

Successful Experiences of Entrepreneurship Center Directors

*A Project of the National Consortium
of
Entrepreneurship Centers*

Nancy Upton

Project funding provided by the
Center for Entrepreneurial Leadership Inc.
Ewing Marion Kauffman Foundation

© Baylor University, 1997.

Distributed by the Center for Entrepreneurial Leadership Inc.

All rights reserved.

Contents

INTRODUCTION	17
<hr/>	
THUMBNAIL SKETCH OF PROGRAMS	19
<hr/>	
BABSON COLLEGE	19
BAYLOR UNIVERSITY: 1997	21
CARNEGIE MELLON UNIVERSITY	22
IC2 INSTITUTE THE UNIVERSITY OF TEXAS	23
RENSELAER POLYTECHNIC INSTITUTE	24
UNIVERSITY OF COLORADO BOULDER	25
THE UNIVERSITY OF ILLINOIS CHICAGO	26
UNIVERSITY OF MARYLAND COLLEGE PARK	27
UNIVERSITY OF PENNSYLVANIA, WHARTON SCHOOL	28
BEST PRACTICES IN ENTREPRENEURSHIP	29
<hr/>	
BEST PRACTICES IN STARTING A CENTER OR PROGRAM	29
BEST PRACTICES IN DIRECTING A START-UP PROGRAM/CENTER	29
BEST PRACTICES IN FUNDING	30
<i>Chairs in Entrepreneurship</i>	31
<i>Best Practices in Curriculum</i>	32
BEST PRACTICES IN MANAGING AND MARKETING	33
<i>Advisory Boards</i>	33
<i>Governance</i>	33
<i>Outreach</i>	34
<hr/>	
BABSON COLLEGE	35
<hr/>	
THE DIRECTOR AND THE SCHOOL	35
<i>Description</i>	35
<i>Mission Statement</i>	35
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	35
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	35
STATISTICS ABOUT CENTER/PROGRAM	36
<i>Year Started</i>	36
<hr/>	

<i>Faculty and Staff</i>	36
<i>Funding</i>	36
Endowments	36
THE COMPONENTS OF YOUR PROGRAM	37
<i>Outreach</i>	37
Founder’s Day and the Academy of Distinguished Entrepreneurs	37
Price-Babson College Fellows Program (PBCFP)	37
Babson /National Foundation for Teaching Entrepreneurship Partnership	38
Entrepreneurial Management Program (EMP)	38
<i>Research</i>	38
Entrepreneurial Research Consortium (ERC)	39
Babson College-Kauffman Foundation: Entrepreneurship Research Conference	39
<i>Curriculum</i>	40
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	41
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM ?	41
<i>Practical Experience</i>	41
<i>Faculty Totally Committed to Entrepreneurship</i>	41
<i>Curriculum</i>	42
REASONS TO START A CENTER OR PROGRAM	42
HOW WOULD YOU START ONE TODAY?	42
<i>People</i>	42
<i>Advisory Board</i>	43
ANY OTHER SUGGESTIONS FOR THOSE TRYING TO START A PROGRAM?	44
<i>Raising Money</i>	45
Funding	45
Endowment Campaigns	46
GROWTH AND MAINTENANCE ISSUES	46
CURRICULUM ADMINISTERED BY THE CENTER FOR ENTREPRENEURIAL STUDIES	47
<i>Entrepreneurship Content in the Required Curriculum</i>	47
Undergraduate Coursework	47
Entrepreneurship Electives	47
CENTER FOR ENTREPRENEURIAL STUDIES ADVISORY BOARD	50
ENDOWED CHAIRS IN ENTREPRENEURIAL STUDIES	51
CENTER FOR ENTREPRENEURIAL STUDIES: RESEARCH	52

BAYLOR UNIVERSITY: 1984 **54**

THE ENTREPRENEURSHIP PROGRAM AT BAYLOR UNIVERSITY	54
<i>History</i>	54
<i>Major Unique, Creative and Innovative Aspects</i>	55
<i>Board of Directors</i>	56
<i>Integration of Programs</i>	56
<i>Examples of Transferability</i>	57
Outreach Assistance at Various Levels	58
<i>Unique Teaching Approach</i>	59
<i>Advocacy Program</i>	59
<i>Continuous Evaluation of Innovative Teaching Approaches</i>	60
<i>Applicability, Effectiveness and Transferability Summary</i>	60
<i>Innovative and Unique Aspects</i>	61
<i>Problem Areas</i>	61
<i>Summary</i>	64

BAYLOR UNIVERSITY: 1997 **65**

THE DIRECTOR AND THE SCHOOL	65
<i>Description</i>	65
<i>Mission Statement</i>	65
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	65
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	65
STATISTICS ABOUT CENTER/PROGRAM	66
<i>Year Started</i>	66
<i>Faculty and Staff</i>	66
<i>Funding</i>	67
Endowments	67
THE COMPONENTS OF YOUR PROGRAM	67
<i>Outreach</i>	67
The Institute for Family	67
Entrepreneurial Training	68
Innovation Evaluation Program	68
The Business Resource Center	68
Venture Capital Consortium	69
Internships	69
Technology Transfer	69
Corporate Training	69

<i>Research</i>	69
Entrepreneurship Research Consortium	71
Journals	71
<i>Curriculum</i>	71
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	72
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?	73
<i>Support from the Dean, President and Academic Community</i>	73
<i>Support of the Community and Alumni</i>	73
<i>Champion</i>	73
REASONS TO START A CENTER OR PROGRAM	73
HOW WOULD YOU START ONE TODAY?	74
<i>People</i>	74
<i>Money</i>	75
<i>Advisory Board</i>	75
ANY OTHER SUGGESTIONS FOR THOSE TRYING TO START A PROGRAM?	76
<i>Departmental Status</i>	76
<i>Build Relationships Across Disciplines</i>	76
<i>Marketing</i>	76
<i>Strategic Planning</i>	77
<i>Entrepreneurs in the Classroom</i>	77
<i>Raising Money</i>	78
Funding	78
GROWTH AND MAINTENANCE ISSUES	79
CURRICULUM ADMINISTERED BY THE JOHN F. BAUGH CENTER FOR ENTREPRENEURSHIP	80
<i>Undergraduate Coursework</i>	80
Starting and Managing a Business	80
Venture Initiation	80
Skills and Behavior of the Entrepreneur	81
Entrepreneurial Finance	81
Managing the Family Business	81
Entrepreneurial Field Studies	81
Innovation and Change Management	81
International Entrepreneurship	81
Internship in Entrepreneurship	82
<i>Graduate Electives (MBA)</i>	82
Entrepreneurial Behavior and Skills	82
Entrepreneurial Finance	82

Mergers and Acquisitions	82
Entrepreneurial Field Studies	82
Special Studies in Entrepreneurship	82
ENDOWED POSITIONS IN ENTREPRENEURSHIP	83
SCHOLARLY CONTRIBUTIONS AND PUBLICATIONS INDICATIVE OF RESEARCH INTEREST	84

CARNEGIE MELLON UNIVERSITY	86
-----------------------------------	-----------

THE DIRECTOR AND THE SCHOOL	86
<i>Description</i>	86
<i>Mission Statement</i>	86
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	86
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	87
STATISTICS ABOUT CENTER/PROGRAM	88
<i>Year Started</i>	88
<i>Faculty and Staff</i>	88
<i>Funding</i>	89
Endowment	89
Fund Raising	89
Grants and Contracts	90
THE COMPONENTS OF YOUR PROGRAM	90
<i>Outreach</i>	90
The Enterprise Corporation of Pittsburgh	90
Seminars and Continuing Education	90
Helping Former Students	91
<i>Research</i>	91
<i>Curriculum</i>	92
Graduate	92
Undergraduate	93
Prizes and Contests	93
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	94
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?	94
<i>Excellence</i>	94
<i>Support</i>	94

REASONS TO START A CENTER OR PROGRAM	94
<i>To Be a Player in Business</i>	94
<i>Financial Reasons</i>	95
<i>Publicity</i>	95
<i>Alumni and Students Demand It</i>	95
HOW WOULD YOU START ONE TODAY?	95
<i>People</i>	95
<i>Money</i>	95
<i>Advisory Board</i>	95
<i>Other</i>	96
GROWTH AND MAINTENANCE ISSUES	96
<i>Succession</i>	96
<i>Outreach</i>	96
<i>Research</i>	96
<i>Other Focus Areas</i>	97
Technology and Entrepreneurship	97
Family Businesses	97
CURRICULUM ADMINISTERED BY THE DONALD H. JONES CENTER FOR ENTREPRENEURSHIP	97
<i>Undergraduate</i>	97
<i>Graduate</i>	97
ENDOWED POSITIONS AT THE DONALD L. JONES CENTER	99

IC2 INSTITUTE AT THE UNIVERSITY OF TEXAS	100
-------------------------------------------------	------------

THE DIRECTOR AND THE SCHOOL	100
<i>Description</i>	100
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	100
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	100
STATISTICS ABOUT CENTER/PROGRAM	101
<i>Year Started</i>	101
<i>Key Players</i>	101
<i>Funding</i>	101
Endowment	102
COMPONENTS OF THE INSTITUTE	102
<i>Outreach</i>	102
Austin Technology Incubator (ATI)	102

The Capital Network	103
Austin Software Council	104
<i>Curriculum</i>	104
<i>Research</i>	104
WHAT WERE THE KEY SUCCESS FACTORS IN STARTING THE INSTITUTE?	105
<i>Benchmarks and Milestones</i>	105
<i>Leadership</i>	105
REASONS TO START ONE TODAY	105
<i>Prepare Students</i>	105
<i>Demand and Results</i>	106
HOW WOULD YOU START ONE TODAY?	106
<i>People Necessary</i>	106
<i>Money</i>	106
<i>Advisory Board</i>	107
GROWTH AND MAINTENANCE ISSUES	107
<i>Further Program Development</i>	107
<i>Curriculum Trends</i>	107
<i>Research Trends</i>	108
OUTREACH DEVELOPMENT/COMMUNITY INTERFACE	108
IC2 INSTITUTE EDUCATION	108
<i>Sample Executive Development Programs</i>	109
Management and Protection of Knowledge Assets (2 days)	109
Commercialization: Converting Technology into Assets (2 days)	109
Corporate Venturing: Developing New Revenues (2 days)	109
<i>IC2 Courses Taught at the University of Texas at Austin</i>	109
IC2 INSTITUTE ADDITIONAL OUTREACH ACTIVITIES	110
<i>Science and Technology Commercialization and Economic Development</i>	110
<i>Global</i>	110
International Innovation and Management of Technology Training (IIMTT) Program	110
Cooperative Activities with Brazil	111
International MOOT CORP	111
IC2 INSTITUTE PUBLICATIONS	111
THE UNIVERSITY OF TEXAS AT AUSTIN	111
<i>Education</i>	111
Expected Outcomes	111
<i>Entrepreneurship Required Courses</i>	112

RENSSELAER POLYTECHNIC INSTITUTE	113
THE DIRECTOR AND THE SCHOOL	113
<i>Description</i>	113
<i>Mission Statement</i>	113
<i>Objectives</i>	113
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	113
SPECIFICS ABOUT THE CITY OR COMMUNITY YOU SERVE	114
SPECIFICS ABOUT CENTER/PROGRAM	114
<i>Year Started</i>	114
<i>Faculty/Staff Involvement</i>	115
<i>Funding</i>	115
Plans for Endowment Campaigns and Naming the Center	115
Operating Funds	116
THE COMPONENTS OF YOUR PROGRAM	117
<i>Outreach</i>	117
Rensselaer Incubator Program	117
Technology Park	117
Venture Affiliates	118
Entrepreneur of the Year Celebration	118
Office of Technology Commercialization	118
Rensselaer Technological Entrepreneurship Council (RENTEC)	118
Rensselaer Business-Plan Competition	119
<i>Research</i>	119
<i>Curriculum</i>	121
Graduate Concentration	121
Undergraduate Concentration	122
Developing Curriculum	122
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	123
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?	124
<i>Entrepreneurial Leadership</i>	124
<i>Ability to Raise Funds</i>	124
<i>Developing a Network</i>	124
REASONS TO START A CENTER OR PROGRAM	124
HOW WOULD YOU START ONE TODAY?	125
<i>People</i>	125

<i>Advisory Board</i>	125
<i>Raising Money</i>	126
GROWTH AND MAINTENANCE ISSUES	127
ANY OTHER SUGGESTIONS FOR THOSE STARTING A PROGRAM?	129
<i>Attract the Right People</i>	129
<i>Create Linkages</i>	129
CURRICULUM ADMINISTERED BY THE CENTER FOR ENTREPRENEURSHIP OF NEW TECHNOLOGICAL VENTURES	130
<i>Undergraduate</i>	130
Principles of Entrepreneurship	130
Introduction to Technological Entrepreneurship	130
Invention, Innovation and Entrepreneurship	130
Practicum in Technological Entrepreneurship	130
<i>Additional Courses Required for MBA Students Opting for the Entrepreneurship Concentration</i>	131
New Ventures	131
Starting Up a New Venture	131
Financial Markets & Institutions	131
Industrial Marketing	131
Management of Technological Innovation	131
Designing for Innovation	132
Research and Development Management	132
<i>Core Courses Included in the Entrepreneurship Curriculum</i>	132
Design, Manufacturing and Marketing I	132
Design, Manufacturing and Marketing II	132
Designing, Developing & Staffing High Performance Organizations I, II	132
Technology and Competitive Advantage	133
Strategy, Technology and Entrepreneurship	133
Financial Management and Valuation of the Firm	133
<hr/> UNIVERSITY OF COLORADO AT BOULDER	<hr/> 134
THE DIRECTOR AND THE SCHOOL	134
<i>Description</i>	134
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	134
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	134
STATISTICS ABOUT CENTER OR PROGRAM	135
<i>Year Started</i>	135
<i>Faculty and Staff</i>	135

<i>Funding</i>	135
Operating Funds	135
Grants and Contracts	136
Endowments	136
Other Funding Sources	136
THE COMPONENTS OF YOUR PROGRAM	136
<i>Outreach</i>	136
<i>Research</i>	137
<i>Curriculum</i>	138
<i>Integrated Learning Lab</i>	139
<i>Executive Education</i>	140
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?	140
<i>Advisory Board</i>	140
<i>Faculty Support</i>	141
<i>Entrepreneurial Environment</i>	142
REASONS TO START A CENTER OR PROGRAM	142
HOW WOULD YOU START ONE TODAY	142
<i>Learn From Others</i>	142
<i>Meet with the Entrepreneurial Community</i>	143
ANY OTHER SUGGESTIONS FOR THOSE TRYING TO START A PROGRAM?	143
<i>Strategic Plan</i>	143
<i>Key Players</i>	144
<i>Entrepreneurial Passion</i>	144
<i>Build on your Strengths</i>	144
<i>Enjoy the Students</i>	144
GROWTH AND MAINTENANCE ISSUES	145
<i>Integrating Entrepreneurship into the Engineering School</i>	145
<i>How Do You Measure Success?</i>	145
<i>Expand Advisory Board</i>	146
<i>Re-institute the Engineering/BS Degree</i>	146
<i>Enhance Curriculum</i>	146
<i>FastTrac</i>	146
COURSE OFFERINGS AT THE CU CENTER FOR ENTREPRENEURSHIP	147
Entrepreneurial Environments	147
Entrepreneurial Finance	147

Business Plan Preparation	147
Entrepreneurship and Small Business Management	147
Engineering Entrepreneurship	147
Small Business Strategy, Policy and Entrepreneurship	147
Projects with Entrepreneurial Companies	147

THE UNIVERSITY OF ILLINOIS AT CHICAGO	148
----------------------------------------------	------------

THE DIRECTOR AND THE SCHOOL	148
<i>Mission Statement</i>	148
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	148
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	148
STATISTICS ABOUT THE CENTER/PROGRAM	149
<i>Year Started/Size</i>	149
<i>Faculty/Staff</i>	149
<i>Funding</i>	149
COMPONENTS OF YOUR INSTITUTE	149
<i>Outreach</i>	149
Entrepreneurship Certificate in Business Administration	149
Entrepreneurship Hall of Fame	150
Collegiate Entrepreneurs Organization (CEO)	150
Minority and Women Business Owner Programs	150
Family Business Council	151
<i>Research</i>	151
Entrepreneurship/Marketing Interface	151
Philosophy of Research	151
<i>How Research Is Conducted and by Whom</i>	151
<i>Integrating Research Across Campus</i>	152
<i>Curriculum</i>	152
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	153
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?	153
REASONS TO START A CENTER OR PROGRAM	154
HOW WOULD YOU START ONE TODAY?	154
<i>People Necessary</i>	154
<i>Advisory Board</i>	154
<i>Endowment Campaigns</i>	154
<i>Raising Research Money</i>	154

GROWTH AND MAINTENANCE ISSUES	155
<i>Further Program Development</i>	155
<i>Research Trends</i>	155
<i>Differentiation</i>	156

COURSES OFFERED IN THE ENTREPRENEURSHIP CURRICULUM AT THE UNIVERSITY OF ILLINOIS AT CHICAGO	156
Entrepreneurship: Opportunities and Creativity	156
New Venture Formation	156
New Venture Financing	156
Special Topics in Entrepreneurship	157
Field Projects in Entrepreneurship	157
Entrepreneurship and Legal Issues	157
Entrepreneurship and Strategic Planning	157
Family Business	157
Innovation and Technology Management	157
New-Product Planning	157
Ph.D. Seminar in Entrepreneurship	158

UNIVERSITY OF MARYLAND, COLLEGE PARK	159
---------------------------------------------	------------

THE DIRECTOR AND THE SCHOOL	159
<i>Description</i>	159
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	159
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	159
STATISTICS ABOUT CENTER/PROGRAM	160
<i>Year Started</i>	160
<i>Faculty/Staff Involvement</i>	160
<i>Funding</i>	160
WHAT ARE THE COMPONENTS OF YOUR PROGRAM?	161
<i>Outreach</i>	161
Mentoring	162
Seminars and Workshops	162
Investment Network	162
<i>Curriculum</i>	163
<i>Research</i>	164
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	164
WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?	164

<i>Support of Dean and Faculty</i>	164
<i>Business Community Support</i>	164
<i>Independence from Bureaucracy</i>	165
REASONS TO START A CENTER OR PROGRAM	165
HOW WOULD YOU START ONE TODAY?	165
<i>People</i>	165
<i>Money</i>	166
<i>Advisory Board</i>	166
<i>Marketing</i>	166
<i>Learn from Others</i>	166
GROWTH AND MAINTENANCE ISSUES	166
<i>Succession</i>	166
<i>Academic</i>	167
<i>Research</i>	167
<i>Outreach</i>	167
CURRICULUM ADMINISTERED BY THE DINGMAN CENTER FOR ENTREPRENEURSHIP	167
<i>Undergraduate</i>	167
Introduction to Entrepreneurship	167
<i>Graduate</i>	168
New Venture Creation	168
Evaluating New Venture Opportunities	168
New Venture Financing	168
The Entrepreneur and the Entrepreneurial Team	168
Corporate Venturing and Intrapreneurship	168
High Technology Entrepreneurship	168
Franchising and Licensing	169
Industry and Competitor Analysis	169
Sports and Entertainment Management	169
Technology Transfer and Commercialization	169
Strategic Growth for Emerging Companies	169
<hr/> UNIVERSITY OF PENNSYLVANIA, WHARTON SCHOOL	<hr/> 170
THE DIRECTOR AND THE SCHOOL	170
SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE	170
SPECIFICS ABOUT THE COMMUNITY YOU SERVE	170
STATISTICS ABOUT THE CENTER/PROGRAM	170

<i>Year Started/Size</i>	170
<i>Faculty/Staff</i>	170
<i>Funding</i>	170
THE COMPONENTS OF YOUR PROGRAM	171
<i>Curriculum</i>	171
<i>Research</i>	171
<i>Outreach</i>	172
IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?	172
REASONS TO START ONE TODAY	173
<i>People Necessary</i>	173
<i>Money Necessary</i>	173
<i>Advisory Board</i>	173
<i>Endowment Campaigns</i>	173
<i>Establishing a Center Chair, Professorship and Research</i>	173
GROWTH AND MAINTENANCE ISSUES	174
<i>Further Program Development</i>	174
<i>Outreach Development</i>	174
<i>Research Trends</i>	174
ANY OTHER SUGGESTIONS FOR THOSE STARTING A CENTER OR PROGRAM?	175
COURSES OFFERED IN THE ENTREPRENEURSHIP CURRICULUM AT THE WHARTON SCHOOL	175
Entrepreneurship	175
Entrepreneurial Decision Making	175
Entrepreneurship: Implementation and Operations	175
Field Work in Small-Business Planning	175
Raising Capital for New Ventures	175
Launching New Ventures	175
Management of Technology	176
Entrepreneurial Management	176
Strategic Management of Innovation	176
Family Business Management	176
Chinese Business Enterprise in the Global Context	176
Legal Aspects of Entrepreneurship	176
Venture Initiations/Personal Acquisitions	176
Venture Initiations/Start-ups	176

EXHIBITS	177
THE W.W. CARUTH CHAIR IN ENTREPRENEURSHIP	177
<i>Statement of Mission and Responsibilities</i>	177
Mission	177
Responsibilities	177
INNOVATION EVALUATION PROGRAM	184
SCHEMATIC DRAWING OF RENTEC	185
RELATIONSHIPS AMONG RENSSELAER'S ENTREPRENEURSHIP INITIATIVES	186
ORGANIZATIONAL CHART OF THE UNIVERSITY OF COLORADO AT BOULDER	187

INTRODUCTION

The number of colleges and universities interested in creating an entrepreneurship program continues to increase. There may be as many as 400 business schools offering entrepreneurship courses and 125 with organized programs.¹ A first step for many of these schools is to contact established programs and request brochures, syllabi and “anything you think might help us.” The second is to pick the brains of the directors of these programs. Out of the plethora of programmatic details they receive, the school tries to piece together a “state of the art” entrepreneurship program. The purpose of this book is to provide you with two things: personal interviews with your colleagues who run the top entrepreneurship programs in the United States and a series of “best practices” culled from these programs. This book should allow you not only to jump start your program but also set it on the path of growth and permanence.

The schools or programs involved in this project are considered among the best. They were chosen through a survey process which included aspects such as longevity, size, unique aspects and impact upon the field. They represent a wide variety of communities and student bodies. Included in this book you will find information about their curriculum, outreach and research. The schools and programs include:

1. Babson College
2. Baylor University
3. Carnegie Mellon
4. IC² Institute
5. Rensselaer Polytechnic Institute
6. University of Colorado at Boulder
7. University of Illinois at Chicago
8. University of Maryland at College Park
9. University of Pennsylvania, Wharton School

The interview questions were developed based on input by the directors. We asked “What are the questions you are most frequently asked?” Therefore, you will find brief histories of each program, a description of the components of the program, key success factors and advice on how to start one today. Since there is some discussion as to what actually constitutes a program, we added that to the discussion. It is to be hoped that too much information is provided—too much detail.

Also included is a classic writing from a pioneer in the field. In October of 1984, Donald Sexton penned a report on how the Baylor program was started, the key

success factors and the barriers to growth. He did this in response to the overwhelming number of requests he received for help in starting a program or center. Thirteen years later, it is still relevant. It is also thought-provoking. Many of the concerns Don expressed concerning perceived legitimacy of the field still exist. A January 24, 1997 article in *The Chronicle of Higher Education*² reveals the same problems in the field of entrepreneurship that Don identified years ago, including distrust by our colleagues concerning the relevancy of entrepreneurship education, the reluctance of tenure track faculty to jeopardize their future by researching and teaching in this area and the lack of acceptance of entrepreneurship research by top-tiered journals.

What steps are we, as scholars in this field, to take to legitimize our endeavors? While we may scoff at academia and ensure our positions through explosive demand of our courses and our outreach, do we have an obligation to go further? Do we have an obligation to bring entrepreneurship to the table? In most universities, the programs are not involved in the mainstream, therefore, entrepreneurship is not represented at meetings of associate deans or chairmen. Entrepreneurship is not considered during budget decisions or during curriculum revisions. A few schools are changing this. Schools are attempting to integrate entrepreneurship across disciplines and across campuses. You will read of their efforts and the problems they are encountering. As you go about developing your program, I would urge that you form a team in your university or college of people who see entrepreneurship not just as a stand-alone course, concentration or major, but as a lifelong learning style from which every student can benefit.

¹ Vesper, K. (1993). *Entrepreneurship Education 1993*, Los Angeles: Entrepreneurial Studies Center, UCLA.

² Mangan, K.S. (January 24, 1997). Many business schools add classes on entrepreneurship. *The Chronicle of Higher Education* p. A9-A10.

THUMBNAIL SKETCH OF PROGRAMS

BABSON COLLEGE

Bill Bygrave is Director of the Center for Entrepreneurial Studies at Babson College and holds the Frederic C. Hamilton Chair for Free Enterprise Studies. Rated consistently as one of the top programs in the nation, Babson delivers an outstanding curriculum and unique outreach programs and co-sponsors one of the best-known research conferences in the world.

