and that the conversion has to be done in an efficient manner and Bob Knitter would supervise it representing EDUCARE.

John Schneider originally expressed a tentative approval. He indicated that they use another service to provide them statistical power and that he would be more in favor of the transfer from General Electric to TYMSHARE if he felt that a good statistical package would be available to them and they could then reduce one of their terminal time suppliers. The documentation for

April 10, 1975

Page 2

"STATPAK" has been sent to John who has turned it over to his son for review. I have told John of my experience with "STATPAK", the ease with which we operate it, create files, load them, and in general operate the program. John indicated to me yesterday that he is in favor of the transfer.

Bob Steele was contacted by telephone and he said to quote him that his reaction is an "enthusiastic, yes". Bob and I had discussed the practicalities of being able to expand the southwestern services of EDUCARE members and gain new EDUCARE members. Having both EDUCARE and the Society of Real Estate Appraisers data bank on the same computer system would be beneficial. The obvious results from the application of our program "MKTCOMP" to their data bank is mind boggling.

I believe that arrangements can be made with the Society of Real Estate Appraisers through such a TYMSHARE marriage that we would be able to generate many new EDUCARE members in the southwestern United States and might even have to consider a special junior class of membership to those wishing only to use the "MKTCOMP" program.

Ron Brown has indicated that he has no strong preference. At the November meetings he indicated that he was concerned that any change be made in a manner that would not prejudice his position since he is at a substantial distance from a normal TYMSHARE outlet. I believe that the providing of toll-free 800 numbers to all necessary EDUCARE subscribers answers his problem.

My reaction is the same as Bob Steele's. I am enthusiastically in favor of this change over. General Electric has done nothing for me, although the people that represent them in East Hartford, Connecticut are very pleasant people and I like them personally. However, liking them does not help me expand my services to my clients. TYMSHARE has been extremely helpful. I cannot think of anything that I would like to have them do that they are not now doing for me, short of going out and getting me some consulting clients. They have been excellent.

I am sure that there will be some variation in the quality of service provided by TYMSHARE representatives throughout the country. I would most energetically urge the transfer from General Electric to TYMSHARE be made. In accordance with this, I would appreciate your considering this letter and the material which I am sending to you and ask that you mail me your expression of desire to make the change now or to totally abandon this effort and put our efforts into other channels for the benefit of EDUCARE and its users.



April 10, 1975
Page 3

No one has raised one question which I expected to be raised and which I considered myself only two days ago. That is, how much of a peripheral computer library does TYMSHARE have that might be meaningful to us? Along with this I have gotten a copy for each of the members of the board of TYMCOM IX, Revision 7 and TYMCOM X, Revision 8. These manuals outline the scope of TYMSHARE's library. I believe that the size of their statistical library programs, finance programs, graphic-plotting programs and their business programs (COMARC) are more immediately and practically adaptable in our work as real estate appraisers and counselors than those of the General Electric library.

I am also sending some other material to you for your consideration. One is the Xerox copy of a blank user agreement of the type that they would ask us to fill out in accordance with my previous letter to you on this matter, three price sheets, cost sheet for TYMSHARE documentation books, for which I have never had a charge made, a copy of their letter to me of February 20, 1975 which sets forth their proposal to supply us computer services, and their letter to me of April 7, 1975 which is a follow up. I would ask you to read all of this material carefully as it would be the basis for entering into an agreement with them.

If you have any questions, I would suggest that you contact Len Solimene, Hartford Branch Manager, directly by letter. I would request that you send a copy of the letter to me so that I might be fully cognizant of the general feeling of the officers and Board of Directors.

TYMSHARE has also indicated their willingness to participate in EDUCARE Network seminars, both for the purpose of teaching our present members to be users of their programs and at our annual "member upgrading" seminar.

I would like to make one strong final request. I believe that the decisions that we are now making are very substantial for the future of EDUCARE. It is not something which should lightly sit on your desk, but rather something that requires very serious consideration and which should not be procrastinated.

There are some other matters that I would like you to consider. I would like to have you consider, and I will bring this up for discussion at the meetings later this month, the idea of creating a second seminar for EDUCARE Network users. This would be a seminar of 2.5 to 3.5 days, would probably carry a charge of about \$200.00 and would have to be financially self-sufficient for as few as 8 to 10 conferees. I have discussed this with Bob Knitter and he believes that my current concept is viable.



April 10, 1975

Page 4

The purpose of this seminar would be to teach our users the basics of programming. They would go away from the seminar with sufficient information that they could understand how programs are written, would understand program logic, could write as much as a simple cash flow model and equally important be able to communicate with a programmer on more sophisticated models that they want developed, assuming that the programmer has no experience with real estate. I am beginning to find in my own practice that having this additional computer power would be extremely valuable to me.

Bob Steele doesn't need this power right now because they have a young man in their office that writes their programs for them. Bob has indicated that having this power is extremely helpful. The question that I would pose to Bob is what happens if the fellow should leave them and to the rest of us why aren't we doing what Bob is doing?

I think that this could be a substantial step forward for EDUCARE and certainly provide services to all of our present members, possibly provide a reason for more people to become involved with EDUCARE and part of the reason for our peer groups to fully abdicate any invasion into the field of computers on the basis that we are doing a proper job.

I would also like your thoughts on what you would like to see conducted in the annual fall EDUCARE Network seminar. Is it your preference that this be conducted as a get-together and talk about our common problems or do we want to focus in on several computer models that would have universal application in which we are not readily conversant?

Along this line I think of the program called "ON-SITE" which was written by Urban Decision Systems, Inc. and is available through National CSS Computer Systems. I access this program. It is slightly different than the regular census data of CACL. It is slightly less expensive. Its primary difference is that it permits approximately eight micro-studies which compliment the macro-study of the nature of the type distributed by CACL. This micro-study deals with information of owner vs. renters, how do people get to work including trip-frequency and even go as far as to say if they travel by car and, if so, are they the driver or passenger? the power is very substantial.

In keeping with the latter line, there is also the program called "QUICK" which was developed by Decisionex. It is an expensive program to run. It is primarily a counseling tool, but is extremely versatile, conversational and provides for substantial sensitivity testing. Please let me hear from you on this matter also.



April 10, 1975

Page 5

EDUCARE Network will generate approximately a \$7,000.00 profit this year. We must make some decisions later this month. The meeting has been changed to 2:00 on Thursday, May 1 in order to accommodate Bob Knitter's schedule. I think this had to be done because of the types of matters that we will be discussing.

Our profit this year is a very pleasant change of conversation, but we are also going to have to do some planning to make sure that we keep on being profitable and that we pay back our debts.

I have nothing else to add at this point and would encourage each of you to continue this conversation via the mails. I would ask Bob Knitter if he would take copies of the contract material which I am attaching to Bill Chatterton so that we can have it reviewed by our attorney of the requirements of the contract.

If you cannot attend the EDUCARE meeting, I would ask that you be sure that your vote is properly delegated to another in order that we are able to fully conduct business and don't default due to a lack of decorum.

Very truly yours,



NORMAN R. BENEDICT, M. A. I. - C. R. E.
President

cac

Enclosures