- A small private school, Babson has 1,500 undergraduate and about 1,650 graduate students.
- The first course in entrepreneurship was taught in 1967. The entrepreneurship major and the Center were established in 1979.
- There are eight full-time faculty dedicated solely to teaching entrepreneurship, four adjunct faculty and the equivalent of five full-time staff.
- The total endowment of the program is between \$12 million and \$14 million.
- Outreach activities include Founder's Day/Academy of Distinguished Entrepreneurs (outstanding entrepreneurs spend the day with faculty, students and alumni); Price-Babson College Fellows Program (program to enhance teaching skills of entrepreneurship practitioners and teachers); Babson/National Foundation for Teaching Entrepreneurship Partnership (teaches inner-city-at-risk youth and their teachers about entrepreneurship) and the Entrepreneurial Management Program (residential program for fast-growth firms).
- Research activities include participation in the Entrepreneurial Research Consortium and the well-known Babson College-Kauffman Foundation Entrepreneurship Research Conference.
- About 25% of Babson's undergraduate degrees conferred are in entrepreneurship. The undergraduate curriculum has an integrative course (Freshman Management Experience) in which a class of 42 students are given \$3000 and asked to start a business. "Entrepreneurial leadership in a global economy" is the theme of the graduate MBA.
- Key success factors include practical experience, faculty totally committed to entrepreneurship and lively curriculum.
- If you want to start a program today: (1) develop an integrated curriculum that concentrates on quality of content rather than quantity of course work; (2) get and maintain the backing of your dean, president, colleagues and

trustees; (3) develop and use your advisory board; and (4) align yourself with a strong department so you do not become isolated.

- Bygrave warns that funds raised for entrepreneurship are easily diverted and faculty expenses that departments would not have to cover are expected to be paid for by a center or program because they are entrepreneurship related.

BAYLOR UNIVERSITY: 1997

Nancy Upton is Director of the John F. Baugh Center for Entrepreneurship at Baylor University and holds the Ben Williams Chair in Entrepreneurship. One of the oldest programs in the U.S., Baylor's stresses a unique undergraduate curriculum, one of the largest family business programs in the nation and the greatest number of entrepreneurship chairs.

- The oldest university in Texas and the largest Baptist school in the world, Baylor has 10,500 undergraduates and 2,200 graduates in 155 baccalaureate programs, 78 master's programs and 16 doctoral programs.
- The first course in entrepreneurship was taught in 1977, the same year the Center was founded. The BBA was established in 1979.
- There are four full-time faculty dedicated solely to teaching entrepreneurship, two adjunct faculty, a family business executive-in-residence, an entrepreneur-in-residence and five full-time staff.
- The total endowment of the program is approximately \$10 million.
- Outreach activities include entrepreneurial training, Institute for Family Business, Texas Family Business of the Year[®] and the Venture Capital Consortium.
- Research activities are varied, with six research chairs and a number of research and teaching fellows.
- About 10% of the undergraduate degrees conferred are in entrepreneurship. The undergraduate curriculum has an award-winning course (Venture Initiation) in which students form teams, raise money and start their own businesses. Growth and transition are key components of the graduate MBA concentration in entrepreneurship.
- Key success factors include (1) having a strong champion within the system, (2) support from the top, (3) dedication of faculty and staff to develop and grow the program and (4) commitment from students and alumni.
- If you want to start a program today: (1) recruit a champion who can negotiate the academic bureaucracy and connect with the entrepreneurial constituency; (2) encourage your center director to facilitate relationship building across disciplines; and (3) form and use a high-profile advisory board.

CARNEGIE MELLON UNIVERSITY

John R. Thorne is Director of the Donald H. Jones Center for Entrepreneurship and the David T. and Lindsay J. Morgenthaler Professor of Entrepreneurship at Carnegie Mellon University. Known for its research, Carnegie Mellon has a balanced approach to entrepreneurship. Students get plenty of practical experience while being taught by leaders in the field.

- A private, small co-educational university of 7,300 students attending either the Graduate School of Industrial Administration, Heinz School of Public Policy and Management, College of Fine Arts, College of Humanities and Social Sciences, Carnegie Institute of Technology, Mellon College of Science or the School of Computer Science. Of the total, 2,600 are graduate students.
- The first course in entrepreneurship was taught in 1972; the first chair was endowed in 1986, and the Center was endowed in 1990.
- There are now nine graduate courses in entrepreneurship (which is a concentration) and three undergraduate courses (including one for scientists and engineers).
- There are three full-time faculty and about six adjunct faculty.
- The total endowment of the program from all sources is about \$2.5 million.
- Outreach activities include the Enterprise Corporation (an affiliated non-profit corporation which assists entrepreneurs in developing their ideas into businesses), seminars and continuing education, and working with alumni.
- High-quality entrepreneurship research is being pursued by a combination of Ph.D. students, entrepreneurship faculty and senior faculty, including a Nobel Laureate.
- Key success factors include focusing on excellence in all activities and support of the academic community.
- If you want to start a program today: (1) have a very strong person with substantial entrepreneurial experience committed emotionally and personally to pursue it, drive it, sell it and organize it; (2) raise \$3 million to \$5 million; (3) form and use an advisory board; (4) visit other programs; and (5) gather all the information you can.

IC² INSTITUTE AT THE UNIVERSITY OF TEXAS

Robert Sullivan is Executive Director of the IC² Institute at the University of Texas, Austin, Texas. A unique institute, IC² is well known for its innovative programs and ground-breaking research. Although the Institute is a stand-alone program, it is part of the University of Texas, and UT students benefit greatly from their exposure to the Austin Incubator and other programs.

For those program leaders who that are thinking about developing an incubator or science park, we include this Institute and information from the next school, Rensselaer Polytechnic Institute. Both are considered to be among the best in the United States.

At the end of this section, we have included the curriculum for the graduate concentration in entrepreneurship at the University of Texas at Austin.

- IC² is a globally interactive virtual organization which is interdisciplinary in nature and does not report to a college or university.
- Founded in 1977 by George Kozmetsky, the Institute is located in Austin, Texas.
- The variety of programming, outreach and research performed by the Institute is enormous.
- Well-known programs include the Austin Technology Incubator, the Capital Network (an angel network) and the Austin Software Council (resources for software firms).
- The Institute is self-supporting with an annual budget of about \$3 million. Funds and in-kind support are provided by local, regional and U.S. government sources, foundations and corporations.
- The Institute provides seminars within the incubator and executive development education and teaches some courses at the University of Texas at Austin. One of the best-known innovations in curriculum created by the Institute is MOOT CORP[®].
- Key success factors when starting a center or program include: (1) identifying benchmarks and milestones and then measuring your progress; (2) attracting an excellent leader; and (3) getting the support of your institution.
- Reasons to start a program today include to best prepare students for careers, to meet the demand of the marketplace and to benefit from the rewards that accompany such a program.
- Advice for starting a program: (1) attract people who are entrepreneurial and have the capability to “make things happen;” (2) outside funding will lead to greater autonomy within the university or college; (3) attract an advisory board made up of the community in which you operate.

RENSSELAER POLYTECHNIC INSTITUTE

Mark Rice is Director of the Center for Technological Entrepreneurship at the Lally School of Management and Technology, Rensselaer Polytechnic Institute. Termed a “technological university” by Dr. Rice, it is this quality technology that permeates the entire university, including the arts and humanities. Out of a field of 500, the Rensselaer Incubator Program was recognized in 1995 by the National Business Incubation Association as the best technology incubator in the country.

- Rensselaer Polytechnic Institute has about 6,400 students, 10% of which attend the business school.
- The entrepreneurship program began in 1980 with the founding of the incubator. The technology park opened three years later, and around 1985 the first courses were taught.
- There are 19 faculty who teach entrepreneurship on a full- or part-time basis. Of those, five teach mostly entrepreneurship. In addition, there are 12 staff members.
- The Center is not endowed. The operating budget is about \$250,000.
- Outreach activities include the incubator and technology park, Venture Affiliates Program (outreach to entrepreneurs not in the technology park) and Entrepreneur of the Year Celebration.
- A variety of research is supported, and the school is the home of the *Journal of Business Venturing*.
- RPI completed a grant to examine how schools infuse entrepreneurship into their curriculum, and this has influenced the current courses and their content.
- Key success factors when starting a center or program include: (1) entrepreneurial leadership; (2) ability to attract funds; and (3) build a network of people, both inside and outside the university.
- Advice to start a program includes: (1) recruiting a core team to develop and disseminate research, teaching and outreach; (2) recruit and manage an advisory board; and (3) raise about \$5 million.
- Rice suggests you may fall victim to opportunity overload, which can lead to doing too many things—especially low-impact or relatively superficial activities.

UNIVERSITY OF COLORADO AT BOULDER

Denis B. Nock is the Director of the Center for Entrepreneurship at the University of Colorado at Boulder. This program is a joint program offered by the Colleges of Business and Engineering. Joint venturing between colleges is one way universities are trying to integrate entrepreneurship across campus and across curriculums. Included in this interview are comments from Denis Nock and Dale Meyer concerning curriculum and research issues.

- University of Colorado at Boulder is a state university with 24,240 students.
- The entrepreneurship program is a joint venture between the College of Business and the College of Engineering.
- The Center director is a non-academic, staff position.
- Boulder is viewed as one of the best cities for entrepreneurship.
- Classes in entrepreneurship have been taught for about 12 years and the Center was established in 1995.
- UC-Boulder offers one of the true Ph.D.s in Entrepreneurship.
- There are seven faculty members who teach entrepreneurship, three full-time. Staff includes the director and a half-time secretary.
- Funds for the center are contributed by the Colleges of Business and Engineering with the intent that the Center be self-sustaining within three years.
- Outreach includes programs that link students with area entrepreneurs such as internships, student projects, Ernst & Young Entrepreneur of the Year Awards Event and continuing entrepreneurial-education courses.
- Key success factors include: (1) forming and using an advisory board; (2) high level of support from a committed faculty; and (3) being in an “entrepreneurial mecca.”
- Advice to those starting a center or program includes: (1) learn from others; (2) develop programs based on the strengths and needs of your school and community; (3) use the entrepreneurial community; (4) develop and implement a strategic plan; and (4) have an entrepreneur’s passion for your program.
- Both Nock and Meyer stress the importance of a center director’s really enjoying the students and keeping them the focus of what you do.

THE UNIVERSITY OF ILLINOIS AT CHICAGO

Gerry Hills is Director of the Institute for Entrepreneurial Studies at the University of Illinois at Chicago. Gerry has created a unique research niche in the entrepreneurship education and research area through his annual conferences on the "Marketing/Entrepreneurship Interface."

- UIC has differentiated itself in a growing sea of programs by concentrating on one particular aspect of entrepreneurship: the entrepreneurship/marketing interface.
- The largest university in the Chicago area, UIC has about 25,000 students, of which 3,500 attend the business school. UIC is ranked fifty-eighth in the nation (Research I) by the Carnegie Foundation.
- Chicago has a population of about seven million and is the third largest city in the U.S. The Institute is connected to more than 100 entrepreneurs.
- The Institute for Entrepreneurial Studies was started in 1982. The first coursework was in 1972.
- UIC had one of the first MBA Concentrations in Entrepreneurship, and now all MBAs take a core entrepreneurship course. Now UIC is offering one of the few PLD seminars in entrepreneurship, in addition to its undergraduate Certificate in Entrepreneurship Program.
- There are 27 people associated with the Institute, of which 14 are full-time and part-time faculty.
- The Center itself is not endowed but funded by the Coleman Foundation, the College and outreach programs such as the Chicago Area Entrepreneurship Hall of Fame. The Coleman Foundation endowed Dr. Hills' Chair.
- Outreach of the program includes: (1) Entrepreneurship Certificate in Business Administration; (2) Chicago-area Entrepreneurship Hall of Fame; (3) Collegiate Entrepreneurs Organization (a national student organization); (4) Minority and Women Business Owners Programs; and (5) a Family Business Council.
- The Institute has differentiated itself from other centers by focusing on entrepreneurship and markets and marketing. The Institute has hosted the UIC Research Symposium at the Marketing Entrepreneurship Interface since 1986.
- Key success factors include: (1) finding staff and faculty who have a heartfelt commitment to the entrepreneurship field and will put in the hours to make a difference; (2) people who can attract resources and creatively visualize programs; and (3) affiliate with outstanding entrepreneurs.
- Advice to start a program includes: (1) have a champion; (2) develop loose, flexible advisory board; and (3) develop an endowment campaign.

UNIVERSITY OF MARYLAND AT COLLEGE PARK

Charles Heller is Director of the Dingman Center for Entrepreneurship at the University of Maryland at College Park, and holds the Dingman Chair.

- The Dingman Center is part of the University of Maryland at College Park, which is the largest college in the University system. There are 20,000 full-time undergraduates and about 9,000 graduate students.
- The Center serves the Washington, DC metropolitan area as well as the Baltimore area.
- The Dingman Center officially started in 1986 with a gift of \$2 million from Michael Dingman. Heller arrived in 1990 and began the process of defining what the Center should be doing.
- There are two full-time faculty, an executive-in-residence and several adjunct faculty. The majority of the faculty are adjuncts, and this is done deliberately.
- The Dingman Center has a \$2 million endowment providing about \$150,000 in operating funds. In addition, Michael Dingman gives an additional \$200,000 per year (for a 10-year period) for operating funds. In 1996 the Center's budget was \$800,000.
- Outreach includes: (1) mentoring; (2) seminars and workshops; and (3) Mid-Atlantic Investment Network.
- Key success factors include (1) support of the dean and faculty; (2) support of the business community; and (3) independence from bureaucracy.
- Advice to those starting a center today includes: (1) recruit someone who has entrepreneurial experience and has worked on the academic side; (2) start with a minimum of \$250,000; (3) using an advisory board is critical; (4) market your center locally, regionally and nationally; and (5) learn from others.
- Succession is an important issue for the Dingman Center, just as it is for many programs.

UNIVERSITY OF PENNSYLVANIA, WHARTON SCHOOL

Ian MacMillan is Director of the Sol C. Snider Entrepreneurial Center. Consistently rated one of the top graduate programs, the program administers the largest SBDC network in the U.S.

- Wharton is the prominent private school in the city, serving mainly the business-school community. There are about 2,000 graduate students and 1,500 undergraduate students. Of these, about 1/3 of the undergraduates are enrolled in an entrepreneurship course as are about 1/2 of the graduate students.
- The program was started in 1972.
- There are four full-time faculty and eight adjunct faculty, all of whom are entrepreneurs.
- The center received an original endowment of \$1.5 million and has just received a significant infusion of funds.
- The center has integrated entrepreneurship through the School by “co-opting” other departments to offer specialized courses. For example, medical-technology entrepreneurship in the biotechnology school or real-estate development in the real estate department.
- Four research streams are emphasized: (1) how businesses develop competence; (2) rapid growth issues; (3) technology commercialization; and (4) corporate venturing.
- Outreach includes being the main center for the Pennsylvania SBDC, visiting scholars program and a student venture fund.
- Advice to those starting a program include: (1) begin with enough money, at least \$5 million to \$10 million; (2) have a good advisory board with realistic entrepreneurs who provide advice and assistance; (3) get the support of your development office; and (4) develop funded chairs when you have someone to fill them.

BEST PRACTICES IN ENTREPRENEURSHIP

BEST PRACTICES IN STARTING A CENTER OR PROGRAM

Themes emerged from the interviews. Three requirements were repeatedly emphasized: a champion who will work tirelessly to create a program; an advisory board which not only offers advice but gives substantial support; and money.

BEST PRACTICES IN DIRECTING A START-UP PROGRAM/CENTER

- Successful directors follow this process to start a center or program:
 - Do your homework. Gather information from:
 - World Wide Web
 - Conferences (Academy of Management Preconference)
 - Request information from programs through a mail-out
 - Build a database of relationships. Lists are available from your development office; alumni association; AACSB; *Success Magazine*; Academy of Management, Entrepreneurship Division; and USASBE.
 - Direct inquiries, newsletters and brochures by coding for:
 - Alumni
 - Donor
 - Entrepreneur faculty/center director
 - Entrepreneurs
 - AACSB Deans
 - Form your team:
 - Internal:
 - Faculty
 - Staff
 - Students
 - Dean
 - Trustees
 - External
 - Alumni
 - Community entrepreneurs
 - Community leaders
 - Develop and use an advisory board
 - Perform a “needs assessment” in your community and within your university to determine:
 - What entrepreneurship resources exist?
 - What entrepreneurship resources are needed?

-
- What are the strengths and weaknesses of my team, my community and my university?
 - Where can we add value in outreach?
 - Where can we develop competence in research?
 - What curriculum exists, and how will we integrate entrepreneurship into it?
 - Using your team and advisory board, develop:
 - Vision Statement
 - Mission Statement
 - Goals
 - Strategic Plan with Action Steps
 - Raise money.
 - Develop a governance structure which allows you to avoid red tape and bureaucracy.
- Successful programs recruit a committed champion to direct the center. A number of schools are following the lead of the University of Colorado at Boulder and hiring a non-Ph.D. as director. The director does not teach or engage in research, although he or she may facilitate both.
 - The director gains the support of the dean, president and board of trustees.
 - Successful programs have the support of the academic community, specifically of faculty throughout the school and across various areas of the university.
 - The director accomplishes much of his/her work by developing a team of entrepreneurs, faculty and students who will work to make this a reality.
 - The director develops a board of advisors to give input on start-up and management.
 - The most successful directors have practical experience in the entrepreneurship area. Starting a center or program is akin to starting a business, and, therefore, all of the entrepreneurial skills apply.
 - The director should use alumni as a base of support, as funding sources and as guest speakers.

BEST PRACTICES IN FUNDING

- Successful programs have three sources of funds:
 - Endowment: Don't try to run your program on a shoestring. You will always be hustling for money instead of teaching, researching and helping entrepreneurs.
 - Grants and contracts
 - Outreach programs

-
- Successful programs do not have their funds diverted to other departments. The funds earmarked for entrepreneurship are kept in entrepreneurship.
 - Programs should not try to start on a shoestring budget. You can teach courses, but trying to accomplish significant outreach will only lead to burn-out if adequate funds are not available.
 - If possible, new directors may delay fund-raising activities for the first year while building their program.
 - Responses on endowed chairs are mixed. Bygrave suggests using them to attract top talent. However, MacMillian suggests not funding one until you have someone to fill it.
 - The best programs have an average operating budget of \$250,000, which does not include faculty salary.
 - Programs tend to grow much faster than people anticipate and consequently suffer from lack of staff and money. A well-developed long-range plan will allow enough money to be raised.

Raising money will be an important part of your activities as a program or center director. From the experiences of the directors included in this book, you have seen that raising both endowments and operating funds may be expected of you. A particular problem concerning endowment is the likelihood that the funds will be diverted to an activity other than entrepreneurship. In the previously cited *Chronicle of Higher Education* article, it was noted that of the five chairs in entrepreneurship held by professors at the University of Texas, none teach entrepreneurship. In this section we look at raising funds, endowment campaigns and strategies for maintaining the hard funds in your own area.

Chairs in Entrepreneurship

Currently there are approximately 176 chairs in entrepreneurship in the U.S. and Canada, of which approximately 165 are filled. There is a move toward “mega-chairs.” A number of early chairs were funded at the \$500,000 level, and those are underfunded today. The average chair today is going for \$1.5 million. One of the most important things you can do to ensure the integrity of your chaired position is to prepare a mission statement and statement of objectives for it. If possible, get a copy of the trust agreement that created the chair. There is a good chance that details concerning the activities of the chair are included in that legal document. Finally, if the donor is alive, develop a good working relationship with him or her. I have talked to some chairs who have never met or written their donor.

Donor relations are important for a number of reasons, not the least of which is, as Bill Bygrave mentioned, you might want to encourage a subsequent gift to your chair to increase its size. Your donor can help you maintain the intent of your chair. Finally, good manners dictate that you keep in touch with the donor

and send him or her papers you have written, copies of brochures, newsletters or programs and copies of any media received.

A description of the Caruth Chair in Entrepreneurship as well as the objectives of the chairholder are included in the Appendix. The Caruth Chair description is of interest because the holder teaches entrepreneurship full time but holds an appointment in the Finance Department. His description is apt because it shows how a chair can be placed in one department (e.g., finance) and yet serve entrepreneurship through the scholarship of teaching and research.

Best Practices in Curriculum

- Begin by developing an excellent core curriculum of four to five classes (Venture Initiation, Entrepreneurial Skills and Behavior, Venture Finance, Managing Growth, Field Studies), and then add the hybrids.
- In all successful programs, students drive the process. Begin with a good curriculum, and pay attention to it.
- Create a really strong first course; usually this is “New Venture Creation.” Put a tremendous amount of effort into making this course successful.
- Blend experiential exercises with theory and research.
- Build on your faculty strengths, and engage the local community in the classroom.
- Successful programs did not wait for the money before they taught a course.
- Consider integrating material across courses so references can be made to previous learning, cases and examples.

Every program must start with at least one course. Our scholars urge that the first course be “New Venture Creation” or “Venture Initiation.” This course focuses on three aspects: entrepreneur, opportunity and resources. As Bill Bygrave notes: “It (the course) focuses on the people, the opportunity and the resources, and pulls it all together with a business plan...” This course generates a lot of excitement among all students, not just entrepreneurship majors. He stresses that you should put a tremendous effort to making it a success.

Nancy Upton urges experiential opportunities in this course and others. In Venture Initiation, small student teams form businesses. They have to come up with the idea and the resources and actually run it. The process of operating a firm not only adds relevance to the theory and research, but it also is one of the most exciting and thought-provoking activities students have during their college career. She reports that not only has Baylor received the Leavey Award and Southwestern Business School Dean’s Innovation Award for this course but also that many of the companies started in this class operate today as successful ventures.

Rice suggests a three-step approach to developing a curriculum. First, see what the marketplace wants. Second, look at the strengths and interests of faculty and how they may reflect the kinds of things that could be taught in entrepreneurship. Third, look at the institution as a whole and get a sense of focus.

BEST PRACTICES IN MANAGING AND MARKETING

Advisory Boards

- Must meet at least twice a year.
- The purpose is both advice and support:
 - Contacts
 - Funding
 - Provide internships
 - Jobs for students
 - Mentoring students
- Early stage: Use boards for advice on curriculum and outreach as well as fund-raising.
- Mature stage: Use boards to innovate, create meaningful outreach and accomplish growth objectives.
- Include a powerful trustee on your advisory board.
- Manage them by preparing them for the meeting and setting specific objectives for them.
- Contact them between meetings to learn about their industry, company, etc.

There are mixed emotions concerning advisory boards. Almost everyone believes they are not only necessary but critical. Bygrave warns that they can be more trouble than they are worth.

Governance

- Most centers are entrenched in an academic department or have strong ties to an academic department.
- Centers are responsible to the dean or a vice president. Their support is critical to cut through red tape and bureaucracy. However, deans may come and go, so the support of a trustee is still necessary.
- Several centers have allied themselves with other centers and institutes within their schools, and this has allowed them to create synergies. Models from Baylor and Rensselaer Polytechnic Institute are included in the Appendix.

None of the centers are housed in an entrepreneurship department. Faculty directors usually report to a department chairman for their curriculum and research and to the dean of the business school for outreach. Although faculty may

try to integrate themselves into the departments, many feel isolated. Babson sees their alignment with the management department as a great strength. Most others do not see the alignment as one of strength. The departments with which they are aligned do not give them a lot of support.

In addition, the use of adjuncts may not lead to opportunities to develop relationships within a department.

Outreach

- Participation in an Entrepreneur of the Year program gives enormous benefits to the center and the school.
- Successful programs have found an unfilled need in the community and met it (e.g., business development, high-tech park or incubator or family business program). They do not reinvent the wheel or try to compete with existing programs.
- Outreach must be meaningful. It should reshape the community and make a lasting impact.
- Develop a high-quality brochure and mail it to all AACSB deans and other center directors.
- If possible, develop a newsletter that highlights your accomplishments and those of your alumni.
- Obsess with quality.

BABSON COLLEGE

THE DIRECTOR AND THE SCHOOL

Bill Bygrave, Director and Frederic C. Hamilton Chair for Free Enterprise Studies, Babson College, Wellesley, MA.

Description

The focal point for entrepreneurship education at Babson College is the Center for Entrepreneurial Studies (CES). We strive to help students develop “entrepreneurial thinking: initiative, flexibility, creativity, a willingness to take risks, the ability to think conceptually and the capacity to see change as an opportunity.” The Center for Entrepreneurial Studies is a center within the Management Department at Babson College. While many CES programs are designed for specific groups (e.g., researchers, teachers, practitioners, etc.), the main focus at Babson College is graduate and undergraduate education.

Mission Statement

To enhance entrepreneurship education and practice worldwide through the creation and development of teaching, outreach and research initiatives that encourage and support entrepreneurs and the spirit of entrepreneurship.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

Babson College has 1,500 undergraduates, 350 full-time MBAs and 1,300 evening MBAs and part-time evening MBAs. I do not have any formal statistics on the breakdown of the executive programs. It is a private school well known not only for our entrepreneurship program but all of our business programs. We have graduate and undergraduate students from 60 different nations, which is amazing for the size of school that we are.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

We serve a pretty big community, but the greater Boston area is approximately 4 million people. Within a 25-mile radius, I estimate a population of approximately 4 million. Due to our recruiting efforts, we are getting fewer and fewer local students. The highest group is still the local group, as it were, people from the Northeast, but that number has been declining.

STATISTICS ABOUT CENTER/PROGRAM

Year Started

The Center for Entrepreneurial Studies was established in 1979 by the Babson Student Chamber of Commerce. It coincided, somewhat, with the establishment of the Academy of Distinguished Entrepreneurs and the Founder's Day celebration. Our very first entrepreneurship course was a graduate course, and it was offered in 1967. We offered our first undergraduate major in 1979.

However, the very first thing we did in entrepreneurship was in 1959, when the Babson Alumni Association Student Business Initiative Award was donated by the first graduating class, the class of 1920. There has always been a strong entrepreneurial theme running through the school, and that's important.

Faculty and Staff

The full-time faculty who teach nothing but entrepreneurship numbers eight. We have four full-time faculty who teach some entrepreneurship. We have four adjunct faculty who teach at least one course each semester, and we have Paul Reynolds, who is in the Babson Chair, which is primarily a research chair. We always have someone in that chair. We have six staff, and that is about the equivalent of five full-time staff. Some of them run an 8- or 9-month year, so I think that is about five.

Funding

Endowments

We built the whole program with only one endowed chair. In terms of what we had to get CES started, all we had was just that one endowed chair. That was the Paul T. Babson Chair in Entrepreneurial Studies, which was endowed in 1980. I believe that it was the first endowed entrepreneurial professorship in the United States. Then we raised the small amounts for the business plan competition and so on; but the next significant amount we raised was for Price-Babson.

Price-Babson is operating money that comes in every year. The Price Foundation said they liked what we had done so much and what Jeff Timmons had done that they put up a Price Challenge. They put up a half million dollars and said you've got to match it two for one to make it \$1.5 million. If you do that in two years, then the money is yours. By the time we did...they never told us they put the money into an escrow account, and they paid us the interest as well. So, we got like a \$1.67 or \$1.7 million endowment, which is not for a chair. It's just for operating funds.

We have raised about \$9 million in the last couple of years. So the total amount of money is probably somewhere in the region of \$12 million to \$14 million.

THE COMPONENTS OF YOUR PROGRAM

Outreach

Founder's Day and the Academy of Distinguished Entrepreneurs

In 1978, Founder's Day took on its current form with the establishment of the Academy of Distinguished Entrepreneurs. The program brings entrepreneurial giants to campus to share their philosophies and experiences and to provide inspiration. The interesting thing is that the very first one occurred when Babson was not that well known, and they got Ray Kroc, Chairman of McDonald's; Royal Little, founder and former Chairman of Textron, Inc.; Kenneth Olson, President, Digital Equipment Corporation; Berry Gordy, President and Chairman of Motown Industries and Soichiro Honda, founder of Honda Motor Car Company, Ltd. I am told, I wasn't there at the time, that it was very much the students' initiative that brought it up. The entrepreneurs spend the day interacting with entrepreneurs and alumni and are inducted into the Academy. The entrepreneurs who have been inducted into the Academy share common characteristics—all were willing to take risks and invest money and energy in ventures that made positive contributions to society. Each was the originator or prime mover of an enterprise.

Price-Babson College Fellows Program (PBCFP)

In 1984 the PBCFP program was launched to improve the teaching effectiveness and course-development skills of entrepreneurship practitioners and teachers. The Symposium for Entrepreneurship Educators (SEE) brings together accomplished business people and professional educators at its intensive residential seminars. Each participating school sends a two-member team comprised of a faculty member and an entrepreneur. The entrepreneur is designated the Price-Babson Fellow. Since 1985, SEE has mentored approximately 400 Fellows from 162 colleges and universities worldwide.

We've done clones of this program in Australia, Poland, Slovenia and Scotland. The one in Slovenia is in its fifth year. The most recent PBCFP joint initiative was launched in 1995. Entrepreneurs, faculty and administrators from Babson College and 13 Scottish Universities founded the Scottish Enterprise-Babson Symposium for Entrepreneurship Educators at the University of Aberdeen.

At the annual Reunion of Educators and Fellows Learning Entrepreneurship (Reflect), SEE alumni return to share their insights on teaching, developing courses and building entrepreneurship programs. They trade stories about the highs and lows of teaching entrepreneurship and pass along tips and materials to help their colleagues succeed.

Pulse 2 (Pulse Squared) is the annual newsletter of the PBCFP. It provides an overview of that year's SEE and Reflect program and provides a forum for pa-

pers by and about, SEE participants. The PBCFP created an award in memory of the Price Institute for Entrepreneurial Studies former executive director, Edwin M. Appel. Several Edwin M. Appel Prizes are awarded annually to SEE alumni who bring “entrepreneurial vitality to academy in the true spirit of the Price-Babson College Fellows Program.”

Babson /National Foundation for Teaching Entrepreneurship Partnership

In 1994, the CES and NFTE established “NFTE University” at Babson College. It is a program that teaches inner-city at-risk youth and their teachers about entrepreneurship and the basics of starting a business. Each summer, teachers and staff from around the country are trained in the craft of teaching entrepreneurship to at-risk youth. Babson also coordinates and funds NFTE BIZCAMP—intensive two-week business seminars for urban high school students—at Babson College and at Paul Quinn College in Dallas, Texas.

Entrepreneurial Management Program (EMP)

Faculty members from CES co-sponsor the annual EMP in conjunction with the Small Business Association of New England (SBANE). The program’s goal is to address the core management issues of fast-growing ventures. This three-day residential program, offered since 1986, is held at Babson’s Center for Executive Education. The seminars normally start on Sunday afternoon at 3:00 p.m. and run through 1:00 p.m. the following Wednesday.

In addition, we have events almost every week for local “wannabes” and would-be entrepreneurs—things like lecture series, breakfast meetings and guest meetings. They can join an organization called the Babson Entrepreneurial Exchange. They’ve put on a research conference and they’ve published a magazine twice a year called *The Babson Entrepreneurial Review* with interesting articles for practitioners. We do executive day programs for local entrepreneurs and for everyone, both on campus and off campus, for entrepreneurs and for companies. We do programming for quite big companies that want to get more entrepreneurship back into their companies.

I guess we’re finding that case writing is a fabulous outreach program. You’re writing about a case every three weeks right now and that’s been a phenomenal outreach for us. It’s amazing. No one’s refused us yet, and some we’ve literally cold called. So far we’ve not had any outright refusals. One or two we’re still working on, and I didn’t realize just how powerful an outreach program that is for us.

Research

Our research came about when the Babson family donated an endowed chair in 1980. We wanted to get someone really important to fill it. There weren’t that many names in those days, but Jack Hornaday, who had headed up the Center

from the beginning, knew Karl Vesper. He persuaded Karl to come, and he said to Karl, "Do whatever you like to do." So Karl said, "I'd like to write some cases and start a research conference."

The purpose of the Babson chair is to bring prominent entrepreneurial academicians and practitioners to campus for a "working sabbatical" and underwrite research projects. We got another endowed chair in 1988. The chair that I hold is the Frederic C. Hamilton chair. We've added three more chairs last year to that, including the Muller Chair and the Timmons chair. We raised money to honor Jeff Timmons. So we now have five fully endowed chairs, and I should say the last one was the Olin chair, what I call a mega-chair. It is a \$3 million endowment.

We had these half-million dollar ones, which are fine, but the trouble is the benefactors almost never top them off. I am trying to persuade Fred Hamilton, who has become a bit of a friend over the years, to top it off.

Entrepreneurial Research Consortium (ERC)

The ERC is a temporary association of 25-30 university centers, research organizations and foundations within the United States, as well as several foreign affiliates, that are planning to initiate the U. S. National Panel Study of Business Start-Ups. Each membership unit or foreign affiliate is sponsoring multiple researchers, and 60-80 scholars are involved. The National Panel Study of Business Start-Ups involves identifying a representative sample of firms in gestation and following their progress for up to 18 months. Paul Reynolds, the current Babson Chairholder, is the coordinator.

Babson College-Kauffman Foundation: Entrepreneurship Research Conference

The Babson Entrepreneurship Research Conference (ERC) was established to encourage and increase quality research in entrepreneurship. This mission is accomplished through an annual conference, which has been held since 1981. The goals of the ERC are: (1) facilitate the public exchange of research ideas and information; (2) provide networking opportunities for entrepreneurship researchers; (3) stimulate additional research in entrepreneurship studies; and (4) publish the best research in *Frontiers of Entrepreneurship Research*. The *Frontiers* series is the most comprehensive collection of empirical research papers on entrepreneurship available. An index of the articles published between 1981 and 1993, abstracts of the 40 papers selected for presentation to the 1994 research conference and the full text of the 1995 edition are now available online.

In terms of what we have researched, Jeff Timmons and I are best known for our work on venture capital, high potential and high-technology businesses and private equity. We've just started an Institute for private equity research, which will pull in more of the finance faculty. Paul Reynolds is doing the ERC, that is, research on entrepreneurship demographics. We've been doing some work in

banking. Natalie Taylor is interested in social entrepreneurship. She is going to introduce a course and is busy writing cases and doing research.

Curriculum

As mentioned earlier, the very first entrepreneurship course was a graduate course in 1967. We offered our first undergraduate major in 1979. In 1985, when I joined Babson, there were maybe 10 entrepreneurship undergraduate majors. Last year, it was the most popular undergraduate major on campus. Of the 400 or so students graduated, more than 100 were entrepreneurship, either single majors or joint or double majors. Along the way we have raised money for scholarships for undergraduates and grad students and so on.

In the MBA program, a major commitment was in 1992, when the school said we are going to completely revamp our MBA program, literally throw out everything we have and redo the first year of it. They made the first year highly integrative, and the theme is entrepreneurial leadership in a global economy. It has been a huge success both in terms of attracting students and the final product. We run entrepreneurship as one of the themes throughout all of the first year. It is a highly integrative program with faculty integrating a lot of just-in-time material for the students, and, no question, that has been a huge hit for us. Simultaneously, we put it into place in the fall of 1993. This year's class—we are the fourth class coming in—and in the undergraduate program, we started simultaneously in the fall of '93 a total integrative first-year course with our first-year students.

In the past, Babson incoming freshmen took a course called General Management, in either their fall or spring year. For most of them it is as boring as all get out, no matter how we try to make it better, putting our best faculty in and trying different materials. When you are an 18-year-old and have never thought much about management, it is pretty dry. John Neuman, on our MIS faculty, said, "Well, we know they like entrepreneurship; that is one reason they come to Babson. We know almost all of the youngsters like computers and information systems. Why don't we design a one-year course which would incorporate general management, entrepreneurship and computers and make it a one-year program team-taught by an entrepreneurship and an information systems person." And as part of that program as well as getting all the information systems stuff and some management and marketing, the students have to start a business in their second semester as a class. So, there are 42 students per class.

We actually give the class \$3,000 and tell them go and start a business in the second semester. So it is always going to be a very short business. It has a lifetime of about 14 weeks max. And we tell them that we would like the \$3,000 back and any excess cash you made, we would like you to donate it to a charity or a good cause of your own choice and oh, by the way, during the whole semester we expect you to work meaningfully with that charity. It has been a phenom-

enal success. Before the first year was out, we had parents calling up and saying things like, “Mary’s not in the FME (Freshman Management Experience). Is she going to be damaged the rest of her 3 or 4 years at Babson?” Students were going home and telling their parents about it and really generating a lot of excitement. So this year every freshman will take the course. So right from the beginning of their experience at Babson, they are getting immersed in the entrepreneurial way of thinking, even though many of those will not be entrepreneurship majors. So that is another very important event for us.

We are teaching about 50 sections of entrepreneurship with an average of 30 to 35 per section. We have about 10 different courses. We only had four courses until about three years ago, when we kept getting pressured into a franchising course and one in family business. But originally we had Entrepreneurship from A to Z in four courses. One thing I stress to people when I start a program, is to start with what I call our New Venture Creation Course. It focuses on the people, the opportunity and the resources and pulls it all together with a business plan. That is the one that generates a lot of excitement among students. It is integrative and reaches out to finance, marketing and all of the others. After you get that in place, work on your other courses.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

The three components we have discussed, definitely (curriculum, research and outreach) define a center. However, more and more, I am using the term “intellectual capitalist” instead of research because too many people think of research as academic acts: having a management journal publication or what else.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM ?

Practical Experience

What most of us have is significant, practical real-world experience mainly in entrepreneurship as well as many of us having all the academic qualifications.

Faculty Totally Committed to Entrepreneurship

One of the things that made Babson different from most schools, but not Baylor or Harvard or USC, is that we had faculty like Jeff Timmons and myself and Bob Ronstadt, who would totally commit to entrepreneurship and did not teach entrepreneurship and accounting or OB and entrepreneurship. We burned our bridges and taught entrepreneurship, period. And we have always thought that was important in terms of getting that commitment. Initially there was no going back, as it were, to say, well, I’m really an OB professor. I don’t like doing entrepreneur-

ship. I don't have to do it. I'll go back and do OB. Now today we do and can afford to have boundary spanners like Natalie Taylor, whose fields are strategy policy and entrepreneurship. But initially we made sure we had that commitment from everybody.

Curriculum

I think that it was important to us that we always paid close attention to that basic New Venture Creation course. And it is important to keep the curriculum lively.

REASONS TO START A CENTER OR PROGRAM

There's most certainly a difference between what we can do at Babson College, being in one of the most entrepreneurial regions in the whole world, having students who come from an entrepreneurial background and having alumni and trustees with that heritage, compared to a state school in a rural area that draws upon kids of fairly working class families; it's not the same thing at all trying to start a program there because they are students who are the poorest. I believe it is easier in an urban area that has a lot of entrepreneurship in it and easier, I think, for the kind of students who we have, who have a proclivity toward entrepreneurship.

HOW WOULD YOU START ONE TODAY?

People

I worked at a college which is a private school, but not below Babson in terms of the demographic, socio-economic group of these students. You have got to start differently, and when I started there, I thought the trustees would push for it and had gone ahead and done it. I started off with the pickings of what I thought was the core course, which is the basic new venture creation course and put a tremendous effort into making it a success. If you cannot get that course to be a success, it is almost certain nothing else is going to work, and so I cannot stress that enough. Get the first course in place; then maybe for the first year do not do anything but that one course, and do your best to get it done and get it right. Then, the other course will follow, I think, fairly automatically in terms of the financing course or the business course or the field studies course or all three in tandem. That was our core curriculum basically—the three legs in the stool almost in terms of what we did. Then when you get those in place and they are successful, you can add these hybrid and specialized courses if there is a demand for them. Some schools may claim to have 10 or 12 different courses, but we must ask whether there really are 12 courses or 12 variations on one theme. One thing is to get more dispersion, as I call it, rather than repetition. Yes, we

want reinforcement. So let us see if we can do Entrepreneurship A-Z with four courses. And that is what we did and I think that is a key to our success because it was highly integrated even though they were all electives. We got a foundation course. People could refer to a case in that course and conceptual material in the growing business course or the financing course, and that was a key. That would be one bit of advice.

Another bit of advice is you have to get the dedicated faculty in, and if you are going to do that, get someone who is not tenured and is going to commit totally to entrepreneurship. As a dean you have to be a bloody good blocking back, which means you really are going to protect that the person, as long as the person performs, will be treated normally on the tenure track.

I did some studies a couple of years ago around the tenth anniversary of Babson Doctoral Consortium. I thought it would be nice to take all the students who had ever been through it and segregate them in terms of those who had completed and those who had not. We did not get a 100% response, but it was pretty good. It was 50 or 60 percent, and, interestingly enough, of the U.S. doctorates, the ones who completed their doctorates and went to the Babson Consortium, *not one* of them was a dedicated entrepreneurship person. *Not one* of them was teaching only entrepreneurship, and several, a few, were teaching no entrepreneurship, even though they were in the academic world. And I think that tells you a lot in terms of what is going on in other schools. But having said that, that may not be very attractive to junior faculty members when they look at the hurdle they have to go through to get tenure. But nevertheless, those are our philosophies and they've worked very well for us.

The alumni and the local business community are also important. If you can find a few people, entrepreneurs, who really believe in this stuff and want it, they can be terrific in helping promote it and persuading the dean and trustees that it is really an important thing.

Advisory Board

We did not have an advisory board at all until two years ago, and we do meet regularly. We meet twice a year, and they do give us some good input, but it is hard work for the faculty members to come up with interesting topics to discuss that are going to be helpful to the program. To be blunt about it, the advisory board really has two functions. One is advisory, and the other function is external.

For example, boards help with raising money, donating money, providing internships for students, providing jobs for students and so on. So the advisory board has to be seen as a two-way thing, where the advisors like to come and meet one another but also help in the program; we're really listening and needing their advice. So advisory boards can be a mixed blessing. I think I am finding that they

are more important in the early stages, such as during fund raising. We started ours after we had our past successes, but it was largely through the push of the president and the chairman of the trustees. It is also probably our best fund raiser. And he and I had several pretty hard conversations about it. Why do we want this? Will it really help us and the program, or is it primarily for fund raising issues? So there is a lot of tension, I think, in advisory boards.

And I think we have had a proliferation of advisory boards, not only in entrepreneurship but elsewhere at Babson, and sometimes I wonder about the real value of them. Some people say they are fabulous—they do this and that. The other extremists say, well, they are just a lot of heartache. To make it meaningful, you have to have meaningful programs. Maybe our advisory board is different than most in that it is a lot of entrepreneurs locally and internationally. In fact it is a much bigger challenge to get them together on a date and have really meaningful things for them to work on. So all I can tell everybody is that we built the whole program without an advisory board and we have had one at Babson for only two years. So if you like, we may be the other way around in terms of doing it.

So I do not think advisory boards are a necessary part of what Jeff Timmons did, but he has been gone for six years. It fell to me to build links with key trustees whom I knew were interested in entrepreneurship. And I went to some length to build those links, inviting them to our regular, monthly entrepreneurship faculty meetings. We would get them to come and talk to the faculty and let the faculty talk to them. We also would have them judge business plan competitions. We sought their advice where I knew they had some advice and I wanted to listen to it, about industry perhaps or whatever. So, we did it very informally but nevertheless built some very good links into the trustees. It is always important because presidents come and go, deans come and go, academic vice-presidents come and go and who knows what might happen if you do not have those strong links. So I personally think that strong links with a few powerful trustees are more important than advisory boards.

ANY OTHER SUGGESTIONS FOR THOSE TRYING TO START A PROGRAM?

I think the endowed chair was an important signal when we raised the money for that. I think it was a commitment. Again, some of the Babson family still serve on the trustees, so that gave good visibility to the trustees. It showed that someone was willing to step up to the plate and put up a significant sum of money for an endowed chair, because in those days there were very few. So, it was pretty exciting to get people to come to Babson through that chair but that would not be so easy for the school today because there are just so many endowed chairs, in entrepreneurship. Nevertheless an endowed chair can attract a significant senior scholar who does not have to worry about tenure.

Another way of getting a center is to do just that. Get in someone who is already tenured, and the school will give them tenure coming in. You can maybe attract someone like that with an endowed chair. It's important to say that our entrepreneurship center is actually part of the management department. That was very important to us in the early days and probably still is today, inasmuch that, again, generally speaking, the management department was very supportive of entrepreneurship. So if you like, they were our first blocking backs. And they said, "The management department wants entrepreneurship and it's what we needed" and so on.

We are not a separate department. We could be. But in fact, I don't think we want to be because we do not want to go back to the bad old days when we were perceived as a black hole. People would say, "Well, what goes on over there?" Being a part of the strongest department at Babson, the management department, was extremely important to us. But I am glad you brought me that because that is a bit of advice I always give people and the more perceptive ones ask that very question. They say, "How are we going to sell the other departments on entrepreneurship when we are telling them how to start a program? And I tell them how we did it. It was not easy, but being part of the management department was certainly a big help.

Raising Money

Funding

I don't know how much money someone needs to start a program. However, if the demand is there for the courses, I do not really see where entrepreneurship needs any additional money compared to say, management. If it is part of the management department, obviously the more the better. But we built ours on a fairly modest budget. In the early '80s we were probably one of the top three or four programs in terms of money, having just won a half million dollars. But by the mid '80s we thought we had slipped to maybe the tenth or below that in terms of the amount of money we had, because Wharton was raising money and there were other schools, such as Harvard, who were raising significant amounts of money—far more than we had up to that point.

We do not do a lot of soft funding on contracts and things. We have program money from the Kauffman Foundation, and that came in again on a two-for-one match. They said, we will give you some operating money, committed to 10 years as long as we could match it, two-for-one. We have Price-Babson money which is soft million a year, something like that.

Endowment Campaigns

So if someone wants to start an entrepreneurship program, if they were to sit down and try to put this together and endow a center or a chair, I'd certainly recommend going to mega-chairs—if someone really had that kind of money and wanted to put up—because then you've got... take 5% of \$3 million and put \$150 thousand, of course that doesn't pay everything, but you could pay some of the salary and give some meaningful operating money to the person doing research, developing courses, developing outreach programs and so on. So I'd recommend that. I'd definitely want to put in the bricks and mortar.

Having said that, we just raised money for a building, which will be the first time we've had our own separate building. It will be very integrated with other academic buildings. It is not going to be a freestanding one up on the hill. It's going to be very much integrated so we don't get the sense that we are becoming isolated. But I wouldn't put money into the buildings because that's what the deans are trying to do. They'll take the bloody money and corrupt it into what they think it is. And we have to fight that battle at Babson, too, by the way, in terms of: "Well, it's our money but why should we be charging off a teaching position to it when you don't expect marketing to do that?" And we want to be good citizens so we understand there's always that give and take in that process, but I fight very hard to make sure if I have a benefactor that it really is going to be for entrepreneurship and not get corrupted into a finance chair or accounting chair, which people say, "Well, it's kind of entrepreneurship, but it really isn't." And that would be very important.

GROWTH AND MAINTENANCE ISSUES

Luckily, at Babson we've got an excellent turnover of faculty. But you worry because you try to recruit people on tenure track. We've got several on tenure track, and there's been an excellent turnover of people, which has allowed us to bring in new people. There are other departments at Babson where there are a lot of older, tenured people who've been around a long time. I've never done any research on it, but my notion is that you can find almost a direct correlation between the longevity of the senior and the lack of innovation in the programs. Not because they want it that way but because they just can't keep bringing in enough young faculty. So that's the challenge I keep in mind—lots of new ideas flowing through.

We are going to have a Ph.D. program now as well, and that will serve to attract people. We are doing it through visiting scholars. We provide office space, fax, computers, and so on. We can't provide any living expenses, but we can treat them like a visiting faculty member. So far we've had no trouble with people wanting to come to Babson and spend a semester a year with us to learn what we do. But they also contribute some intellectual things at the same time such as research and writing. It's an important issue. Obsess with quality. No matter how obsessed you are, you'll still get an occasional disappointment, whether it's a faculty member or a course.

Babson is obsessed with teaching quality, but it has to be that way. If we don't put out a really good classroom product, then we don't get the students that we need. So, you can't stay at Babson if you are a below-average teacher. The average is pretty high at Babson, even if you are a world-class researcher; except where we have some specifically visiting chairs like the Babson chair. So, we are obsessed with both teaching from the beginning and trying to pick people we are reasonably sure are not going to become casualties.

Regarding pressure to stay on top, the advisory board says don't do that. Now these are very successful entrepreneurs, and they say you simply cannot get obsessed with the statistics in terms of what is in the evaluation criteria. Rather concentrate on putting out what you think is the very best product from the classroom, the intellectual center and the outreach. That's what we've really done all along.

CURRICULUM ADMINISTERED BY THE CENTER FOR ENTREPRENEURIAL STUDIES

Entrepreneurship Content in the Required Curriculum

Undergraduate Coursework

Freshman Management Experience (FME)

A two-semester entrepreneurship class, this was added to the required coursework in 1993. In the FME, the entering class is divided into teams and instructed to create new ventures. Each team develops a business plan and is provided with up to \$3,000 in seed capital to start a business. The coursework then guides the students in planning, launching and managing a for-profit venture. The businesses are liquidated at the end of the school year. Profits in excess of the seed capital fund a charitable project undertaken by the freshman class, with the remainder donated in cash. To date, every student team has shown a profit at year's end.

The first year of the new two-year MBA program is based on the new-venture model. Students trace the business life-cycle from launching a product or service, through assessing the opportunity, into building the marketing and delivery systems and on to further product development. Students develop practical and theoretical knowledge using real business problems.

Entrepreneurship Electives

The following courses are taught at both the graduate and undergraduate levels. The three core courses, New Venture Creation, Managing a Growing Business and Financing Entrepreneurial Ventures, are continually offered for both full-time and part-time students. Other courses are scheduled depending on student interest and faculty availability, but each is taught at least once annually.

New Venture Creation

This course concentrates on how new businesses are started. Objectives of the course are understanding entrepreneurs, seeking and evaluating opportunities for new ventures, and gathering resources to convert those opportunities into businesses. There are two projects: each student interviews an entrepreneur and student teams write business plans for new ventures they have chosen.

Managing Growing Businesses

The course focuses on managing growing companies in an increasingly professional manner, while maintaining the entrepreneurial spirit that brought the company to its current growth position. Subject matter is organized around the following themes: measuring economic performance and obtaining information for management decision making; management control systems for innovative companies; short- and long-run planning in owner-managed businesses; and entrepreneurship and managing (professionalizing) growing companies.

Financing Entrepreneurial Ventures

This course covers various aspects of financing an entrepreneurial venture. Major topics include attracting seed and growth capital from sources such as individuals, venture capital, investment banking, government and commercial banks. Among the issues discussed are valuing a company, going public, selling out, acquisitions, bankruptcy, different legal forms of organization, partnerships and taxes.

Franchising, Licensing and Distributorships

This course encompasses theory and practice of franchising, which is an increasingly important sector of the economy. It is taught from the perspectives of both franchisers and franchisees. Franchising is a highly effective inter-organizational form. The proven operational format, trademark value and scale economies provide a launching pad for entrepreneurship, especially rapid-growth opportunities. The focus of the course is on business formal franchising but students also gain an understanding of product franchising, distributorships and licensing.

Entrepreneurs in Organizations

This course provides an overview of the types of innovation managers encounter, explores issues common to innovation, suggests how innovation impacts stakeholders within and outside the corporation and explores the range of options available for managing innovation along with the likely consequences of those options.

Family Business Management

This course is organized around: understanding the family business in terms of systems theory, culture and stages of evolution; individual development and career planning; management of family culture and stages of evolution; individual development and career planning; management of family structure, conflicts and relationships; and organizational issues including succession and estate planning, strategic planning and formalizing the firm.

Business and Tax Planning

The course examines common tax-, corporate- and securities-law concepts. Topics include types of business entities; ownership and control; changes in form of ownership; stockholder and partnership agreements; compensation; private placement; purchase and sale of assets; dividends, recapitalizations and redemptions; installment sales; spin-offs and split-offs; public offerings; and mergers and acquisitions.

Management Buy-Outs and Buy-Ins (MBOs and MBIs)

This course deals with buying a small- to mid-sized business as a way of becoming an entrepreneur. It focuses on both the entrepreneurial and financial aspects of MBOs and MBIs.

Marketing for Entrepreneurs

This course emphasizes the attitudes and tools required for bootstrap marketing the start-up firm. It was taught for the first time at Babson College in the fall of 1996.

Venture and Growth Capital: Theory and Practice

This course explores venture and private-equity investing. The central themes of the course are (1) venture capital investing, (2) deals and deal structuring, (3) valuing high-risk, long-term equity investments, (4) creating and realizing value, and (5) the private equity fund as an enterprise. It was taught for the first time at Babson College in the fall of 1996.

Entrepreneurial Field Studies

This is a practical course in which students work independently, with guidance from the instructor, on entrepreneurial projects. Faculty supervise field studies on an ad hoc basis.

CENTER FOR ENTREPRENEURIAL STUDIES ADVISORY BOARD

CHAIR

Paul Firement Chairman and CEO Reebok International, Inc.

MEMBERS

Steven B. Belkin Chairman of the Board Trans National Group

Arthur Blank President and COO The Home Depot, Inc.

Jose M. Bonetti CEO Sociedad Industrial Dominicana

William D. Bygrave Professor, CES Director Babson College

John Cullinane President The Cullinane Group

Sam Farber President OXO International

William Glavin President Babson College

Donald Graham Chairman The Graham Companies

Frederic Hamilton Chairman Broken Hill Proprietary Petroleum

Yotaro Kobayashi Chairman and CEO Fuji Xerox Co. Ltd.

Peter H. Lunder President Dexter Shoe Company

Robert E. Madden Retired S.B.H. Group

Patrick McGovern Chairman of the Board IDG

John C. Merritt Chairman of the Board Van Kampen Merritt Co.

John H. Muller, Jr.
tee Chairman of the Executive General Houseware Corp. Commit-

Junichi Murata President Murata Machinery Ltd.

Fran S. Rodgers President Work/Family Directions

Sachio Semmoto President DDI Tokyo Pocket Telephone

Michie Slaughter President Center for Entrepreneurial
Leadership, Kauffman Foundation

Jeffry A. Timmons Professor Babson College

ENDOWED CHAIRS IN ENTREPRENEURIAL STUDIES

The **Paul T. Babson Professor in Entrepreneurial Studies** was the first chair dedicated to entrepreneurship in the United States. Established in 1980 by the Paul T. and Edith Y. Babson Foundation, the chair brings prominent entrepreneurial academicians and practitioners to campus for a “working sabbatical” and underwrites research projects pursued by the chairholder while in residence as a visiting professor.

Previous Chairholders

Karl Vesper	University of Washington	1980-1981
John A. Hornaday	Babson College	1981-1982
Jeffry A. Timmons	Northeastern University	1982-1984
Albert Shapero	Ohio State University	1984-1985
Rein Peterson	York University (Canada)	1985-1986
Neil C. Churchill	Southern Methodist University	1986-1987
William E. Wetzel, Jr.	University of New Hampshire	1987-1988
Neil C. Churchill	Babson College	1988-1993
Alan J. Grant	Babson College	1993-1994
Paul D. Reynolds	Marquette University	1995-1996

The **Frederic C. Hamilton Chair for Free Enterprise Studies** was established in 1988 to support professors whose academic credentials are matched by their ability to prepare students for successful entrepreneurial careers. The chair was funded by Mr. Hamilton '48, an entrepreneur and co-founder of Hamilton Brothers Petroleum Corporation, who was inducted into Babson's Academy of Distinguished Entrepreneurs in 1983. The current Hamilton chairholder is Professor of Entrepreneurship, William Bygrave. Jeffry Timmons, Professor of Entrepreneurship, was the first professor to hold the Hamilton chair.

The **John H. Muller Chair** was established in 1995 by the trustees of Babson College to honor entrepreneur John H. Muller for his creativity as founder and CEO of General Houseware Corp. and for his extraordinary service to the college as chairman of the Babson College Board of Trustees.

The **Jeffry A. Timmons Chair** was also established in 1995. It was endowed to honor faculty member Jeffry A. Timmons. Director of the Price-Babson Fellowship Program, Dr. Timmons was a pioneer in the field of entrepreneurship education and has remained a leader in his field for over 20 years.

The **F.W. Olin Distinguished Chair in Entrepreneurship** was established in 1995. It was attached to the \$30 million endowment from the F.W. Olin Foundation. The first F.W. Olin chairholder is Jeffry A. Timmons.

CENTER FOR ENTREPRENEURIAL STUDIES: RESEARCH

In addition to the books listed below, the Babson College entrepreneurship faculty's articles and papers and the *Frontiers of Entrepreneurial Research* are also good sources for understanding venture creation, management of growing companies, franchising, family businesses, entrepreneurial processes and entrepreneurial finance (especially in the area of venture capital).

The following books are available by special order and at many full-service bookstores:

William D. Bygrave

Venture Capital at the Crossroads. (with Jeffrey Timmons) Boston: Harvard Business School Press, 1992. Japanese translation published April 1995.

The Portable MBA in Entrepreneurship. Editor. John Wiley & Sons, Inc. February 1994.

Realizing Investment Value. (with Michael Hay, Jos Peeters) Pitman/Financial Times, November 1993. Published in Spanish translation, 1995.

Preparing Financial Statements. Chapter in *Planning and Financing the New Venture.* J. A. Timmons. Acton, MA: Brick House Publishing Company. 1990.

Paul D. Reynolds

Ethics and Social Science Research. Englewood Cliffs, NJ: Prentice-Hall. 1982.

Ethical Dilemmas and Social Science Research. San Francisco, CA: Jossey-Bass. 1989.

A Primer in Theory Construction. New York, NY: MacMillian (17th printing). 1971.

Joel M. Shulman

How to Effectively Manage Corporate Cash. (with D. Dewan, J. Finnerty and R. Kleiman), American Management Association, New York, NY, January, 1990 (adopted by AICPA).

Planning Cash Flows. (with L. Anderson, J. Heptonstall, J. Finnerty and R. Kleiman), American Management Association, New York, NY, June 1988. (adopted by AICPA).

How to Manage and Evaluate Capital Expenditures. (with J. Finnerty and R. Kleiman), American Management Association, New York, NY, May 1988. (adopted by AICPA).

Innovations in Financing. (with J. Finnerty, R. Kleiman and J. Stokes), American Management Association, New York, NY, April 198, (adopted by AICPA).

Leasing for Profit, (with S. Amembal, R. Cox, T. Isom and M. Asom), American Management Association, New York, NY, December 1987 (adopted by AICPA).

A Manager's Guide to Financial Analysis. (with I. Austin and W. Hammink), American Management Association, New York, NY October 1987 (adopted by AICPA).

The Job of the Corporate Controller. (with J. Buckley and G. Troughton), American Management Association, New York, NY January, 1985 (adopted by AICPA).

Jeffry A. Timmons

Venture Capital at the Crossroads. (with B. Bygrave) Boston: HBS Press, 1992.

New Venture Creation, 4th Ed. (Including Teacher's Manual). (with A. Dingee and L. Smollen) Homewood, IL: Richard D. Irwin, 1994.

Planning and Financing the New Business. Acton, MA: Brick House Publishing Company, 1990.

New Business Opportunities. Acton, MA: Brick House Publishing Company, 1990.

The Entrepreneurial Mind. Acton, MA: Brick House Publishing Company, 1989.

Audio Cassette

The Keys to Entrepreneurial Success. (with S. Tyler) Scott/Tyler. 1995.

BAYLOR UNIVERSITY: 1984

THE ENTREPRENEURSHIP PROGRAM AT BAYLOR UNIVERSITY

Donald L. Sexton, Caruth Professor of Entrepreneurship
October, 1984

History

The concept for the Center for Entrepreneurship in the Hankamer School of Business at Baylor University was developed in the late 1970s, when a number of faculty and administrators recognized that business schools in general concentrated on the development of students preparing for entry-level positions in large firms. Recognizing that initiating a new business venture and growing that business into a larger one is a viable career alternative that can provide both monetary and intrinsic rewards that may exceed those in traditional approaches, the educational entrepreneurs instituted the framework for what has become the John F. Baugh Center for Entrepreneurship.

The goals of the Center were relatively direct and straightforward, namely:

- Develop educational programs that provide quality education for the students, delivered in an innovative manner, which will provide proven results of effectiveness
- Provide an outreach program to assist existing business and to assist those persons planning to initiate new business ventures
- Conduct state-of-the-art research to advance the understanding and body of knowledge in entrepreneurship practices and education.

Staffing for the Entrepreneurship Center began in 1979. The balance is history. In 1979, a Venture Assistance Program was initiated to assist would-be and practicing entrepreneurs. In 1980, an undergraduate major in entrepreneurship was developed in the Bachelor of Business Administration program, and an Innovation Evaluation Program was initiated to evaluate the commercial feasibility of new products. Since 1980, these programs have been further developed, expanded and transferred to a number of other institutions both in the United States and in other countries. Additional staff are currently being recruited to incorporate additional programs in the near future.

Recognition of the efforts of the staff has taken many forms. Articles about the aspects of the program have appeared in every major newspaper in the United States and in three other countries as well as in a number of magazines. Several awards and certificates of appreciation have been presented to the staff. Most importantly, the programs have been transferred to a number of other schools providing benefits to students and businesses.

Major Unique, Creative and Innovative Aspects

The major unique, creative and innovative aspects of the Center for Entrepreneurship and its programs are:

1. An active board of directors composed of practicing entrepreneurs which not only directed the general activities but determined what, based on their experiences, should be taught in the entrepreneurship courses.
2. Integration of all of the programs—education, outreach and research—into a network of activities which provides an overall synergistic effect and has enhanced the programs both singly and collectively.
3. State-of-the-art research to enhance the body of knowledge and understanding of the entrepreneurship area and the incorporation of the research findings into the programs, especially in the entrepreneurship-education area.
4. Transferability of the programs to other schools. Innovation-evaluation programs have now been established in seven other universities. Entrepreneurship education programs in 30 to 40 schools have used the Baylor program as a model, and three schools have Centers for Entrepreneurship which have utilized all or part of the Center model at Baylor University.
5. A combination of programs which provide education and assistance at various levels of assistance. For businesses, the programs provide assistance from pre-venture initiation planning through start-up and growth to transition via mergers, acquisitions and family succession.
6. A degree program at the BBA level which utilizes a unique teaching approach comprised of practicing professionals, successful entrepreneurs, visiting professors and the staff of the Center. In 1980, Baylor University and two other schools offered the first BBA-Entrepreneurship majors in the United States.
7. An active advocacy program for small business, entrepreneurship, innovation and entrepreneurship education. The staff of the Center has participated in numerous programs sponsored by the Small Business Administration, the National Federation of Independent Business, the Department of Commerce and many other local and regional conferences.
8. A continuous evaluation of unique or innovative approaches to enhance the overall effectiveness of the programs. As a result of research into the psychological characteristics of entrepreneurship students, the teaching approach for the entrepreneurship courses is being modified.
9. A program of applicability and effectiveness as measured by the businesses and universities that have copied programs developed at Baylor

and the number of graduates that are now operating businesses either as owners or partners.

10. A program that is innovative in its approach to teaching entrepreneurship and unique in the fact that the combination of outreach, research and courses provide a truly synergistic effect.

Board of Directors

Many programs have a board of directors that provide various levels of assistance. Some are ceremonial, only for public relations purposes. The unique feature about the board of directors for the entrepreneurship program at Baylor is in degree of input and level of effort. Prior to the establishment of the programs, the board determined what programs should be pursued and what approach should be taken in the development of the program. The board provided extensive input to the content of the entrepreneurship courses. Practicing entrepreneurs with business degrees know what concepts and applications are important in their own businesses, plus they are also aware of those concepts or techniques which were either missing or should have received more emphasis in their own educational experiences.

The board has continued to play an active role as speakers in the classes, role models for students and assistants to graduates of the program on various business matters.

Integration of Programs

The overall objective of all the programs is to provide research assistance to businesses that can be utilized in the educational courses for the students. It is a philosophy and belief of the Center staff that the students' learning process is enhanced when an opportunity is provided for the students to test the applicability of the concepts in real-world situations.

The two-year duration of the program is such that the students oftentimes have the opportunity to see a product on which they conducted the market analysis and developed the business plan culminate in a business venture that is manufacturing and marketing the product. In other cases, they have seen an existing business develop from a small, marginal one into a growing and profitable organization.

All students majoring in entrepreneurship have a requirement to develop a business plan for their proposed venture or for an expansion of a family business. Two students now have retail operations in multiple cities and another recently acquired a marketing organization to enlarge a catfish farm which was initiated upon graduation-based upon the business plan he developed as a student. For others, the development of a business plan showed that their proposed venture would not be viable.

Contact with the students does not end with graduation. The staff is frequently consulted by graduates for advice on acquisitions, operations, expansion or proposals by others to purchase their businesses.

The integration of the programs and their interrelationships is such that it is difficult to describe. The charts in the Appendix of this report show more clearly how the programs contributed to the Center activities and to each other.

Examples of Transferability

Interest in entrepreneurship programs, both in academe and in industry, continues to be high and does not seem to be abating. According to a recent report by Dr. Karl Vesper of the University of Washington, 253 colleges and universities now offer one or more courses in entrepreneurship. Judging from the frequency of letters and telephone calls that the Center receives for information and assistance in establishing courses and programs, the number may increase substantially within the next few years.

It is the belief of the Center that the needs of students and entrepreneurs across the nation are far greater than the supply of programs and courses available to serve these needs. Consequently, we have been and continue to be, willing to assist as needed. The Center has been visited by faculty from more than 50 universities within the United States and from Australia, Ireland, Switzerland, England, Columbia and Mexico to review our programs and to discuss their applicability to their schools. In addition, the staff has visited, talked with faculty, students, administrators and business persons at five colleges and universities. Approximately 50 letters or telephone calls are received each month requesting information, advice and other forms of assistance on transferability of the programs.

The University of Arizona's newly established program follows the Baylor model. Innovation Evaluation Programs have been established at the University of North Dakota, University of Missouri-Rolla, the University of Western Florida, University of Alabama-Huntsville, Louisiana State University and the University of Arizona as a result of reprogramming the Innovation Evaluation Program for use on the IBM personal computer.

In addition, a number of businesses, including Control Data Corporation, have modified the Innovation Evaluation Program for the evaluation of internally generated products.

In recognition of the Center's efforts, the Small Business Administration has awarded the staff with two regional Innovation Advocacy awards and a Certificate of Appreciation from the national office in Washington, DC. Certificates have also been received from the Department of Commerce and the Minority Business Development Agency for assistance to others in their efforts to establish entrepreneurship programs.

The results of the transferability entrepreneurship program are reflected also in the improvement in profitability of many small businesses, the introduction of new products into the marketplace and the initiation of new business ventures by graduates of the program. Specific examples of the transferability of each program are delineated in the description of the programs in the following sections.

Outreach Assistance at Various Levels

Students are provided the opportunity to gain practical knowledge by working with businesses at all levels from the “cradle to the grave.”

In the Venture Assistance Program, students assist would-be entrepreneurs with pre-venture planning, start-up problems, consulting on a myriad of operation problems, product and business expansions and, in some cases, on terminations or bankruptcies.

Although students are not involved in the evaluation of new products in the Innovation Evaluation Program, they are taught the evaluation approach and do conduct market analyses, evaluate distribution strategies and develop business plans for firms to market and manufacture the new products. One student currently in the program is negotiating a licensing agreement for a product for which he developed the marketing and business plans. Upon graduation, he will initiate the venture to produce and market the product.

It is the belief of the Center that the students' learning process is enhanced when that student is provided the opportunity to test and evaluate the application of the concept in real-world situations. Further, the student is provided the opportunity to experience situations in a “hands-on” environment which will be essential to the success of his/her own venture. The student is also afforded the opportunity, under these conditions, to develop “street sense” related to industry practices and to develop contacts with suppliers and customers prior to entering the business world. With this approach, the effects of “baptism by fire” are minimized.

The transferability of this program is a two-way street. The students assist and learn from the business experiences, and the businesses are assisted by the students while imparting knowledge to them.

One of the major innovative aspects of this program lies in the fact that a normal Small Business Institute program has been expanded to include pre-venture planning for businesses that do not currently exist. The impetus for this aspect lies in the belief that many small businesses fail because the venture was not viable from the beginning, and the development of a business plan, if this is the situation, will reveal this condition prior to initiation of the new venture.

Unique Teaching Approach

Both the undergraduate and the graduate entrepreneurship courses are taught by a combination of resident faculty, visiting faculty, practicing professionals and successful entrepreneurs.

The visiting faculty are persons that have a proven track record of research, teaching and business experience. Under the funding provided by the Schoen Visiting Professorship, notables such as John Komives, Karl Vesper, Bob Brockhaus, Cliff Baumbach and John Welsh have taught entrepreneurship courses at Baylor. More recently the funding has been used to invite a number of distinguished faculty to teach specific topics within a course.

Successful entrepreneurs speak frequently to the classes to provide a role model for the students. Research by the Center staff on the lifetime experiences of entrepreneurs has shown the presence of a role model to be the single most important factor in new-venture initiation. A couple of the more notable entrepreneurs who have addressed the students are the late Herman Lay, founder of Lay's Potato Chips and later Chairman of the Board of Pepsico and David Thomas, founder and Chairman of the Board of Wendy's.

The use of practicing professionals to teach sections of the class is one of the more distinctive aspects of the courses. The field of entrepreneurship is changing rapidly, as are the economic and regulatory environments. Given the fact that two years are required to publish a textbook, the student may receive only outdated information. Practicing professionals bring to the classroom the latest techniques and practices, provide a depth of coverage not offered by full-time faculty and provide the students contact with those persons who may be of assistance in the initiation of their ventures.

Many classes use one or more of the above approaches. However, the Baylor approach is one that was developed based upon research and rationale to provide the best educational process.

Advocacy Program

It is often stated that entrepreneurship has grown, much like a weed, without care or nourishment. Recognizing that the field is often maligned and misunderstood, the Center has devoted its efforts to a continued advocacy program. While the program's intent is not to serve as missionaries, it is designed to educate others in the role and benefits of entrepreneurship to the economic well-being of the country.

The speeches and presentations made by the Center staff are too numerous to list. However, worthy of note are the recent invitation to appear before the House of Representatives Banking Committee to testify on HR4718, "the Entrepreneurship Act," the Certificate of Appreciation and Innovation Advocate of Appreciation and the Innovation Advocate of the Year Awards by the Small Business Administration.

Continuous Evaluation of Innovative Teaching Approaches

A research paper entitled "Entrepreneurship Education: A Plan for Increasing Effectiveness" was published by the Center staff in the April 1984 issue of the *Journal of Small Business Management*. This paper reported on research efforts directed toward determining the differences in psychological characteristics between entrepreneurship majors and other business students. The findings of the research showed that entrepreneurship students are significantly different from other business students in that they tend to remain calm in stressful situations, do not go along with the crowd and do not enjoy restraints or restrictions. They are also capable of original thought and novel solutions to problems, especially under conditions of ambiguity and uncertainty and they enjoy situations with uncertain outcomes which are new and different with some degree of danger and risk.

Based on the findings of the research, the teaching approach in the classes was changed to one that is not overly structured or burdened by non-essential constraints and one which required novel solutions under conditions of ambiguity and risk. This, of course, is a modification of the typical case analysis, pedagogical approach.

Further, since entrepreneurship students prefer independent efforts and do not seek group consensus, individual case analyses rather than group cases are assigned. The adventuresome aspects of the students are served by working with existing or would-be entrepreneurs. In these situations, the students are thrust into somewhat ambiguous situations, where the outcome is dependent upon their ability to make decisions in the present, using past or incomplete data, which will affect the future of the organization.

Based upon the research conducted by the Center's staff and upon the application of the findings of the research in classroom methodology it can safely be said that unique students deserve and respond positively to unique and innovative approaches in the educational process.

Applicability, Effectiveness and Transferability Summary

A program that is not applicable to different situations, that does not represent an increase in effectiveness or that is not transferable to other schools, even though unique and innovative, does not contribute to the overall effectiveness of education as a field of endeavor.

The applicability of the research and outreach programs to the educational aspects has been discussed earlier in this paper. The effectiveness of the program has been exemplified by the impact on students and businesses and by graduates' initiating new ventures. The transferability of the program has been demonstrated by the number of schools that initiated Innovation Evaluation Programs

and the number of colleges and universities that have used the research, course content and delivery mechanisms in developing their own courses or centers.

Innovative and Unique Aspects

The entrepreneurship program at Baylor University is innovative in many respects. The fact that it, along with two others, was developed as an entirely new major within a business school is innovative in itself. Other innovative aspects include the application of research findings into teaching approaches which directly apply to the psychological characteristics of the students and the utilization of a mix of instructors based not on the needs of the faculty but upon the needs of the students.

Many of the aspects of the entrepreneurship program at Baylor are now in use in other universities. Further, other schools have programs that provide more depth in certain areas. However, the most unique aspect of the operation is the concentration of a wide variety of programs in an attempt to provide quality research to add to the understanding of the field of entrepreneurship, quality assistance to would-be and existing entrepreneurs and quality education for entrepreneurship students.

Problem Areas

In order for others to build on the program started at Baylor University, it is necessary to include a discussion of those aspects which were effective, those which were not effective and those things which we feel would have had a positive impact on the program if they had been implemented.

Throughout this report, the positive aspects of the program have been presented. However, with regard to external affairs, some additional information should be provided.

First, interest in entrepreneurship among academic institutions is high and appears to be growing. In 1980, Karl Vesper reported that entrepreneurship courses were offered in 163 colleges and universities throughout the United States. A follow-up study in 1984 showed the number of schools offering entrepreneurship courses had grown to 260. Further, an additional 61 schools are planning to initiate entrepreneurship courses in the near future.

Second, interest in entrepreneurship programs among businesses, as expressed by monetary gifts to establish centers and endowed positions, is also growing rapidly. Five years ago, there were fewer than five endowed entrepreneurship positions. Today, that number has grown to approximately 30, with the demand for candidates to fill these positions exceeding the supply of qualified faculty.

Interest in the media is also high. Articles about the Baylor program have appeared in every major newspaper in the United States, in those in a number of

other countries and in a number of magazines. The total circulation of articles describing the Baylor program is in excess of 30 million.

Finally, the federal government appears to have recognized that entrepreneurial ventures, not small businesses, are the major factor in creating new jobs. Consequently, attention is being transferred from small to emerging (entrepreneurial) firms.

Delineating the positive aspects of an entrepreneurship program is not useful without a discussion of the obstacles which must be overcome in building a program and a consideration of those efforts which did not contribute to the overall success of the program.

One obstacle which must be overcome is that many academics do not make a distinction between entrepreneurship and small business. For a number of schools, the small business course is one that was initiated in an effort to obtain SBA funding for a Small Business Institute. This course was often staffed by lecturers or faculty that were being "put out to pasture."

This negative aspect can be overcome by distinguishing between small business and emerging businesses. Carland and others provided a conceptual distinction in the April 1984, issue of the *Academy of Management Review*. In their distinction, a small business is one that is "independently owned and operated, not dominant in its field and does not engage in any new marketing or innovative practices." An entrepreneurial venture, on the other hand, is one that has "the principal goals of profitability and growth and is characterized by innovative strategic practices."

When the distinction is made, academics tend to equate the entrepreneurship area with the business-policy area. Further, the development of entrepreneurship as an academic area of study closely resembles that of business policy about 10 years ago.

The attitudinal problems suggest that the control of the program must rest with the person responsible for its success and not with a committee or an administrative officer who has other priorities.

Further, it must also recognize that working with practicing entrepreneurs, speaking to groups and answering letters from others interested in the area requires an inordinate amount of time—time that would normally be available for university service or some other area of importance in the promotion process. Entrepreneurship programs enjoy the most success in schools where service to the business community is as important in the promotion and tenure process as in other areas.

Another area which requires a proportion of effort larger than the return is an entrepreneurship summer-intern program. Baylor University initiated an intern-

ship program early in the development of the program but discontinued it after two years. The administrative effort required to support the internship and the less-than-desired level of interest among students and practicing entrepreneurs did not justify the continuance of the program. The concept of a summer-internship program has merit and can be effective if the staff is sufficiently large to support the program. Unfortunately or fortunately, depending on one's point of view, other areas normally force themselves into positions of higher priority.

A frequently asked question is, "What would you do differently or what would you like to have done that you did not do?" One area worthy of consideration is a venture-assistance fund to provide capital, either as equity or debt, to students and graduates of the program who need limited funds to initiate businesses for expansion purposes. A number of schools have had venture assistance funds to invest in selected companies. Contact with these schools showed that the programs failed due to poor investments or a lack of interest over a period of time. By limiting the investments in firms initiated by students or graduates of the program, a large pool of funds is not necessary, nor will it become a project which requires considerable time to manage the investments.

Most businesses start with and suffer from a lack of capital. Entrepreneurship programs tend to grow much faster than most people anticipate. Consequently, they tend to suffer from a lack of staff. The requests for information, assistance, etc. seem never-ending. If resources were available, it is suggested that a long-range plan be developed and staff acquired at the onset. In this manner, unanticipated growth can be handled more efficiently without adjusting priorities in mid-stream.

In the fall of 1985, the entrepreneurship program at Baylor was changed from four separate, three-hour courses to one three-semester-hour seminar and two courses of six semester hours credit each. The first course addresses the concepts, techniques and problems associated with pre-venture planning and new-venture initiation. The second course is directed toward rapid growth and business-transition stages of the firm. In these new courses, a number of the class sessions will be taught by "practicing professionals." The general format will be one of faculty providing the conceptual aspects in one session, followed, in the next session, by a person practicing in the field. It is expected that the learning process will be enhanced by a "real world," "how to" approach with regard to the application of the conceptual material.

Two other research areas which will be addressed in the near future are venture capital and family business succession.

Summary

Throughout this submission, an attempt has been made to describe the activities and programs of the Center for Entrepreneurship in the Hankamer School of Business at Baylor University. The Center actually represents a unique combination of a number of innovative programs directed towards research, outreach and education in entrepreneurship.

Not so unique, but clearly a major contribution to the success of the program, is a dedicated staff, possessing the psychological characteristics attributed to entrepreneurs: remaining calm in stressful situations; enjoying work with limited restraints and restrictions; capable of original thought and novel solutions to problems; enjoyment of situations that are new and different which have uncertain outcomes; and, above all—dedication.

BAYLOR UNIVERSITY: 1997

THE DIRECTOR AND THE SCHOOL

Nancy Upton, Director, John F. Baugh Center for Entrepreneurship and Ben Williams Professor of Entrepreneurship, Baylor University, Waco, Texas.

Description

The John F. Baugh Center for Entrepreneurship administers the curriculum for the BBA in Entrepreneurship and MBA concentration. The Center develops and disseminates outreach programs for entrepreneurs, inventors and family firms.

Mission Statement

The Entrepreneurship Program at Baylor University will be a leading resource for developing and perpetuating the entrepreneurial spirit. This will be accomplished by developing and delivering innovative, experiential curriculum, participating in scholarly activities which expand the field and our understanding of it and by providing practical resources to entrepreneurs and family firms who want to grow and succeed.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

Baylor University has 10,500 undergraduates and about 2,000 graduate students. This typically includes students from all 50 states and approximately 70 foreign countries. The curriculum includes 155 baccalaureate programs, 78 master's programs and 16 doctoral programs. The Education Specialist degree is offered by the School of Education, the Juris Doctor degree is offered by the School of Law and the Master of Divinity is offered by the Truett Seminary. Chartered by the Republic of Texas in 1845, Baylor is the oldest university in Texas. The 432-acre main campus adjoins the Brazos River near downtown Waco, a central Texas city of 110,000. Approximately a quarter of Baylor's 12,000 students are enrolled each year in business courses. The Hankamer School of Business has received international recognition for its programs in entrepreneurship, accounting and professional sales.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

Our outreach programs extend throughout the state of Texas. In addition, we deliver entrepreneurship and family business succession seminars throughout the United States. Within Texas, our FastTrac programs attract clientele to Waco from Austin to Dallas/Ft. Worth. Our family business programs are located in San Antonio, serving South Texas; Irving, serving North Texas and Southern Okla-

homa; and Waco, serving Central Texas. Our students represent every state and about 70 countries. We have programs for start-ups, growth firms, inventors and service professionals.

STATISTICS ABOUT CENTER/PROGRAM

Year Started

In the middle '70s—about 1975—Richard Scott, who was Dean of the Business School and Justin Longenecker, who is perhaps one of the best-known small-business management authors, had some input from alumni that we needed to be doing something in the private enterprise/entrepreneurship area. It was pretty forward thinking.

The Center for Entrepreneurship was then established in 1977, with the primary focus being teaching. The first graduate course was taught then, and the undergraduate major was established two years later. In 1977, we received the E.M. and Thelma Stevens Chair of Private Enterprise and Entrepreneurship, one of the first chairs of its kind. That year we also received the Schoen Lectureship Series endowment. We received another chair in 1978, two more in 1979, one in 1984, one in 1987 and the latest just this year. In 1988 Mr. and Mrs. John F. Baugh endowed our center.

The Center actually begin as the Center for Private Enterprise and Entrepreneurship and was co-directed by Cal Kent and Don Sexton. However, the Private Enterprise side took a turn toward education for K through 12, and the Entrepreneurship side took a turn the other way. In 1984, I believe, the two split, and Cal took the Center for Private Enterprise and Don took the Center for Entrepreneurship.

Faculty and Staff

Today there are seven chairs in Entrepreneurship. We have six faculty engaging in teaching or research. In addition we have two adjunct faculty engaged in teaching. We have a research fellows program in which faculty at other universities are named as research fellows of the Center for Entrepreneurship. This year Dr. Michael Hitt, who is at Texas A&M University and President of the Academy of Management, is a research fellow of the Center for Entrepreneurship. In addition, we also have teaching fellows—Dr. Sam Lane, out of Ft. Worth, is a teaching fellow for us this year and he is doing family business seminars for us in San Antonio and North Texas.

Center staff includes a full-time program coordinator and a secretary. In the Institute for Family Business, which is part of the center, we have a program director, a program coordinator and an assistant director. We also have a full-time

receptionist. Another program we have, the FastTrac program, has two instructors and six counselors. I think that's all the staff and faculty. We are bringing on a new tenured-track faculty member in the fall. That will give us seven faculty members teaching and doing research in entrepreneurship.

Funding

Endowments

The program was built around the chairs and the support of the dean of the Hankamer School. Several outreach programs also contribute to operating funds. In addition, we are pretty aggressive in seeking grants and training contracts. The seven chairs buy release time for the faculty, and staff support is provided by the Baugh endowment. We are currently trying to endow our Institute for Family Business at \$1 million minimum. The endowment is important in that program because it depends heavily on corporate sponsorship. The entire endowment of the program is probably around \$10 million.

THE COMPONENTS OF YOUR PROGRAM

Outreach

All components of our program are critical and interactive for students, entrepreneurs and faculty. Both students and our research outcomes influence the curriculum; our students become involved in the outreach and research through our programs. Finally, a number of our research projects are possible only because of our students (e.g., education articles) or our outreach programs (e.g., venture capital). So it kind of all works together, and it was planned that way.

The Institute for Family

The Institute for Family Business was initiated in 1987. In 1989 we had our first national conference and began distributing our newsletter, *Legacies*. Today it has a quarterly distribution of about 7,000 recipients. We provide it free-of-charge to Texas residents and at a small cost to ones out-of-state. We have three family business seminar series. One is in San Antonio and is co-sponsored with St. Mary's University. One is here in Waco, and it's a breakfast series. One of the unusual things about the Waco series is that we donate 10% of all revenues to a local charity, a family-oriented charity. And then we also have another one up in the North Texas area. The purpose of these seminar series is educational in nature, to help families grow their firms and then successfully transfer them to the next generation. That's a very big program. In addition we have the Texas Family Business of the Year[®] program, in which the governor declares it Texas Family Business Day and we give awards to outstanding family firms in Texas. And we

have an annual conference that is open to anyone in the United States. There are also special programs we do such as family business retreats—things like that.

The faculty and staff involved with the Institute have been instrumental in developing and growing the International Family Business Program Association (IFBPA). We've taken board positions in that organization in an effort to influence family business education and research at an international level. So that's a pretty major piece of the Center for Entrepreneurship.

Entrepreneurial Training

A major area of outreach for us is training for business start-ups and growth-oriented firms. Our first program is something called "First Step." This is a very short course which gives you the basics of what it takes to start a firm. We have developed a book for it entitled "How to Start a Business in McLennon County." People who take that course and want to go to the next one can go on to FastTrac I. FastTrac I is a course for individuals who think they want to start a business and is based around a feasibility analysis. And then we also have FastTrac II, which is for existing businesses that want to grow. That's an 11-week course based on a strategic plan. Both of these were developed in conjunction with the Kauffman Foundation who provides support for it. Baylor considers the FastTrac programming continuing education, and participants can receive CEUs. Since it is a cooperative program with the city of Waco and the Chamber of Commerce, we teach the course at a variety of locations, including the convention center. These programs have been very well received.

Innovation Evaluation Program

This is one of the few innovation programs left in the nation that still evaluates everything from ideas to patented inventions. We have evaluated about 2,000 ideas, and several have done quite well. After the first 1,000, we surveyed the inventors as to the efficacy of the program and published the results of that.¹ The program is very effective and a cost-efficient way to evaluate your idea. If the individual inventor wants us to go further, we can help them develop a prototype, find a patent attorney and get a patent or help them develop a marketing plan.

The Business Resource Center

The Business Resource Center is a cooperative program founded in 1987. It is a joint effort of the City of Waco, Baylor University, McLennon Community College and Southwestern Bell. The Business Resource Center is a one-stop shop for small businesses, including an incubator and business-information center. We found ourselves inundated with requests for assistance from small businesses. We didn't have the time or inclination to devote ourselves full time to the small

business area. We found that their needs are different from our start-up and growth-oriented entrepreneurs. So we helped form the BRC and incubator off campus. We support at the advisory-board level, through student interns and program development. Our students work with the incubator firms, and we help get companies into the incubator. There is a business-information center that has computer and Internet access and a library—anything a business might need. There is a micro-loan program there, and we do some educational programs out of BRC.

Venture Capital Consortium

We have access to a database of venture-capital sources, including about 200 Texas venture capitalists. We provide students to perform research for these firms or for their portfolio companies. In addition, we perform research of interest to the venture capital industry. We maintain for our alumni a database of funding sources and facilitate alumni reaching venture capital when needed.

Internships

The other things that we do for entrepreneurs include—and again this gets back to integrating the students into our outreach programs—providing interns for companies if they need specific projects. We can help companies through classwork and put students with companies to help them develop a business plan.

Technology Transfer

We are involved right now with a technology task force, comprised of individuals from the City of Waco, the Chamber and various educational and corporate entities, which is interested in developing a new incubator at Texas State Technical College. This will be more technology oriented than our current incubator. In addition, a member of the task force is putting a distance-learning classroom at our School of Nursing in Dallas, and we plan to offer courses through that site.

Corporate Training

We do quite a bit of training for corporations, trade association and franchise organizations. Right now we are developing an executive-education program for a major hospital system in Texas. That is a very big project for us right now, as we will be training about 12,000 employees. Most of the trade associations are finding that their members are family-owned firms who need access to management and succession resources.

Research

Research has always been an important component of the Baylor program. In 1980 Baylor hosted the first Entrepreneurship Research Conference. The proceedings of that conference were published as the well-known *Encyclopedia of*

Entrepreneurship. In 1981, Baylor co-hosted (with the National Federation of Independent Businesses and the International Council of Small Business) the first Entrepreneurship Education Conference as a follow-up to the 1980 conference. The attendees read like a “who’s who” of entrepreneurship. The proceedings are still available and have papers concerning entrepreneurship education written by scholars such as Vesper, Brockhaus, Kourilsky, DeCarlo and Lyons, Schell, Hornaday, Mitton and Brophy.

In determining research interests, the six chairs in entrepreneurship develop research agendas that deal with their areas of interest. In addition we usually have at least one research fellow associated with the Center. Every year the faculty who hold the chairs in entrepreneurship meet and discuss their research strategies or their research agenda. Bill Petty’s interest is primarily finance oriented. I have worked with him some, and we have done some research into banking and entrepreneur/banking relationships; and we are looking at venture-capital right now—venture-capital funding of family-business transition.

Dan Jennings is more interested in corporate venturing and in case development. Kent Gilbreath is more interested in international issues. Ray Bagby is interested in individual entrepreneurship and cognitive issues, and he co-authors with an individual in the management department. Michael Hitt is working with Duane Ireland on a project for the Kauffman Foundation on fast-growth entrepreneurial firms and performance indicators. My own interest, besides working with Bill Petty on venture capitalists, is family business. So part of our research philosophy is to try to take the interest of the individual and encourage them to work with others. It is important to get other people interested in entrepreneurship research. The Center then facilitates the chairs and research fellows, research in whatever manner is appropriate. We might provide database access, assist in grant writing or provide staff support.

We work very hard in the Center to assist in attracting grants. If one of the chairs comes to the Center and says, “I am interested in doing some research in a certain area,” then we will help him or her develop the grant to seek the money to help him or her fulfill that research. Developing a research agenda and getting it funded takes a minimum of 12 months and a maximum of two years (from grant to final publication). The ultimate goal is presentation of material at conferences and publication, and we always try to look for things that have practitioner implications.

So not only is it good research, but it is practical. It is applicable to entrepreneurs. Part of our strategy of integrating entrepreneurship into the curriculum is also at the research level, and we would like to involve more people in doing research. In fact, I have a person who is getting a Ph.D. in education and who is actually going to do his dissertation in the area of mentoring the next generation in the

family business. And so that is part of our process, too: to find people in other areas—sociology, psychology, gerontology—and show them that there are some overlaps between entrepreneurship and business and opportunity seeking in their own field.

Entrepreneurship Research Consortium

We are a member of the ERC. Ray Bagby and *ET&P* represent the university in that group.

Journals

We have two journals: *Journal of Small Firm Finance* and *Entrepreneurship Theory and Practice*. Bill Petty and Ray Bagby are the respective editors. This has brought us quite a bit of recognition...I think everyone knows Ray, for sure.

Curriculum

The first course in entrepreneurship was taught in 1977. We offered our first graduate class in entrepreneurship, and then in 1979 we offered a major in entrepreneurship—one of the first in the nation. And our first graduating class with a BBA in entrepreneurship came out in 1981. I think the curriculum evolved as it does in many entrepreneurship programs. It started with a small-business management-type course that evolved into a venture-initiation course over a period of time. We started doing the SBI course in 1979 and continue that today but in conjunction with our FastTrac, not the SBA.

At that time Don Sexton was helping to create the curriculum, and he took a life-cycle approach to the curriculum². In fact, we had a number of articles published about our curriculum and I think a number of universities emulated that curriculum—the life-cycle approach. Don and I taught the entire curriculum in two six-hour modules. The first six-hour course had to do with venture initiation and the beginnings of growth, and the second half had to do with growth and harvest. So basically we looked at taking the company, from start-up all the way through the harvest and examined the components of that process. Each class was three hours long. We would present a concept in lecture or case format and then provide a guest speaker to illustrate it. It was very dynamic and experiential.

The curriculum today is still based on that model. We still have a venture-initiation course. That is the course where the students actually start companies. I don't know how many other universities actually do that. Every year the students start between 15 and 20 companies. These are *actual* companies. One of the things that is kind of exciting about it is that, of the businesses that have been started in that class, about a dozen exist today. There are half a dozen of them that have sales between \$5 million and \$25 million that were actually started in that class. I think that is a good experience.

You can see that our curriculum is experiential. We try to involve the students not only on the level of theory and research but also practice. After Venture Initiation, the majors take a skills and behavior course. This class involves role modeling, presentations and trying to gain the skills necessary to be an entrepreneur—oral and written communication, decision making, team building and leadership—those types of things. We are very finance-oriented at the undergraduate level and require a Venture Finance course. And then the final course is a practicum field-experience course, where students work with an entrepreneur. In addition, we have a number of electives, including an internship program. That's at the undergraduate level.

At the graduate level we have an MBA concentration. The primary focus of the graduate program is not on venture initiation but on growth and harvest. What we have found from our MBA students is that they want to go into a company—not necessarily start it up—but go into a company and perhaps take an equity position and help grow the firm. So, we are focused more on growth issues and harvest issues at the graduate level and less on actual venture initiation.

We are making an effort to integrate the curriculum within the business school, with the engineering school and with the Seminary. At the undergraduate level within the business school, we are reevaluating the core and may offer a one-hour module on entrepreneurial behavior and opportunity recognition. The School of Engineering would like us to work with the Marketing Department to develop a three-hour course for their graduates. Topics would include entrepreneurial behavior, business formation, team building and the process of taking a product to market. The Seminary is interested in the skills pastors need when starting a church or growing one. So, there are quite a few opportunities to cross-pollinate curriculum.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

I know there has been a lot, or some, discussion over the past decade about how to define a center or program. A lot of that goes back to the fact that there are centers that have one person in them and administer one course. And people are saying, "Well, that's not really a center or a program." In addition, when that one person leaves, the program ceases to exist.

So I would define a center or program as having the components we just talked about. It's got to have a number of people working there, faculty and staff. I don't know what that magic number would be, if it is three, four or five. They should have a full curriculum, an active research component and an active outreach component to really have a program, and then have all three of those interacting with each other.

The program should, in time, participate in activities that expand our knowledge of the field and others' awareness of it...perhaps a public-policy arm.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?

Support from the Dean, President and Academic Community

Support from the top is critical...whether is it the dean, provost, president or trustee. You should have as much support from the top as you can get. Then, try to get the support of the rest of the academic community. Sometimes that is difficult to get because you are not seen as mainstream academic people. A lot of people have said in the past that entrepreneurship should be integrated into all courses and not be taught at all or entrepreneurship is just part of the strategy. It is not true. It is an academic discipline. And so there may not be as much respect in some schools for it, but you need the support of your colleagues.

Support of the Community and Alumni

You need the support of the community, your chamber of commerce, your city economic-development unit—all of these people can help you. You need the support of the students and students who want to participate and take the courses, and alumni. I think all the stakeholders that you find in any area are important. Perhaps current students are the most critical ingredient because they are our main mission.

Champion

You can't overemphasize the importance of a champion—someone who is going to dedicate a lot of time and effort to developing your program and center.

REASONS TO START A CENTER OR PROGRAM

There are a lot of people considering starting one today, and one of the reasons I think they start one is because entrepreneurship is an economic reality. You're going to have demands from students, because entrepreneurship has evolved beyond the definition of "Well, it's starting something...it's starting a business." That's not what entrepreneurship is. Today, it is seeing that entrepreneurship is in everything. Entrepreneurship has to be in your government, in nonprofit, in universities and what it is, is (to borrow from Stevenson) identifying opportunities and gathering the resources to exploit them. You can do that in any career. I think you start one today because you want to gather the resources to give your students, your alumni and your community the skills to be more successful. Communities need entrepreneurship because it is the entrepreneurs who are providing the new jobs. So it's good to start one as a resource for economic development.

I do think that entrepreneurship is becoming more universal and that it is not something just to put into a business school and then forget about it. It could be a center that can be of use to the entire university.

Another reason to start one today is that there is a lot of money out there. Entrepreneurs have a lot of money, and deans know that it is easier to fund a center for entrepreneurship than it is a music school, because it is the entrepreneurs who have gone out and made all of that money and then want to give back and help the individuals who are going to be doing the same thing they did.

HOW WOULD YOU START ONE TODAY?

People

You've got to have a champion, and it is hard now to find the right person for entrepreneurship. Most programs want the academician who can teach and do research, but they also want someone who can interact with the entrepreneurs. It is difficult to find someone who has that entrepreneurial experience or that background to understand the entrepreneurial process and who also happens to have a Ph.D. and can publish and teach.

If you can't find that person, you are going to have to build a team with someone who is committed to the students and wants to teach entrepreneurship, but who will also interact with the community and help in that development, as well as put up with the bureaucracy that is inherent in a university system. And that is atypical: You've got this Renaissance person you are asking to be an entrepreneur, because to run an entrepreneurship center is entrepreneurial. You have got to be an entrepreneur and create new programs and constantly innovate new curriculum and yet do it within a bureaucratic structure. So, it is not easy. But you need that person. I think the most important people that I have are my two program coordinators—Maurene and Bob. They literally do all the work and maintain attention to detail. Bob puts on 35 seminars a year all over Texas plus coordinates newsletters and the Family Business-of-the-Year program and is a good detail person as well. It is the same thing with all of the programs that Maurene runs. And they are not faculty. They are executive staff.

So part of a trend might be moving away from faculty actually running these programs and instead having professional staff run the program, with faculty input to make sure they are theoretically sound, maintaining their academic integrity and that the content of the programs is influenced by state-of-the-art research. And this is new for Baylor. Up until two years ago, the faculty was actually responsible for running all those programs. It's the synergy. For example, think about the research that we are going to be doing in the area of mentoring and family business. Although a common anecdotal response in family firms is to suggest a mentoring relationship, there is literally no research to support doing

so. When John Boyd finishes his dissertation on mentoring in the family firm we will take his results and then funnel that into Bob's family business programs. For example, we would do a seminar on mentoring and we have a monograph on mentoring, so you can see how it kind of funnels and both sides can work together.

I think the job of the center director is bringing those two sides together and the person doing the dissertation could not do it without Bob's family businesses. And Bob's family businesses are going to benefit from the work that John Boyd does. So it could be that you are looking for that person who can balance those two things.

Money

It depends, I guess, on the philosophy and how big you want to be, etc. To do a really good job with a center means that you have to have a center director, staff and programs. Not all of your programs are going to make money, and yet they are still providing benefit to the community. I think your minimum money to run a large center is going to have to be about \$10 million in endowment, and there are a lot of people running centers with \$500,000 in endowment, or \$1 million in endowment and they limp along and are constantly seeking money.

If you have \$1 million, then you are getting about \$60,000 a year and you have got to have a secretary and travel support, and centers pay for everything. It is difficult. So, what you are trying to do is get your center endowed for \$5 million and maybe pick up two or three chairs at \$2 million a chair, and that would do it. Obviously, you could do it on a shoestring if the school, college or university would pick up some of the expenses. Baylor put up all of the money for a number of years to get us started. So, if the school will give you the support while you seek endowment, you could start a program with no money.

How do you do that? Just start teaching a course, and from there you may do some outreach with a student club and you can do it on a shoestring. And then, as you are becoming successful, perhaps you can attract an entrepreneur and start funding your program.

Advisory Board

I think they are critical for a number of reasons. First, you are going to need some support. If you are going to start a center, you are going to need support from the academic community and from the business community. You are going to want everything from guest speakers to money. So you get as high a profile advisory board as you can and that gets the attention of your dean and your president and your community. You have them help you on strategy and on fund

raising and have them reality-test every one of your ideas and help bring to the academic setting some professionalism and some business experience. I think it is critical. The advisory board probably plays a different role in the center or in your program as your program evolves. The advisory board that you pull together when you are initiating a center or program is probably going to be a little different than the one taking care of the maintenance or growth stage, because you are going to want them to help you raise money, where later that may not be an emphasis. You are going to want something else.

It is critical to gather one together and then work them hard. We used the advisory board when the program started here to help us determine what should go in that curriculum; what's important for those students to learn. And we used them to decide what kind of program we should be running. Today our advisory board has three strategic elements: one that is concentrating on global issues and our international curriculum, one on family business and endowing the Institute and one on general strategic planning and growth areas. So the three subcommittees are helping us in those three areas as we expand in those areas.

ANY OTHER SUGGESTIONS FOR THOSE TRYING TO START A PROGRAM?

Departmental Status

I believe that entrepreneurship will never have academic credibility until we have our own departments. We don't even have a seat at the table when it comes to curriculum decisions or budget discussions. A critical success factor for longevity may be one, that we attain that academic credibility and two, that you build a team of staff and faculty that spans colleges and disciplines.

Build Relationships Across Disciplines

Finally, work hard to make everyone understand what you are doing and how it benefits not only the institution as a whole but also how it can benefit the various stakeholders. It makes for a lot more work but it is important in the long run. The worst thing to become is either prima donna or an island of your own.

Marketing

One thing we didn't talk about is marketing. How do you market your program or center? And you are going to have to market. You are going to need a state-of-the-art brochure and some type of communication vehicle, whether it be a newsletter or a web page. And hopefully you can use your in-house and university public relations because you need to be newsworthy within your own community, region or state. You will have to market your center or program just the way you market a business, so you can attract students and entrepreneurs; it does make a difference.

The web page is very important. In fact, we have a lot of queries about our program from potential students over the web. We have all of our curriculum on the web, all of the chairs and research papers and things like that. In fact, I don't take research papers to programs any more. I just get the web address, and they can download it themselves rather than carry a hundred papers around. So I think the marketing is very important.

Strategic Planning

I'm not sure how many programs actually write a business plan, where they have developed a vision, a mission statement and a strategic plan—a five-year strategic plan. We have a plan that helps us answer the question: "Where is this program going to be in five years?" And although we require that discipline of our students and our entrepreneurs, I'm not sure how many academicians actually sit down and go through that. We have an annual strategic planning meeting, and we set out our goals and objectives of what we are going to do every year to take us to the next level and the next step.

Entrepreneurs in the Classroom

One of the things that the entrepreneurship program brings to the university occurs when there is a business person with whom the university would like to develop a relationship. The university almost always contacts the Center for Entrepreneurship and says, "Could you invite this person in to speak to classes?" And we invite them in, and they talk to the entrepreneurship classes, they have lunch with the president and we have a program where we make them an honorary professor of the Center for Entrepreneurship. We have maybe four or five of these business people whom the university really wants to get to know better and who we believe can make a contribution back to the school either intellectually or as an advisor, and, perhaps, at some point, monetarily.

But the important thing is that they can really give something to the students. So that's how we first bring them in and I think a service which the Center for Entrepreneurship and entrepreneurship courses can do for the university is bring a lot of business people into the school to speak to a lot of the different courses and then interact with the faculty. For example, I had Al Hill, Jr. come in, and we gave all the international students who were interested a chance to sit down and talk to him. He had just come back from the World Economic Summit and was able to give state-of-the-art information there about what the leader of this nation or that one said. He shared that also with local business people and faculty from across the campus. So you really can do things that impact the entire university. You are in a good position to do that.

Raising Money

Funding

Our center was endowed by Mr. and Mrs. John F. Baugh in 1988. He was the founder of Sysco. We have a healthy endowment that helps defray the cost of the staff, travel and overhead. In addition we have six chairs in entrepreneurship, each of which are endowed. And we have just received a seventh from Mr. and Mrs. Charles Adams, and that chair is what Bygrave calls a mega-chair. It is being funded at several million and will be for a center director. The purpose of the chair will be to provide leadership for the Center for Entrepreneurship. So that chair is not going to be tied necessarily to teaching or to research. It is going to be tied to center leadership. And I think that will help in recruiting and continuity. So our primary funding is through endowment of the center and seven chairs. That's our hard funding.

We have other sources of funding. We have grants. We have, of course, the Kauffman Foundation, from whom we receive quite a bit both for research and programming. If I had to guess, over the past two years we've probably received \$400,000 for research and programs. We have other grants from foundations or government to do research and programs. We have grants locally from the Waco Foundation to put on programs and we also rely on corporate sponsorship for our family-business programs. In fact, we rely quite heavily on corporations to help us.

We have a fund for alumni giving called the Entrepreneurship Excellence Fund. I think those are the primary sources of funding.

Endowment campaigns

The advisory board can play a role in soliciting these endowments. For example, right now we have a campaign to endow the Institute for Family Business. Campaigns are set up so you are not constantly scrambling for cash. We would like a minimum of \$1 million to endow the Institute for Family Business. We would use the funds to defray the cost of the director and be able to expand programming to other areas. To begin the campaign, you prepare a mini-business plan. We have a business plan on the Institute that shows how much money we need and how we would use those funds, the history of the Institute and things like that. We did identify a handful of people who have the funds to endow the center and who have relationships with us. The advisory board assisted us in developing that business plan and in identifying those people. We then work with our university development office in approaching these people, presenting a plan to them and asking them to help.

Unlike state universities, private universities have a little more difficulty raising money. With state universities, many times you get matching funds from the state

or, if you are a land grant university, you can get matching funds. But as a private university we can't get matching funds. So we almost have to raise twice as much money as state schools.

Most schools who are considering starting a center for entrepreneurship or entrepreneurship program have an individual in their community or state who is probably a friend of the university or friend of the business school or dean who has the wherewithal to put together either a chair or a center.

As far as how much is needed, you could do a center for \$1 million and then try to build from that. I don't know how you could do it for less than that if you are going to be paying for your secretary and equipment. I know there are centers right now that are being endowed at \$20 million and above, so they run the gamut. If I were going to try to endow a center today, I'd probably try to get a minimum of \$5 million, \$10 million if I could. Chairs used to be going for \$1 million, and now people are trying—because of the interest rates and cost of faculty—to get chairs at over a million, maybe \$2 million or \$2.5 million. We do professorships at under \$1 million, and we are actually trying to endow a research fund now, so we are not constantly searching for grants and research money. In schools you can endow anything. You can endow this room and I'll sell you this telephone, put your name on the front.

We have a resource center that we are trying to get endowed for \$250,000 and that would throw off enough to keep up with subscriptions and books and things like that. So, I think what you do is sit down and look around and try to figure out what you need to run your program and then back up from there.

GROWTH AND MAINTENANCE ISSUES

Part of this has to do with the list—the *Success Magazine* list, the *US News and World Report* list and top-ten this and that. Programs and centers that really are growth oriented have to constantly scramble, I think, to keep going to the next frontier.

The last new frontier was family business, and a lot of people have jumped on that bandwagon. Another place people are going right now is technology or international—and we are looking at both those areas. But growth is important and, just as a company has to continue to grow and innovate and change, I think programs do, too. The students can't be taught the same old thing. Things change. So if you are integrating your curriculum, your research and your outreach, then as that changes, it is better for the student.

So, in our areas, as I already mentioned, we are looking more at technology and tech transfer and partnering with the Texas State Technical College. I didn't

realize this, but, in the United States, Waco is known for our laser and photonics work, and there are kids out there cutting CDs and evidently doing things that they are not doing other places. So we are trying to partner with TSTC on some of their technology and our entrepreneurship. And the same with our School of Engineering—it ranks fourteenth in the nation and so we are trying to partner with them, putting together teams of engineers and entrepreneurs. So I think our further development is going to be in the areas of technology and international. It seems like we are partnering with more universities, internationally, to exchange students and programs.

Our research is more rigorous, which is good for the field, and the trends that I see in research are in the growth and strategy areas. Here as I mentioned, one big research area is the nature of the impact on funding entities as money is being shifted to later-stage transactions. We are trying to figure what is going to be the impact on early-stage transactions; a lot of those later-stage transactions are family business transitions, and so we are looking at that.

And then we will continue community things for economic development. We may take our FastTrac programs further throughout Texas. We are doing a lot more executive education and participating in our EMBA's. Large corporations and large systems are interested in developing entrepreneurial cultures and entrepreneurial spirit within their businesses. And with the hospitals, we are being invited in and asked to do seminars and working with these larger companies to develop an entrepreneurial culture.

CURRICULUM ADMINISTERED BY THE JOHN F. BAUGH CENTER FOR ENTREPRENEURSHIP

Undergraduate Coursework

Starting and Managing a Business

This is an introductory course for students other than entrepreneurship majors. This course, which is designed around the business plan, examines how to: formulate business ideas; select a location; select a legal form of organization; locate financing sources; assess the market; develop a human resources management system and establish budgets for control.

Venture Initiation

The start-up phase of a business is the primary focus of this course. Opportunity recognition, entry strategies, team building and obtaining initial financing are among topics included. Students will start and operate a small business. This is the first course for the entrepreneurship major.

Skills and Behavior of the Entrepreneur

The course focuses on the individual and the skills and behaviors necessary to be a successful entrepreneur. Students will develop creative thinking skills that will enable them to recognize business opportunities. Other skills include team building, goal setting, leadership and negotiation. Significant portions of the course are conducted using experiential exercises and simulations.

Entrepreneurial Finance

This course examines the intriguing process of financing the pursuit of opportunity and growth without regard to assets controlled currently. The major focus is on the stages following start-up. There is an emphasis on high-growth firms and the central objective is to gain an understanding of how entrepreneurs obtain and use financial resources. The course also examines how value is created.

Managing the Family Business

The business, personal and interpersonal issues associated with the family-owned-and-managed company are explored in this course. Topics evaluated in the course include: the competitive strengths and weaknesses of a family firm; the dynamics of family interactions and the family-business culture; conflict resolution; estate planning; and planning for succession.

Entrepreneurial Field Studies

This is a practicum course that provides students with opportunities to apply concepts mastered in previous business courses. Students work with entrepreneurs to develop comprehensive business plans for new ventures or to assist business persons with problems related to market research, financial management, managerial issues and other business requirements such as planning expansion or new-product development.

Innovation and Change Management

The course focuses on creating or finding new business opportunities, technologies or processes and managing the change necessary to incorporate them into the firm. An emphasis is placed on evaluation, planning and leadership.

International Entrepreneurship

This course examines entrepreneurship in other countries by focusing on the unique opportunities and problems associated with the particular country being studied. Comparisons are made between the host country and the United States. General issues related to doing business across national boundaries are included. This course is taught only outside the United States.

Internship in Entrepreneurship

In this course, a student is required to work with an entrepreneur in a decision-making, managerial role. Application forms and additional information are available from the John F. Baugh Center for Entrepreneurship.

Graduate Electives (MBA)

Entrepreneurial Behavior and Skills

This course focuses on the individual and the entrepreneurial skills needed to successfully manage a growing firm. Through a deeper understanding of the personal and interpersonal skills needed by the entrepreneurial manager, the student will develop oral-communication capability enhancing their ability to influence. Specific skills addressed include negotiation, goal setting, time management, delegation, conflict resolution and motivation. The course will provide a practicum for developing or enhancing those skills by incorporating them into behavior.

Entrepreneurial Finance

The focus of this course is on entrepreneurship and enterprise development, with particular attention paid to the formation and management of new-business ventures. Topical coverage includes the role of entrepreneurship in economic development, characteristics of entrepreneurs, sources of innovation and identification of new-venture opportunities, location and market analysis, legal and tax aspects, sources of financing, financial analysis, planning for personnel and organizational structure.

Mergers and Acquisitions

The central focus of this course is to gain an understanding of the acquisition environment, the underlying concepts of acquisition policies, firm valuation and deal structuring. Team projects include live case analysis and evaluation of a publicly traded firm.

Entrepreneurial Field Studies

This is a practicum course wherein students work with businesses to apply knowledge acquired in previous courses. These skills are applied to a variety of situations, including bringing new technology and products to the marketplace.

Special Studies in Entrepreneurship

Students may register for a maximum credit of six semester hours.

ENDOWED POSITIONS IN ENTREPRENEURSHIP

The E.M. and Thelma Stevens Chair of Private Enterprise and Entrepreneurship was established in 1977 as one of the first chairs in entrepreneurship. The mission of the chair is to provide leadership and to develop academic programs in the areas of private enterprise and entrepreneurship education. The chairholder will teach courses in entrepreneurship and engage in scholarly activities which serve to expand our understanding of the entrepreneurial process.

The Dr. Joseph F. Schoen Visiting Professorship in Private Enterprise & Entrepreneurship was funded in 1977 by Dr. and Mrs. John Schoen to honor Dr. Schoen's father. This series funded a number of visiting professors to Baylor including John Komives, Karl Vesper, Bob Brockhaus, Cliff Baumbach and John Welsh.

The Herman Lay Chair of Private Enterprise was established in 1978 by Mr. Lay and funds teaching and research in the area of private-enterprise economics and entrepreneurship. The Lay Chair is held by the Director of the Center for Private Enterprise.

Mrs. W. A. Mays Professorship in Entrepreneurship was established in 1978. The professorship provides release time for a faculty member to perform research in entrepreneurship. The position has been held by Dr. Duane Ireland and Dr. Daniel Jennings. The chair is currently empty.

The Caruth Chair of Entrepreneurship was established in 1979 by the Hillcrest Foundation. The first holder was Dr. Donald Sexton, director of the Center for Entrepreneurship. The purpose of the chair is to provide support for teaching and research in the area of entrepreneurship. The current chairholder is William Petty.

The Streich Family Professorship in Family Business Management and Succession was formed in 1979 by the Streich family. The position was first held by Dr. Nancy Upton. The purpose of the professorship is to provide resources for research in family-business succession. In 1996, the Streich family amended the purpose of the chair to include funding for a visiting professor and for scholarships. E.J. Poza, Director of the family-business program at Case Western Reserve, was the 1996 Visiting Streich Professor.

The Robert M. and Louise Rogers Chair of Entrepreneurship was established in 1984. Mr. Rogers, the founder of TCA Cable, funded the position to provide support for excellence in teaching and research in entrepreneurship. Dr. Ray Bagby is the current Rogers Chair.

The Curtis Hankamer Chair of Entrepreneurship was established in 1987 by the Hankamer Foundation. Curtis Hankamer spent 40 years in the oil and gas industry as an independent operator and also held extensive real estate and banking interests. The chairholder is to perform meaningful research in entrepre-

neurship. The current chairholder is Dr. Duane Ireland.

The Ben Williams Chair in Entrepreneurship was formed in 1992 to support outreach and research activities for the Center for Entrepreneurship. Mr. Williams' career in insurance led him to establish his own business in 1950. His firm served as sales-training consultants to various advertising agencies and life insurance companies throughout the United States. The Foundation established by Mr. Williams funds five chairs in the Hankamer School. The entrepreneurship chair is held by Dr. Nancy Upton.

The Charles R. and Janice M. Adams Endowed Chair in Entrepreneurship was designated in 1996 by Mr. and Mrs. Adams. Mr. Adams is the founder and CEO of CHAD Therapeutics; a publicly held firm in the health care industry. During a trip to Baylor, Mr. Adams was so impressed by an entrepreneurship student that he requested more information about our program. Mr. and Mrs. Adams have determined that the chair be designated for the Director of the Center for Entrepreneurship, thereby providing leadership to the entrepreneurship program.

SCHOLARLY CONTRIBUTIONS AND PUBLICATIONS INDICATIVE OF RESEARCH INTEREST

Dr. Ray Bagby, Robert M. and Louise Rogers Professor of Entrepreneurship

- Editor, *Entrepreneurship: Theory and Practice*
- Cognitive processes to differentiate entrepreneurs presented to Babson and published in *Journal of Business Venturing*
- "Can Entrepreneurship Be Taught?" (with Stetz; Entrepreneurship Education Conference, 1993)

Dr. Duane Ireland, Curtis Hankamer Professor of Entrepreneurship

- Associate Dean for Research and Scholarly Activities for Hankamer School of Business
- Editorial Review Board, *Academy of Management Journal*, *Business Insights*
- Strategic Management: Competitiveness and Globalization
- "Financial Performance of Growth-Oriented Firms" with Mike Hitt for the Kauffman Foundation
- "Are Acquisitions a Poison Pill for Innovation?" (with Hitt, Hoskisson & Harrison; Academy of Management Executives)

Dr. William Petty, Caruth Professor of Entrepreneurship

- *Financial Management of the Small Firm*, 2nd edition (Prentice-Hall)
- *Small Business Management*, 9th edition (with Longenecker and Moore; Southwestern Publishing)
- Editor, *The Journal of Small Business Finance*
- Chairman, Joint Editorial Policy Board, *The Journal of Financial Research*
- “Harvesting Company Value” Portable MBA on Entrepreneurship

Dr. Nancy Upton, Ben Williams Professor of Entrepreneurship

- *Entrepreneurship: Creativity and Growth* (with Sexton, MacMillian Publishing)
- “How to Start a Business in McLennon County” (Center for Entrepreneurship)
- *Family Business Management and Transition* (Small Business Administration)

¹ Bowman-Upton, N., Seaman, Samuel, and Donald Sexton. “Innovation Evaluation Programs: Help for Inventors?,” Journal of Small Business Management, Vol. 27, No. 3, 1989, pp. 23-30.

² Sexton, Donald and Nancy Bowman-Upton “Validation of an Innovative Teaching Approach for Entrepreneurship Courses,” American Journal of Small Business, Winter 1988, pp. 11-21;
Sexton, Donald and Nancy Bowman-Upton. “Evaluation of an Innovative Approach to Teaching Entrepreneurship” Journal of Small Business Management, 25(1) 1987 pp. 35-43.

CARNEGIE MELLON UNIVERSITY

THE DIRECTOR AND THE SCHOOL

John R. Thorne, director, Donald H. Jones Center for Entrepreneurship and the David T. and Lindsay J. Morgenthaler Professor of Entrepreneurship, Carnegie Mellon University, Pittsburgh, PA.

Description

The Graduate School of Industrial Administration at Carnegie Mellon University started teaching entrepreneurship in 1972. It established the Donald H. Jones Center for Entrepreneurship in 1990 with a major gift from Pittsburgh entrepreneur and GSIA Adjunct Professor Donald Jones. The Center continues to expand its entrepreneurial programs. Housed in GSIA's new Posner Hall addition, the Center provides state-of-the-art facilities and resources to support student entrepreneurial projects. Most outreach work is done through The Enterprise Corporation of Pittsburgh, an economic-development organization affiliated with Carnegie Mellon which encourages and supports entrepreneurial development in the region. GSIA interns work on a variety of Center and Enterprise Corporation projects, which provides them with valuable experience. The establishment of the Donald H. Jones Center emphasizes the school's commitment to teaching and research in entrepreneurship by providing resources and a focus of excellence.

Mission Statement

The Donald H. Jones Center for Entrepreneurship's mission is to develop and conduct educational programs of excellence and to support research that will advance our fundamental understanding of entrepreneurship and entrepreneurial management.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

Carnegie Mellon is a private coeducational university. The university is made up of the following: the Graduate School of Industrial Administration (GSIA); the H. J. Heinz III School of Public Policy and Management; the College of Fine Arts (CFA); the College of Humanities and Social Sciences (H&SS); Carnegie Institute of Technology (CIT)—the college of engineering, Mellon College of Science (MCS) and the School of Computer Science (CS). All seven units have outstanding reputations. We have one of the strongest computer-science departments in the nation. The university is small—there are approximately 7,300 students, more than one-third of whom are graduate students. There are 524 faculty members

holding full-time teaching positions. With research staff, part-time faculty and adjuncts, the total faculty is over 1,000.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

The Pittsburgh region has a population of about a million and a half. The actual size of the city of Pittsburgh is approximately 490,000. The city is relatively small, but there are lots of communities around the area with a substantial business base. Pittsburgh has been traditionally a strong, big-company, manufacturing-based town. I grew up in Pittsburgh but resided on the west coast for 20 years, where I became an entrepreneur. I came back in 1972 after I sold my company. Pittsburgh was then beginning to slide into a depression. It was not at all entrepreneurial. For the first venture deal I put together here, I had to go to Boston to find a lawyer who knew about venture capital deals. I raised the money while I was skiing at Vail, from a Boston investor, as there was no venture capital here in Pittsburgh.

The city sort of bumped along in the late '70s and early '80s, as most of the steel mills gradually shut down. Pittsburgh used to be the steel capital of the world; it now makes very little, except specialty steels like stainless steel and some steel processing. USX (formerly US Steel) still has its headquarters here, but it is into many other things, including oil. Pittsburgh's major corporations have been downsized greatly. We lost Koppers—it was bought up and fragmented. Westinghouse has all but shut down its research and development operations here and is turning into a broadcasting company. It is selling off its traditional manufacturing firms, so the home office is greatly reduced. Allegheny International sold off most of its assets and in effect went out of business, although one of its major divisions was bought by an entrepreneurial manager who turned it into Allegheny Ludlum, which recently acquired Teledyne, so they have done very well. I will not describe all of them, but Gulf Oil was bought by Chevron and moved. Rockwell went to California. This all caused a lot of unemployment, which got to be very high in the early '80s (about 15 percent). In short, things were bleak in the early '80s and the region had to develop more of an entrepreneurial culture.

Now the economy, although not vibrant, is pretty good, and all the jobs lost have been replaced, mostly with an expansion in new businesses and small businesses. There has been a particular upsurge of high-technology companies, including many software companies. The population is well-educated, but it is an older population by normal statistics. If we had the normal demographics, we would have about 115,000 more people in the 28-35 age group, which is the prime age for people to do significant entrepreneurial ventures. This is a significant issue because our best and brightest are often the ones who leave and that is an issue we are trying to solve. The economy is now picking up, we have a number

of venture capital firms and entrepreneurial activity is greatly increased. Both universities (Carnegie Mellon and the University of Pittsburgh) are now encouraging spin-offs and technology transfer. The whole business community is focusing on improving our entrepreneurial vitality and this has enhanced the role of our Entrepreneurship Center and The Enterprise Corporation of Pittsburgh. We like to think we have played an important part in improving the region's entrepreneurial vitality.

STATISTICS ABOUT CENTER/PROGRAM

Year Started

We started teaching entrepreneurship seriously in the business school in 1972, when I moved back from California after having sold a company I started. This program was started on a nominally half-time basis, and I was doing a lot of other things with small business and investments through the '70s. But we had a going entrepreneurship program at the graduate level.

In 1983, we raised money to start The Enterprise Corporation in order to expand our outreach work. It is affiliated with both Carnegie Mellon and the University of Pittsburgh, but in practice more with Carnegie Mellon. In 1986, David Morgenthaler (a venture capitalist) donated a \$1 million for a chair in entrepreneurship, and it was awarded to me with the condition that I would make it more or less full time. So we started a more serious program in 1986. Then in 1990, we got an initial million-dollar gift from Donald Jones (an entrepreneur) for the Center. We decided to use half of Don Jones' gift to "buy" the space in the new business school then being designed. Although we don't have "legal title" to it, we designed it exactly the way we wanted. It has about 3,000 square feet with offices, an executive-in-residence office, conference rooms, student work areas and an entrepreneurship library. We felt and Donald Jones agreed, that it was a good long-term investment. A condition of the gift was that the center be a Carnegie Mellon-wide operation. We are housed and administered in the Business School, but have a university-wide scope.

Faculty and Staff

We have three full-time faculty, including Jack Roseman as associate director of the Center and about six adjunct faculty. Some of them teach several courses, and some of them teach one course. They are all very experienced entrepreneurs who have good reputations, know what they are doing, and take their teaching very seriously. They also spend a reasonable amount of time with students individually. We are looking for one other senior person, and we have added a research faculty member starting in the fall of 1997.

Funding

Endowment

We have \$1.5 million for the Morgenthauer Chair (given in 1986) and the Center was started with a \$1 million gift from Donald Jones in 1990. We understood that this was not big funding to start a Center, but it allowed us to get started, and we knew we could raise more money. We would rather have had five or ten million. I also have a few special endowments. One is to fund student projects. One of our donors gave us private stock that grew to more than \$100,000 when his company went public and that gives me about \$5000-\$6000 a year that I can use to support students on their projects. I have another endowment to support our library and another endowment set up by a local law firm that also provides money for students' projects. We have had significant unrestricted gifts and have another chair in process, nearly funded.

Fund Raising

Don Jones, who had owned several successful companies and is an adjunct professor, gave us \$1 million to start the Center. As I mentioned earlier, we used half of that to buy our space. After building the Center, we "sold" all the rooms, the halls, even the Xerox facility, to other donors. We have named the executive-in-residence room, every other office, the lobby, the student center, the conference room and the library. We made a deal that at least half and in some cases all that money, went to the Center, because the space was already paid for once. This raised about as much as we "paid" for the space. The other \$500,000 from Donald Jones is not technically an endowment but a fund that I have control over, subject to some reasonable oversight from the school.

Through all of these fund-raising activities, we have accumulated a fairly large fund which can be used to support our Center. It is not all technically an endowment but can be spent as needed. We also get the interest on this fund to use to support our activities. I have been active in fund raising, and I also sit on the business school's development committee. For example, we just got a gift of \$50,000 from a person we had worked with who just sold his company and wanted to recognize the role we played consulting with him. Recently, I negotiated another \$50,000 gift in private stock from a graduate whose company is likely to go public next year. I would guess that stock may be worth over twice as much after it is public. In any case, miscellaneous gifts have been a steady source of discretionary money. A \$5,000 gift came in recently from a graduate who just said, "Spend it any way you want—I like what you're doing."

Fundraising has been a continuous activity and overall, successful. Even though we have greatly expanded our program in the last few years, our assets have grown. We are still looking for that "big" gift that would add substantial endowment. The need for funds depends in large part on how much faculty and support time is charged to a Center and how much is absorbed by the school for teaching

and other activities which presumably would be required without a center. I suspect this varies widely between centers and could have a major impact on funds needed.

We have cut the needs for funding at our Center by doing substantially all our outreach (except continuing education) through the separately funded Enterprise Corporation of Pittsburgh. Its yearly budget is approximately \$750,000 a year, so it is a relatively substantial operation, but not a part of the Center budget. As chairman, I also get very much involved with raising these funds.

Grants and Contracts

We are also bringing in contracts close to \$250,000 a year. We are getting about \$100,000 a year from the Pennsylvania Ben Franklin Partnership to assist with our continuing-education programs and I have a matching grant from The Henry L. Hillman Foundation that amounts to about \$80,000 a year. This lets me pay a large part of the salary for myself, Jack Roseman, staff and secretarial support. We also got a grant from the Ewing Marion Kauffman Foundation to write an instructors' manual for continuing education in entrepreneurship and have had grants of support for a Ph.D. student.

THE COMPONENTS OF YOUR PROGRAM

Outreach

The Enterprise Corporation of Pittsburgh

Our major outreach is through The Enterprise Corporation. It was formed in 1983 and is affiliated with Carnegie Mellon and the University of Pittsburgh. I was the founder of Enterprise and am currently chairman. Its primary mission is to help entrepreneurs develop new businesses that have real growth potential. Enterprise assists entrepreneurs in starting new businesses, with a focus on business which can grow substantially. It also organizes a variety of functions which promote entrepreneurship in the region. Enterprise provides the Center with two adjunct professors, hires students as interns and is a good resource for class speakers, mentors and contact with our growing entrepreneurial community.

Seminars and Continuing Education

About five years ago, we started conducting continuing-education courses for the community and for the campus community. We teach a course called Entrepreneurial Management, limited to founders or presidents of local companies. They have to be off-the-ground and profitable, typically at least \$1 million a year in sales. The average company has about \$20 million in sales, ranging from \$1 million to \$100 million. The specific objective is to teach how to manage growth of the company. We think we understand this process pretty well. The classes are

always full and it is a profit maker for the Center. It also gives us reputation in outreach. Some of the participants have become donors and some are available as class lecturers. They have even formed their own alumni association, which we help support administratively because it provides a good network.

We also teach two courses specifically aimed at technology entrepreneurs, in part because of our work with technology-transfer offices at the two universities. One course, “How to Start a Technology Business,” is taught twice a year—one aimed at computer-related technologies at Carnegie Mellon University and one aimed at biomedical technologies at the University of Pittsburgh. The course is open to the community in general, but most attendees are faculty and research staff. A number of those participants have gone on to start new companies.

The other course, “Commercialization of Technology,” is a somewhat longer course focusing on product development and marketing. It is taught twice a year with no particular technical focus. We have obtained grants to subsidize these two courses because typical attendees will not ordinarily pay the full cost.

Overall, these courses have been successful and have won awards. They are all taught by an entrepreneurial faculty member, plus one person from our marketing faculty. An instructors’ manual has been prepared for distribution (for all three courses) and is available through our Center.

Helping Former Students

I spend a lot of time (too much, probably) helping alumni in reviewing business plans or introducing them to investors. It is just continuous. There is not a week that goes by that I do not get long-distance calls, business plans and all kinds of questions to which we try to respond. Either I do these myself or refer them to Jack Roseman. Even our adjuncts will do some of this consulting. We try to help our graduates for as long as they need help.

Research

Our research efforts have, in the past, been sporadic. We have generated three Ph.D. students with a strong focus in entrepreneurship. One remains in academia doing very well—the other two became entrepreneurs. Since our primary entrepreneurship faculty are practitioners, we have tried to encourage interdisciplinary research with other members of our faculty and we are bringing in a full-time research-oriented entrepreneurship faculty member starting in the fall of 1997. GSIA is a very research-oriented business school, with a strong analytic approach. We have produced several Nobel Laureates.

Currently, a Ph.D. student is conducting research aimed at how very successful entrepreneurs think about business issues and how new companies are started. To try to elevate the quality and reputation of entrepreneurship research, we got Herb Simon (Nobel Laureate) and Lester Lave (senior faculty) to serve on the

Ph.D. student's committee. The research seems to be going well and has begun to generate interest from other faculty members. We plan to sponsor additional interdisciplinary research in the general area of entrepreneurship in the near future.

We are planning an entrepreneurship research conference in the fall of 1997, which will explore fundamental questions which might be the focus of future research. The participants include two Nobel Laureates and others who have solid reputations in research. This conference is sponsored by the Kauffman Foundation and we hope it will help define an agenda and highlight areas needing top-level research attention.

Curriculum

Our focus is on excellence in teaching by people with substantial entrepreneurial experience. We use people really motivated to work with young potential entrepreneurs and who have reasonably broad entrepreneurial experience. We generally get new faculty started by working with one of us in a course or two before taking complete charge of a course. We are gradually expanding to meet student demand for more sections, etc.

Our core courses put a great deal of emphasis on student projects, with some cases used to help integrate the concepts we teach. We find a focus on projects encourages learning and allows for a good bit of innovative thinking. Many of these projects have turned into real businesses. Class sessions often include an active entrepreneur/lawyer/investor/etc. to enter into the discussion and be available to students for subsequent questions and mentoring. We provide some financial support for project costs and free telephones for project-related research.

Graduate

We are currently teaching nine graduate courses in the Entrepreneurship concentration. A complete list and description is attached to this report under "Curriculum." Some of these courses are "mini," or half courses and some also count toward other concentrations. We have been adding sections, particularly for the core course Entrepreneurship I and II as fast as we develop available instructors. All but one of these courses are for second-year students, as our first-year is almost completely full with required core courses.

Out of our graduate class of about 215, about 60 currently concentrate in entrepreneurship. About 70 percent of our students take some of the courses. The core courses are limited to 40 students, and we are currently teaching three sections. Entrepreneurship courses get very high student ratings and tend to be over-subscribed.

As stated earlier, our courses tend to focus on student projects. It is somewhat

difficult to get students started on viable projects early enough in the course, so a few years ago we started teaching an elective course for first-year students entitled "Introduction to Entrepreneurship" with a focus on finding and screening suitable projects to use in Entrepreneurship I and II. This has helped substantially in upgrading projects.

Undergraduate

The undergraduate program in entrepreneurship was started about three years ago when GSIA was given responsibility for the undergraduate business program (leading to a degree in Business Administration). Jack Roseman, Associate Director of the Center, is responsible for the undergraduate courses, and we are expanding to meet the demand. We currently teach two full-semester courses for undergraduate business majors leading to a complete business plan for an entrepreneurship project.

We have also started courses for technical majors, aimed mainly at Electrical Engineering and Computer Science majors. These will soon be expanded to include other technical majors. The introductory course assumes no business background but permits those who take the introductory course to join the second course offered to business majors. There appears to be substantial demand for such courses, driven by the technical department heads and we are working on developing more qualified instructors.

Prizes and Contests

We run our own prize contest for the best business plan and venture for graduate students and separately for undergraduates. We give cash prizes and "Entrepreneur of the Year" awards, which are donated by sponsors.

In the spring of 1997, we entered the State of Pennsylvania's Young Entrepreneur Contest sponsored by Governor Ridge and our students won three of five cash prizes given statewide (including first prize). We have also participated in the University of Texas MOOT CORP International Entrepreneurial Challenge and have won first prize twice.

These contests are excellent experiences for the students, but tend to take a lot of time, do not always coincide with our schedules for business plan completion and have tended to become "presentation contests," rather than real business evaluations. Some of our best students have turned down contest participation because: a) they are too busy building a real company; b) they do not want to go public with their ideas; and c) the requirement of some contests that the students sign over the copyright of their plan. I note these issues because the growing focus on "business plan" contests is not without related problems and issues to be considered in Center management.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

There is no clear definition of a center at Carnegie Mellon that I have been able to get. It is a focus in an area of long-term importance and in an area where contract or grant support implies some financial independence. It is also a way to build a reputation in a specific area and often to acquire supporting personnel.

I am not sure a successful Entrepreneurship Center has to be strong in the three components of curriculum, research and outreach. It should be involved in all three, but should be strong in at least two, including curriculum. A center needs a strong, motivated leader, funding sources and the support of a dean and senior university officials. To be successful, it has to build a reputation for excellence and a broad constituency.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?

Excellence

I think whatever you do, you have to do excellently. Unless you have the kind of people who can be really good at it, it is just wasting time. I believe our use of experienced entrepreneurs to teach our courses is a distinctive advantage and has greatly contributed to excellence.

Support

You need strong support from the dean, president and other constituencies, including trustees, key alumni and students. Our Center was started under Dean Elizabeth Bailey, who gave it strong support and subsequent deans have continued this support. Our present Dean, Douglas Dunn, is expanding GSIA's entrepreneurship focus by including an entrepreneurial component in all core courses.

REASONS TO START A CENTER OR PROGRAM

To Be a Player in Business

If you want to be a strong player in business education, you have to recognize the role of the entrepreneur. They start businesses, transfer technology, create employment and wealth and play an essential role in business development. We feel it possible to teach many of the skills needed for successful entrepreneurship, and further research will help in our increased understanding of these processes. The same skills needed for a center are helpful in community outreach and economic-development support.

All of this provides the basis for a center or focus on entrepreneurship. With the right leadership, support and financing, it can be successful.

Financial Reasons

An entrepreneurship center can be a magnet for funds.

Publicity

A good entrepreneurship program can give the school some publicity. Many media contacts involve entrepreneurship. We also attract a lot of students to GSIA because we have an Entrepreneurship Center; they often put that right on the application: "Why I'm applying to GSIA."

Alumni and Students Demand It

Our original courses in 1972 were started by student demand. This has continued and increased substantially. Many of our alumni also strongly support our entrepreneurial program.

HOW WOULD YOU START ONE TODAY?

People

You need a very strong person who is committed emotionally and personally to pursue it, drive it, sell it and organize it. I do not know of any successful centers that do not have a top-quality person running the show. They build it by scratching out their own niche, developing programs and people and raising their own money. One of the limitations in this area is finding and motivating such people.

Money

There is much evidence that entrepreneurship programs have been a magnet for money. It would take \$3 million or \$5 million to do it properly. If you are going to rely on an endowment, I would say \$5 million; but, we did it for \$1 million initially (plus a Chair) and it is working just fine. We have raised other funds and expect to continue this fund raising. I have expectations of more funding in the future. The total amount might depend on how big the school is and how broad a program you plan to start. I think you could start small and build it as you grow if you have the right person in charge. There are lots of ways to raise the money.

Advisory Board

We were late in forming an advisory board, and I wish we had done it earlier. We did start one last year with 35 members and had a great first meeting. The group is composed of entrepreneurs, entrepreneurial alumni, venture capitalists and

significant private investors. We do not make donations a requirement for membership, but a number are donors, and we expect to develop others as donors.

Many of the group have volunteered as speakers, mentors or advisors to our students and have offered other types of support. We are currently on a once-a-year meeting schedule, but individuals are contacted frequently.

Other

We have had many visitors from other schools thinking of starting entrepreneurship programs. This is a useful way to gather information and get a “feel” for the individuality of a variety of centers.

GROWTH AND MAINTENANCE ISSUES

Succession

Succession is an important concern because of the ages of myself and Jack Roseman. We have been looking for someone to hire and develop for possible future succession and have found it very difficult. We have interviewed people referred to us and we have an informal arrangement with a friendly executive-search firm. We keep searching, but finding an individual that we feel really understands entrepreneurship, is motivated to run and build it and will fit our academic environment is tough.

Outreach

We are happy with our relationship with The Enterprise Corporation for outreach, and we expect to continue with it rather than trying to staff, manage and fund this directly through the Center. We will also promote our continuing-education courses as a community service and a source of funds. In addition, I get very much involved with regional economic development issues—an activity which helps keep us in touch with business leaders and government.

Research

Our current research efforts were previously described. We hope to expand research, primarily by supporting interdisciplinary research with the GSIA faculty. A full-time entrepreneurial research faculty member has been hired to start in September of 1997 and another faculty member is joining who has been researching entrepreneurial subjects.

Other Focus Areas

Technology and Entrepreneurship

We will continue to put a major focus on technology entrepreneurship. We are in a school that is good at technology and we are in a community that absorbs and supports it. Most of our students have backgrounds in engineering or science, probably 70-80 percent of them. So, it fits in with the kind of people we have around the school and on our entrepreneurship faculty. It is an area we want to continue to work on and it is one of our comparative advantages.

Family Businesses

We will probably not focus on family businesses because we do not have a large enough group of people in our student body for whom this is a dominant interest. We address at least some family-business issues with students who have an interest. We have people available who have experience with family-business issues for students who are interested.

CURRICULUM ADMINISTERED BY THE DONALD H. JONES CENTER FOR ENTREPRENEURSHIP

Undergraduate

Entrepreneurship I ** is designed primarily to provide an overview of entrepreneurship, develop an entrepreneurial frame of mind and learn the rudiments of how to differentiate an idea from an opportunity. Students come up with a business idea and explore its potential for becoming a viable business. They learn to do market research and experience first-hand the rewards and difficulties in dealing with people in the real world. They meet entrepreneurs and business professionals as part of the course and learn how to make effective presentations—both written and oral. Other important aspects of the course include self-assessment to determine one's strengths and weaknesses, understanding the "magic" of leadership and gaining an entrepreneurial perspective on life.

A different version of Entrepreneurship I** is also available for technical students with no previous business background. Students completing this course will be admitted to Entrepreneurship II.

Entrepreneurship II ** Students in Entrepreneurship II further develop project ideas into complete business plans, with additional related topics covered in class sessions.

Graduate

Introduction to Entrepreneurship * is an introductory course offered in the last mini semester for first-year students. It gives a broad overview of entrepreneur-

ship and focuses on finding and screening an entrepreneurial project that can be further developed in Entrepreneurship I and II.

Entrepreneurship I * is an overview of entrepreneurship, with emphasis on the role of the entrepreneur, finding products and services suitable for new ventures and the preparation of a mini business plan for a project of interest to the student. Emphasis is placed on criteria for selecting products and services suitable for new ventures, analyzing and minimizing the risks and arranging the financing. Class work is complemented by presentations from real-world practitioners of the topic under discussion. The prerequisite for this course is ordinarily the completion of the first year in the GSIA program, but some students are admitted who are taking our joint degree programs with computer science.

Entrepreneurship II * is a continuation of Entrepreneurship I, but with more emphasis on the legal, accounting, managerial and financial aspects of starting a new business. The business plans initiated in Entrepreneurship I that have the highest potential for success will be developed into complete business plans, often in groups of students. As in the previous course, a number of guest speakers will participate in Entrepreneurship II.

Project in Entrepreneurship ** is a seminar course for those students interested in further developing their projects or in pursuing some other aspect of entrepreneurship as an independent study. The classes are in a seminar format and include a number of guest speakers who can interact with the students on an individual basis. Individual consultations with the instructor are an important part of this course and enrollment is limited to 20 students.

Venture Capital Development * provides more background and insight into the process of financing new ventures and investing in companies in their early stages. Cases and projects taken from actual financing situations are used to illustrate the structure of early-stage investments and the process of making investments in emerging companies. Venture capital, individual investors and other sources of early-stage funding are considered.

Entrepreneurial Management * focuses on the management of growing companies—especially the role of the chief executive officer—with an emphasis on entrepreneurial or opportunity-oriented management. The course helps students develop insights into the strategic, control and operations functions important to a growing company.

Small Business Management Project ** involves students in a variety of projects of interest to the owners of small businesses in the Pittsburgh area. This course encourages students to work as consultants directly with the CEO and use techniques learned at GSIA in solving real business problems. The project work is supplemented by classroom work on related issues.

Project in the Commercialization of New Products/Technology ** allows students to learn firsthand the issues and activities involved in launching new products. Course projects are selected from companies actually in the process of launching new products and students work with the company team to assist in planning the product introduction. Additional classroom work provides a background of theory, with cases and discussion.

Entrepreneurs and Economic Growth * reviews and studies the impact and techniques used by a variety of significant entrepreneurs in developing the American Economy. Industries include railroads, communications, steel, financial markets and computers. The focus is on showing how entrepreneurial innovators impact the growth of the economy in major ways. This course is the only entrepreneurship course not taught by the Entrepreneurship Center faculty.

Independent Studies in Entrepreneurship is offered to students wishing to do an independent study with close supervision of an instructor.

Note: Courses marked * are mini-semester courses. Those marked with ** are full-semester courses.

ENDOWED POSITIONS AT THE DONALD L. JONES CENTER

David T. and Lindsay J. Morgenthaler Professor of Entrepreneurship (held by John R. Thorne)

John R. Thorne Professor of Entrepreneurship. This chair is in the process of being funded by students and friends of John R. Thorne.

IC² INSTITUTE AT THE UNIVERSITY OF TEXAS

THE DIRECTOR AND THE SCHOOL

Robert Sullivan, Executive Director of the IC² Institute, University of Texas at Austin, Texas.

Description

The Institute is a globally interactive virtual organization that uses modern telecommunications and multimedia technologies to link research universities, businesses and other institutional and individual resources in developed and emerging regions for shared prosperity at home and abroad. IC² Institute is an interdisciplinary Institute that does not report to a school, unlike what you are probably going to find with everyone else, for example, where the center for entrepreneurship is within the school. In addition to our Institute, there is an entrepreneurial curriculum at the business school. We do not teach regular courses in terms of undergraduate and graduate courses. The schools do the teaching; but we've been the pioneers, primarily, of the programs that the schools now use.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

The University of Texas at Austin has approximately 48,000 students, 3,384 faculty and 15,000 staff members at the main campus here—a total population of approximately 54,000. It is one of 15 campuses in the University of Texas system. The student population as a whole in the system is something in excess of 150,000 students. It is one of 15 component institutions that began in 1883.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

Austin is the capital of Texas, the second most-populous state. With more than one million people, the area serves as a center for academic, political, research and technological activities. We have one of the most highly educated communities in the U.S. (with 250,000+ population). Austin has achieved national rankings by *Fortune* as one of the “Best Cities for Business,” as the ninth best city for Hispanic entrepreneurs and as the third best place to run a home-based business.

A number of high-technology employers are found in Austin, including Motorola, Dell Computer, Advanced Micro Devices and IBM. The entrepreneurial climate is very good, and there are a number of resources for business owners.

STATISTICS ABOUT CENTER/PROGRAM

Year Started

George Kozmetsky founded the Institute in 1977. He was formerly dean of the business school and is accredited with taking the University of Texas business school from being unranked, so to speak, to the sixth highest-ranked business school in the country. He is an unusual individual. Prior to initiating the Institute, he was co-founder of Teledyne, a very large and extremely successful corporation. So he is an entrepreneur in his own right and a successful one as well. At the same time he feels that education is important, and the passion of his life is the university. He went back to be dean to teach and use his knowledge of entrepreneurship. I think he was dean from 1966 until 1982—about 16 years. When you go back to the '60s, entrepreneurship wasn't even a word in the dictionary.

He started the Institute in 1977 in response to a need he recognized for interdisciplinary research in the field of innovation, creativity and capital. So, the Institute has been around for 19 years and has evolved from a think-tank as in doing research and reports, etc. to both a “do-tank” and a think-tank, meaning we do research in the areas in which we are interested.

Key Players

The key person is Dr. George Kozmetsky. He was the founder and the director until a year ago. A year ago Dr. Robert Sullivan (previously dean of Carnegie Mellon Business School, GSIA, and prior to that, an associate dean of the University of Texas business school) joined us to become director while Dr. Kozmetsky became founding director. Dr. Kozmetsky is still involved on projects on a daily basis, but he is not director of the Institute as he used to be. I guess several of the people in the Institute's programs have been recognized for their contributions. Dr. George Kozmetsky and myself have received the Ernst & Young Entrepreneurship Supporter of the Year awards. Laura Kilcrease is Director of the C²E.

Funding

In terms of our activities, we are totally self-supporting. Our support comes from activities such as the incubator and the venture capital network, where there are small charges to participate, or through sponsored research that we undertake individually.

In our area, because the research is also implementation, not just book research, we have had it funded by federal agencies. We have also had some of our research sponsored by other groups outside our community who want to do what we have done somewhere else. That is how we fund most of the things we do. We don't have a line-item from the university, but we have received community

funding. The city has contributed the county has contributed and the greater Chamber of Commerce has contributed. Initially the Chamber's funding was our only source and was very important. Now, their contributions are insignificant compared to the whole, because we have grown all the other funding sources in the meantime. We started with \$125,000 in 1989 for all of the projects I talked about. Now, in a given year we run probably a \$3 million budget. It goes up and down depending on what other sponsorship work we are doing.

We actually get a lot of soft funding. I actually describe it as in-kind. Through many of our activities, instead of getting cash, we have been given things like furniture or equipment. That is not insignificant. We have an electronic strategy center with 13 Pentiums. That's a phenomenal training and teaching center for entrepreneurial companies as well as for students and faculty. We run new entrepreneurial company's products, like software products such as "Groupware" and group interaction through it. So it has multiple benefits. That was probably a \$165,000 room. If I had to raise the money to build it instead of getting someone to donate the \$14,000 for chairs and donate the Pentiums, it would take me a long time to get the money. So we do get lot of funding in-kind.

Endowment

We don't have any endowments because, again, we are unusual. The Institute has endowed fellowships. We have fellows of the Institute, but our University endowments go directly to the University. So, in fact, we work with major entities who give the University endowments. We may not see the entire amount that is given. For instance, I'm working with a major corporation, who is going to give the University \$1 million of which \$500,000 will go to one school, \$300,000 to another, and \$200,000 will come to our institution because they want us specifically to do something in entrepreneurship. In this instance, it is a one-time gift and there will be ongoing research that we will do. I also helped the University get \$1 million from a Japanese company several years ago and that went to the University. We, the Institute, didn't see any of that, but it went to the greater good.

So I think you will find funding sources are very different, depending on how you have been forced to bootstrap your program.

COMPONENTS OF THE INSTITUTE

Outreach

Austin Technology Incubator (ATI)

The Austin Technology Incubator (ATI), founded in 1989, currently houses 25 resident companies. ATI is an incubation program where we nurture and grow new or emerging technology-based businesses for which we also undertake

experiential learning as this is an entrepreneurship program. We involve business plan winners and student-based companies and interns and professors who do entrepreneurial research on emerging-life business cases.

ATI has nurtured in excess of 65 companies, of which 32 have graduated from its programs. Thirty of the 32 businesses are surviving and thriving. Two have been purchased outright. Two have gone through an IPO and two more will probably go public within the next 12 months as well. Our companies have made the cover of *Forbes* magazine. We've developed a program to start businesses directly with our students at the business school before they graduate, so, by the time they graduate, they have a business up and running and can do full-time or go off and get a job. Another one of those was in *Inc.* magazine on an issue that talked about developing business in entrepreneurship in business schools. Three or four have been merged or have acquired companies for strategic growth, and the rest remain independent.

The independent group sold \$100 million worth of product in 1995 and five years before didn't exist. Our graduates from the incubator program employed in excess of 1,047 people as of 1995. We still have another 30 of them we are nurturing through the process. All of them have been "bootstrapped" in terms of financing except one, and they now have raised collectively in excess of \$110 million of capital. This helps the community because that money would not have been here otherwise.

Companies in the incubator include not only enterprises based in Texas and the United States, but also in Australia, Brazil and Canada. In the Spring of 1995, ATI moved to the Microelectronics and Computer Technology Corporation building on the UT-Austin J.J. Pickle Research Campus. ATI has moved four times in six years, each time to provide more space for resident companies.

ATI provides entrepreneurial education for its tenants and are businesses, such as its seminar series on "Creating Your Business Plan," "Funding Your Business," "Managing Your Company" and "Selling Your Product." The incubator also offers "Financing Entrepreneurial Ventures," a seminar focusing on securing capital, structuring deals and creating business plans.

The Capital Network

Secondly, we are the founder of The Capital Network—TCN. Founded in 1988, TCN has become the largest, nonprofit business "angel" network in the country. We essentially have a dating service where we match angels, i.e. individuals and some institutional investors, with entrepreneurs who need capital to move forward. TCN, to the best of our knowledge, has matched entrepreneurs to angels to the tune of over \$70 million of capital that has changed hands. We influenced the change of SEC law in Washington to make sure we could run this as a not-for-profit activity and not as a broker dealer. The difference is that the broker-dealer minimum is \$10,000 to \$30,000 to do the same thing we do for \$400. As a

consequence the SEC mandates that we cannot track the deal once we introduce entrepreneur to investor, because we are not broker-dealer. So the \$70 million figure is only what we know that has come back to us. It may be more.

Austin Software Council

The third activity is the Austin Software Council, formed in 1992. We wanted to nurture that industry here. It was having major issues. A few years back, our goal was to make Austin one of the top three software centers in the country. Today the software industry in Austin has the largest single number of corporations in town in a single industry group—believed to be over 800. It's certainly probably the second largest industry in Austin after the semi-conductor industry. We run that association so people can get educated there in monthly forums. We bring speakers in and so forth. I think it's something that has been good for Austin.

Curriculum

IC² stands for “Innovation, Creativity and Capital.” The Institute is an interdisciplinary think tank and “do tank” and is unique at the University of Texas. So we are unusual because we are not part of a school, which is a great benefit because we are neutral and free to do the kind of interdisciplinary research vital for any entrepreneurship center. It means we also do not teach regular graduate and undergraduate courses as in Entrepreneurship or as you'd find in centers in other universities.

We do teach at the executive level, but our individual associates and professors, may individually teach within a school and have, say, a “second” position with the Institute. Despite the fact that we do not offer entrepreneurship courses per se, we have been traditionally the nurturer, starter even initiator of these kinds of new entrepreneurship courses that are eventually adopted by universities.

For example, we originated a program called “Moot Corp[®]”, an international business-planning program at the graduate level, and IC² ran that through the business school for the first five years of its existence. Now the business school runs that course itself, and it has a course number under the business school. But IC² itself doesn't have a curriculum you could find in the programs at the University of Texas.

Research

Although we do in fact educate at the executive level, develop course structure or curriculum and have some of our people teach courses at the university in a variety of schools, at the same time we implement our research or test it out through programs like the technology incubator. A lot of our issues are concerned with problems we work on. The research involves entrepreneurship, be it technology commercialization, technology venturing, curriculum or entrepreneurship itself—all kinds of

things like that. Given that IC² is an independent Institute, research on entrepreneurship is actually spread out throughout the university and is not in any one school.

For instance, Professor John Butler conducts entrepreneurial research through the School of Communications. Professor Dave Gibson and Dr. George Kozmetsky, founder of the Institute, do conduct some individual entrepreneurship research on behalf of IC².

WHAT WERE THE KEY SUCCESS FACTORS IN STARTING THE INSTITUTE?

Benchmarks and Milestones

I think the single biggest factor is choosing what you are trying to do and measuring the results to make sure you are getting that. Key success factors of a center are the recognition of its output or what happens to its students. You can measure your activities in the same way. For example, a reporter asked me once if could I tell him how many patents we had in these companies that we had nurtured and I had never thought about measuring that. I needed to go back and look.

But the public needs some kind of criteria by which to judge whether or not your center is successful. Whatever you choose to be your key success factors, they need to be measured or monitored because too often in the field of entrepreneurship, the measuring stick becomes kind of hazy and it becomes difficult to gauge the success of a center.

Leadership

Other success factors are having a leader who can lead in the field and not just be a figurehead. You need a recognized leader who can really gain the support and is a risk-taker. Finally, you need support from your institution. The worst thing that can happen is that individuals in the institution push just to make a center happen when the institution as a whole doesn't give it any importance on its agenda.

REASONS TO START ONE TODAY

Prepare Students

Well, it's really simple. If your institution of education is aiming your product, which is your graduating students, into the marketplace, the marketplace for new jobs is more with emerging companies than it is with our traditional, basic, large companies. If one thinks of a commercial field, you produce a product for an end

marketplace and our end marketplace in education has changed. Wealth as well as new jobs are being created by entrepreneurial entities. Therefore, in the same way that one needs to learn the skills of accounting, you need to get some tools in the field of entrepreneurship to be able to progress entrepreneurship forward for the country so that we continue to indeed improve the economy here.

Demand and Results

Also, if you look at the top rankings of business schools or schools in this field, most often it seems to me that entrepreneurship has had high influences on the ranking of their institution. If we look at the demand from the students, I think if you look over a ten-year history, the demand for entrepreneurial courses, specifically at the graduate level, is increasing.

HOW WOULD YOU START ONE TODAY?

People Necessary

I think most successful programs are run by individuals who are in the entrepreneurship field today. Be it in a not-for-profit catalytic sense like we are here or be it in having been very successful in their lives, you need people like Kozmetsky and others who want to give back. This doesn't necessarily mean these have to be old people, either. If I look at the rankings the students give of the business schools to their professors in the entrepreneurship curriculum, it seems that, consistently, the professors who get most highly ranked are those who don't hold Ph.D.s but those who have been very successful in their activities or undertakings in their daily life and therefore can convey real-life knowledge and data—not just what's been read from a textbook. So in terms of people, you need people who are recognized to be successful entrepreneurs, you need people that are capitalists in entrepreneurship that enable it to happen and connect the dots, so to speak, as well as some of your traditional people who are doing research in this area.

Money

We self-fund our activities. The best money is probably going to come from the successful entrepreneur who will endow something or give money to your center. If you rely too much on money from the inside, the institution will rarely get the proper prioritizing and be allocated the resources necessary by the university. Whereas if the money comes from the outside, from someone who has been successful, typically the institution sits up and listens.

About how much money, it would depend on what you are going to do. If you are going to just have a training program or curriculum, that's different than if you match

that curriculum with something like an incubator or an experiential learning program. So your money can range by multiples depending on the breadth of your program.

Advisory Board

We have an advisory board on everything we do. It's a way for the community to buy in and that advisory board is not from our own institution. It is normally mixed with a third from government, a third from business and a third from our education sector, which may indeed be our own university but may indeed be other educators as well. But they should all come from the community in which you want to do this activity.

GROWTH AND MAINTENANCE ISSUES

Further Program Development

I think one of the biggest issues you have going forward is that as these centers become more significant to the institutions of the colleges they are within, they become threatening to the traditional professorship, because resources should be effectively swayed toward the things your market, i.e. your student population, demands. Therefore, your traditional professor who is teaching Accounting 101 (I am not putting down accountants—I am an accountant and have been for the last 20 years) says, “Why do these new guys get this stuff when I am highly ranked over here and I don't get these things?”

So the traditional totem pole of who has been there the longest clashes with the criteria of who knows how to attract the resources. Therefore, that makes people feel uncomfortable.

Curriculum Trends

I think that the IC² Institute's situation of being a separate entity from any specific college or department within the university is something of which we will see more. I think it's going to spread to all schools over time. It's just a matter of time. Schools that do not offer some form of entrepreneurial concentration should definitely move in the direction of doing so. It can only strengthen the program. In fact, because of this concentration, it has helped rank UT's business school pretty high, like *Business Week* ranking it seventeenth best in the nation. Among business schools with an MBA program, it's listed fifth for public universities. Mainly it's because of these entrepreneurship programs. *Public Accounting Report* ranked it as No. 1. *Success Magazine* ranked it in the top 25 best business schools for entrepreneurs for a second year in a row. *The Economist* ranked it No. 5 among public MBAs of economic value. So, certainly what the IC² Institute has started at the University of Texas will become more of the norm at other universities.

Research Trends

You can't just provide an entrepreneurship program and come back five years later. It's an ongoing, developing curriculum every semester. Therefore, you have to give the people involved in teaching and research ways to keep themselves up to date and much of that relies on them. Compared to your other classes, like Physics, Entrepreneurship does not operate under the same theory that's been around for 20 years. It makes a difference. There is only so many laws of physics—they don't change. Physics 101 is the same every semester. Entrepreneurship 101 isn't. So we need to give the people involved in this some ability to continue to keep up to date in a way that we don't have to give other professors. That's clearly going to cause some aggravation.

Of course, with the increased opportunity, I would expect a higher level of performance from the entrepreneurship professor. I would expect the output within a five- to seven-year period would be students who had been successful giving back to the institution. I don't expect that from Physics 101 professor. So I think the flexibility should be matched with the returns the institution requires. They need to perform similar to the investment that's being put into them.

OUTREACH DEVELOPMENT/COMMUNITY INTERFACE

People are getting more and more used to university involvement in the community because there is a greater need. I think universities or educational institutions play a far stronger role today and will be in the future more important to the economic well being of their community. And as such, community education has been one of those things we do. Education is fundamentally at the pivotal point of what happens economically in your new companies, in your new labor forces, who you attract to your region, what companies you grow and what the standard of living is for your area. New and developing entrepreneurship programs need to recognize that they are right at the heart of the issue now and not on the sidelines and entrepreneurship just highlights that. So they need to get more involved in their community in some kind of planned way, preferably as opposed to one professor going out and working with a few businesses.

IC² INSTITUTE EDUCATION

In addition to courses taught at the University, the Institute provides Executive Development Programs for a wide variety of organizations. The Institute can custom-design programs to address specific issues and industries. Live programs can be provided at their site or at a remote location or may be delivered via videoconferencing facilities.

Sample Executive Development Programs

Management and Protection of Knowledge Assets (2 days)

Learning Outcomes

- Understand what comprise “knowledge assets” in a firm
- Identify and classify existing commercial knowledge assets
- Assess the commercial potential in technology-based knowledge assets
- Recognize opportunities to expand current asset base
- Plan strategies to shape the direction of knowledge-base development
- Describe processes to secure the knowledge-asset base

Commercialization: Converting Technology into Assets (2 days)

Learning Outcomes:

- Build a model of effective and efficient technology transfer
- Understand barriers and facilitators to technology commercialization
- Analyze and evaluate commercialization processes
- Acquire knowledge and skills to locate and assess technology commercialization opportunities
- Ability to apply benchmarks for technology commercialization

Corporate Venturing: Developing New Revenues (2 days)

Learning Outcomes:

- Use a systematic method to screen new opportunities
- Outline a business plan to initiate and launch new venture
- Outline a strategy to create and implement new innovations
- Understand management and leadership skills needed to handle each stage of a rapidly growing venture
- Outline strategy to support innovation culture within a firm

IC² Courses Taught at the University of Texas at Austin

Topics in Innovation, Technology and Commercialization

Technology Management & Transfer: Theory and Practice

Research in Communication Technologies

Economic History of the World: 1900-Present

Strategic Analysis for High-Tech Industry

Management Planning/Control of Complex Systems

Entrepreneurial Behavior: Social Aspects/Business Aspects

Corporate Strategy

Management of Alliances—Organizational/Communications/Information Technology

Special Topics in Statistical Mechanics

IC² INSTITUTE ADDITIONAL OUTREACH ACTIVITIES

Science and Technology Commercialization and Economic Development

The NASA Technology Commercialization Centers (TCCs), established in the summer of 1993 at the NASA Johnson Space Center in Houston and the NASA Ames Research Center in Sunnyvale, Calif., have had the opportunity to evaluate and potentially commercialize \$3.5 billion in NASA research. The TCCs have been catalysts for technology commercialization and business development, linking government, business and academia for the value-added transfer of NASA technology. By August of 1995, a total of 18 companies were operating inside the commercialization centers, with an additional 11 businesses working with the TCCs on an “outside the wall” basis.

The C²E Technology Marketing Group (TMG) has continued to support emerging companies in the TCCs through business planning and market research. The group has also expanded its commercialization activities in response to the growing demand from a variety of technology-based organizations.

Global

A distinguishing feature of the IC² Institute has been its global activities in teaching, research, conferences publications and theory application. The Institute's continuing international activities include the Japan Industry and Management of Technology Program, China Industry and Management of Technology Training Program, cooperative relationships with Brazilian institutions, international executive-education program and support of the international MOOT CORP competition of the UT-Austin Graduate School of Business. The participation of international Visiting Scholars-in-residence at the Institute enhances IC² global activities.

International Innovation and Management of Technology Training (IIMTT) Program

Initiated in 1994 as the China Industry and Management of Technology Training (CIMTT) Program, the International Innovation and Management of Technology Training (IIMTT) Program is a summer internship program designed to build business, academic and government ties between strategic regions and firms in the United States and other countries, including Brazil, Chile, China, Portugal, Russia and Ukraine.

Cooperative Activities with Brazil

A formal agreement of academic cooperation between the Institute at UT-Austin and the Pontificia Universidade Catolica do Parana (PUC-PR) in Curitiba, Brazil, made in 1993 has led to student exchanges, conferences and joint research activities.

International MOOT CORP

Twenty-one teams of entrepreneurs from leading business schools in the United States, Australia, Brazil, Canada, France, Great Britain, Hong Kong and Peru participated in the eleventh annual International MOOT CORP held at UT-Austin.

IC² INSTITUTE PUBLICATIONS

The Institute research activities are directed toward leading-edge theory development, applied research activities, the development of new academic disciplines and the implementation of new methodologies in emerging areas of research and teaching. Publications reflecting this research include monographs, book series, technical reports, research papers and a working paper series.

A complete listing of these would span a dozen pages. Ordering information for books published by the Institute may be obtained by contacting them at 512-478-4081. Working papers are also available from the Institute for a fee of \$5

THE UNIVERSITY OF TEXAS AT AUSTIN

Education

The University of Texas at Austin offers an Entrepreneurship Concentration at the graduate level. The purpose of the entrepreneurship concentration is to prepare effective executives in the identification, formation and growth of new ventures in startup, independent and corporate-based settings. Because courses use the case method, students learn to apply the functional skills they learned in their first year as an MBA to real world situations presented in class. Students learn to listen, to think on their feet, to state their positions clearly and concisely and to back up their conclusions with evidence and analysis.

Expected Outcomes

The entrepreneurship-concentration curriculum emphasizes theory and concepts that are linked to application-oriented classroom experiences. The range of careers after graduation is varied and extensive. In the past, graduates have formed new ventures, often implementing ideas developed from coursework or an internship. Some join existing entrepreneurial ventures or start-ups and par-

ticipate in the management of high growth. Others accept positions with larger organizations interested in the process of continuous renewal in order to gain competitive advantage or to remain competitive in their respective industries. Still others have become members of organizations that contribute the infrastructure supporting the entrepreneurial community: consulting firms, commercial banks, investment banks, accounting firms, venture capital firms, business incubators and economic-development agencies.

Entrepreneurship Required Courses

1. Introduction to Entrepreneurship
2. Opportunity Identification for Entrepreneurs
3. MOOT CORP®
4. Launch and Growth
5. Practicum or Entrepreneurship and New Ventures

All classes link theory to practice and provide an interdisciplinary perspective on the concepts, analytical tools and processes of entrepreneurship. Business relationships and partnerships have been established for projects that insure the curriculum is meeting the expectations and needs of the employment market for entrepreneurship-concentration graduates.

The entrepreneurship curriculum is taught by five faculty members from the management, marketing or accounting departments. Although there are five chairs in entrepreneurship, one is unfilled, and the other four are held by faculty who do not teach entrepreneurship.

RENSSELAER POLYTECHNIC INSTITUTE

THE DIRECTOR AND THE SCHOOL

Mark Rice, Director, Center for Technological Entrepreneurship, Lally School of Management and Technology, Rensselaer Polytechnic Institute, Troy, New York.

Description

The Center for Entrepreneurship of New Technological Ventures (CENTV) was established in 1988 as an inaugural initiative of the university president. The Center acts as a bridge between the Lally School of Management (and by extension the rest of university core activities) and the community of entrepreneurs in the Incubator, the Technology Park and the extended Rensselaer network.

Mission Statement

Our mission is to educate future business leaders who will guide their organizations in the conversion of technical ideas into new businesses, products, processes and systems.

Objectives

- To create a unique environment for entrepreneurial development, one that produces both successful ventures and successful entrepreneurs
- To connect the School of Management to the Incubator Program, the Rensselaer Technology Park and the extended network of entrepreneurial alumni and friends of Rensselaer
- To create a “living laboratory” for significant research in the success and failure of new enterprises, including mechanisms and policies to encourage growth and success; the role of public agencies, colleges and universities; and attitudes and behaviors of successful entrepreneurs
- To build a network of entrepreneurs and organizations dedicated to promoting entrepreneurship and to plug our students, faculty and local entrepreneurs into that network

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

Sixty-four hundred is the size of the university. It has about 4,000 undergraduate and 2,400 graduate students. The School of Business is about 10 or 12 percent of the total, depending on how much you count things like Executive MBA and so

forth. There are five schools in the university, which is dominated by engineering as the biggest, probably about 50 to 60 percent of the total. Science is about 20 percent, management 10 percent, architecture 7.5 percent and humanities a few percent. That's student population, not faculty. There are a lot of faculty over in humanities and social sciences because they are kind of a service school for all the other schools. It's a private university which could best be labeled as a "technological university" as opposed to an engineering school, because it's technology that shows up in every one of the schools, even humanities and social sciences. Just to give you a flavor, in HNSS it's technical writing and it's electronic media in arts, so there is a lot of the technical side of things showing up across the board.

In the school of management, we're not a general-purpose business school. It is the Lally School of Management and Technology. And in entrepreneurship, it's not Main-Street entrepreneurship, it's technological entrepreneurship. So I think the critical thing is to understand that technology is a cross-cutting theme across all the disciplines.

SPECIFICS ABOUT THE CITY OR COMMUNITY YOU SERVE

We are in the city of Troy, which has about 55,000 residents. However, we're really in the capital region of New York State. Troy, Albany and Schenectady, which 50 years ago were separate cities with farms between them, are now all one big metropolitan area. So it's more appropriate to say we're located in the capital region of New York State, which is a metropolitan area of about a half a million people. Schenectady is the home of General Electric and Troy is literally known as the home of the Industrial Revolution. It started here in the late 1800s with the iron mills and the textile mills and such. But it's an old industrial city that is now in a major state of decline. What's interesting is that the University is taking the lead in doing the turnaround, transforming it from an old industrial city on the brink of disaster into a home for technological entrepreneurship.

So the Incubator, the Tech Park and the Center for Entrepreneurship are leading the turnaround.

SPECIFICS ABOUT CENTER/PROGRAM

Year Started

The program really started in the late 1970s. It grew out of the engineering research centers that were tightly coupled to industry. Because of that activity, in the late '70s and early part of 1980, the university president and a number of key trustees began to explore, in depth, the possibility of doing a technology park. That led to the decision to do an incubator program as a pilot test, and that started in 1980.

If there was a single point in time that you'd say the entrepreneurship program started, you'd say it would be 1980, with the founding of the Incubator. Because of the success of the Incubator, the Technology Park opened in 1983. That was the second major component of our program. It was in the mid-1980s, around 1985, that the first courses were taught in entrepreneurship.

The Center for Entrepreneurship was founded in the fall of 1988, when we inaugurated our new president, at that time Roland Schmidt. We—and the “we” are three people: myself as director of the Incubator, Bob Hawkins as the Dean of the School of Management and Mike Walkholder as head of the Tech Park—made a proposal to the President that we create an umbrella organization for all of our entrepreneurship activities. He accepted the proposal and made it one of his three major inaugural initiatives. So, to have that kind of high-visibility leadership proclaiming technological entrepreneurship as critical to the university was very important. The basic mission of the Center was to be the bridge between the internal core academic activities in entrepreneurship and the external outreach programs represented by the Incubator, the Tech Park, the Venture Affiliates and so forth.

Faculty/Staff Involvement

The number of faculty who teach entrepreneurship courses full time or part time is 19. Of those faculty, five teach mostly entrepreneurship-type courses and 14 teach courses outside the field of entrepreneurship. Then we have visiting entrepreneurs who come for a semester and do a significant amount of teaching while they're here. We have 12 additional staff.

Funding

Plans for Endowment Campaigns and Naming the Center

We had an institute campaign that ended a couple of years ago. One result was the endowed chair. The second was the research fund—both of them named endowments. But most importantly, Ken Lally, an entrepreneur and his wife donated what will turn out to be a minimum of \$15 million. It could be as much as \$20 million to the business school, and the school was named. Given the very tight tie between the Center and the school, this is having a big impact on the Center as well.

In the next campaign, which is likely to start in a year or two (they tend to go in these five-year cycles), we will have in there a naming opportunity for the Center for Entrepreneurship and we certainly hope that we will have an additional naming opportunity for the director of the Center. Our strategy is to think in terms of, instead of one big naming opportunity, two still big but smaller ones by comparison. And then, additional endowed chairs. There is an endowed chair in name that doesn't have the money behind it. So I would guess that over the next five years our chief targets would be a naming gift for the Center, a naming gift for the director's position and a naming gift for another endowed chair.

Operating Funds

Let's look at the topic of money from the three key programs. The Tech Park and the Incubator were both started with the idea that they should ramp up quickly and be financially self-sufficient. The university made a very small investment in the Incubator in the beginning as a match to some external funding to help renovate a building to start the thing. The university was prepared to commit \$750,000 to do the renovation of a much bigger building. Although an initial investment was made, both of those programs very quickly became financially self-sustaining based on their own operations and have remained that way.

The Center for Entrepreneurship, by comparison, is very different. We have no way of generating revenue directly. We're part of the academic program and the funding goes to the Lally School of Management. When we started in 1988, it was largely done by pulling in the time and resources of people from the School of Management and Technology, from the Incubator and from the Tech Park and all with a very small budget. The budget was primarily derived from relatively small gifts. We limped along for several years on that basis, until about five years ago. One of our larger donors got pretty excited about what he was seeing and donated a large sum of money. We have chosen to use that as our seed capital. We spent about half of it in operations and that is the primary source of ongoing funding for operations. We try to preserve as much of that capital as we can by bringing in other sources of money. That is our soft money bankroll.

The other funding we raised has all been in the form of endowments. Our Entrepreneur of the Year celebration is at least partially funded by an endowment that an alumnus set up, and the rest we take out of operations. We don't charge for that, so that is our key event of the year for keeping our network going.

The business plan-competition was funded by a gift by an anonymous donor, an entrepreneurship donor and the expenses associated with that are covered by the endowment.

The Venture Affiliates is by and large a break-even. That is, the members do pay a fee when we hold a workshop. There is a fee associated with that. We don't count the costs very closely because whatever additional costs may occur we kind of slip between the Incubator and the Center for Entrepreneurship. But that's essentially a break-even.

The Office of Technology Commercialization is not yet self-sustaining. It has a budget, basically one full-time person and a secretary. And that's one of the reasons we formed RENTEC (Rensselaer Technological Entrepreneurship Council)¹. They're now aggressively going after, trying to generate revenues to make that self-sustaining. It's not yet; it's funded by the university.

THE COMPONENTS OF YOUR PROGRAM

Outreach

The difference in the evolution of our program from that of most other centers I'm familiar with is that ours really started with the outreach programs. And the success at connecting the entrepreneurial community to the university became the foundation upon which the Center for Entrepreneurship was built. That actually came third after the Incubator and the Tech Park and all the affiliated outreach programs.

Rensselaer Incubator Program

So, given that our focus is technological entrepreneurship, the real starting point for this program was the development of the industry-oriented engineering research centers in the mid-1970s. That created a whole flow of practically oriented research which resulted in technologies that needed to be transferred. So tech transfer was a critical issue 25 years ago. Part of that technology transfer occurred from the research centers to the industrial partners, but only part of it. And the vision that president George Lowe created was the need for us to have multiple paths for technology transfer. One of the paths needs to be the new venture path. He specifically had in mind Stanford Research Park and the success that they had. In our case we had 1,400 acres of undeveloped land that had been purchased many years before. So around 1978 George Lowe had the vision that that should become the Rensselaer version of the Stanford tech park. Then that became the starting point for discussions among the president and his top leaders, both academic and administrative and trustees of the university who themselves had been successful entrepreneurs, which led to the decision to start the incubator as a pilot test for the Tech Park. The incubator was founded in late 1980 and is probably what we are best known for. It is a department of the university and is tightly tied into university activities.

Since 1980 the Incubator has launched over 100 new technological ventures. Over two-thirds of them have been started by students, faculty, staff and alumni of the university.

Technology Park

The second major outreach program that evolved from that start was the Technology Park, reflecting the success of the Incubator. The university invested \$3 million of its own endowment funds in developing the roads and the other utilities and the first major tenant, National Semiconductor, opened its facility in 1983. Today, it is home to more than 50 high-tech companies and 2000 employees. The Tech Park attracts students to projects for credit, internships and summer and part-time jobs. The park is home to a located manufacturing facility; an information-processing center for NYNEX; the national R&D center for MetLife;

Virogenetics, a highly successful biotech company; and a host of fast-growing companies, like MapInfo.

Venture Affiliates

In early 1989, we started the Venture Affiliates Program. The Venture Affiliates is an outreach to the local community to tie in the entrepreneurial ventures in the community that were not in the Incubator or Tech Park but who wanted connection to the university. A variety of things happen in that program. One is that they get many of the same business-assistance services that the companies in the incubator get, for example.

Secondly, we have essentially a monthly networking meeting that really attracts people from all the different entrepreneurship sectors, both inside and outside the university. And that has a combination of networking and education or training associated with it. We usually have the pretty heavy-duty guest speaker who will talk about an area of specific interest to entrepreneurs. Then we have the networking. That's usually a two-hour program that sometimes gets extended to half a day or a day type of workshop, if there's more training that goes on than normal. One of the highlights of the Venture Affiliates is the Entrepreneur of the Year Celebration.

Entrepreneur of the Year Celebration

The Entrepreneur of the Year Celebration is the outreach to our extended entrepreneurship network and it's a way of focusing attention on successful RPI alumni entrepreneurs. But it also becomes a magnet for bringing many of those kinds of people back to campus. And we've now done that successfully since the fall of '89.

Office of Technology Commercialization

In the last year, we have had a couple of major new outreach initiatives. The first of those was to bring the Office of Technology Commercialization into the entrepreneurship arena and out of the dean of faculty's office, recognizing that tech transfer is a critical part of what we do. That initiative created a new, higher-order presidential initiative called the Rensselaer Technological Entrepreneurship Council.

Rensselaer Technological Entrepreneurship Council (RENTEC)

Now, this is a program that is headed by a direct report to the president. Regular reports are made to the president's cabinet and the Rensselaer Technological Entrepreneurship Council or RENTE C for short, is the umbrella for the Office of Technology Commercialization, the Tech Park, the Incubator, the Center for Entrepreneurship and all the other entrepreneurship activities. The point is that when the Center for Entrepreneurship was formed in 1988, we had probably half the activity, if that. Maybe a third of the activity we have today. The whole thing has continued to rise in importance within the university. So, with the formation of RENTE C, the Office of Technology Commercialization came under the super umbrella.

So the core group under the super umbrella, The Rensselaer Technological Entrepreneurship Council, RENTEC, are the leaders of the key components, which means the director of the Technology Park, the director of the Office of Technology Commercialization, the assistant director of the Tech Park, the director of the Incubator program, myself as director of the Center for Entrepreneurship and our new managing director, the second-in-command in the Center for Entrepreneurship.

Rensselaer Business-Plan Competition

We also this past year started the Rensselaer Business Plan Competition, specifically at the behest of our successful entrepreneurial alumni in Silicon Valley. The winner of that competition got to present the plan to 25 people at a banquet in Silicon Valley about a month ago. We think that's a big new initiative for us.

Research

In the early days when there was really only one faculty member, Pier Abbetti, the research followed his research interests, which are in primarily three areas. First, the relationship between strategy, technology, R&D management and new venture creation inside established companies. The second area is the kinds of infrastructure that you put into place to support entrepreneurship and that has to do with incubators and tech parks and other kinds of assistance programs. And the third area would be how that same concept plays out in the international arena. He's done a huge amount of studies on entrepreneurship and entrepreneurship-support programs in countries all over the world.

When I came over to the School of Management, I continued to do research in those areas, but two things have happened in the last two years that have dramatically changed our research program. First of all, about two years ago, we proposed to the Sloan Foundation that we conduct a multidisciplinary team-based research project studying management of discontinuous innovation in established companies. Now, from our perspective, that has a heavy component of corporate entrepreneurship. And in fact, as one of the team members and the project manager, that's my focus. But there's a huge amount of overlap with what I'm doing with the professors from the other nine functional disciplines. The area of greatest interest for our participating companies is what they call the "fuzzy front end," that is, where uncertainty is highest and where entrepreneurship, creativity and different ways of doing things are most important. That project has had a huge impact on pulling really a third of our faculty into entrepreneurship-related research.

That's been going on now for a year and a half and I think the impact is reflected in what happened at the Babson entrepreneurship conference this year. Before this year, the norm was that RPI would send one or two people and we'd do our papers and play our part. This year we had five faculty, two Ph.D. students and

one staff member and we had the second-largest delegation at the entrepreneurship research conference. And it was primarily because of this large-scale, multidisciplinary corporate-entrepreneurship research project. So that's one of the major new developments.

We were successful in attracting Professor Venkatraman from Wharton to our endowed chair in entrepreneurship. He brought with him the *Journal of Business Venturing*, which is generally thought of as the premier academic journal in entrepreneurship. And having him here in the heart of our school has created all kinds of new research activity. So now there are the traditional areas of research, a heavy emphasis on corporate entrepreneurship and discontinuous innovation, as well as the whole set of research streams that Venkatraman has been engaged in for the last 10 years. It's very hard to develop a significant research agenda if you don't have at least one or more core faculty members engaged.

So, if you're starting up a program and you're concerned about doing research, you've got to find a way of connecting to the core faculty. And if it's not entrepreneurship faculty, that is, if the entrepreneurship faculty are more the practitioner academics, I think the challenge is for the dean to find a receptive mainstream faculty member who is willing to take the lead on the research dimension. You need a core, traditional-academic type person inside to get the attention of other faculty. So if your entrepreneurship team doesn't include a faculty member who would attract the attention and the respect of the core faculty that are doing lots of good research, then you've got to find a way to recruit one of those core faculty members to be part of the team. Now that's not probably going to be a junior faculty person who's got to deal with tenure. It's going to be someone who's gotten through the tenure process and then has the luxury of intellectual flexibility.

And since most of the centers are involved either with schools of business or schools of engineering, if you are wanting to integrate it across campus into other areas, whether it be psychology, sociology or computer science, it is good to know some of the things that tempt other people to do research in entrepreneurship. One, of course, is money. And one of the interesting things about entrepreneurship programs is that they tend to have the capacity to attract money, because they are very exciting to donors, particularly alumni donors who made their money doing entrepreneurship. Therefore, if the center can set aside some of its soft money specifically to pull new faculty into the arena or under the umbrella by offering funds to support a graduate student or to support one month of summer research or a summer or whatever it might be, that's a powerful way to bring non-entrepreneurship faculty into the entrepreneurship arena.

The second way is strictly through personal relationships. That is, the dean or some other key leader prevails on some non-entrepreneurship faculty and says, "Look, this is a really important initiative for the school; is there a way that you

can take your research interests and see how they play out in the domain of entrepreneurship?” That may be organizational behavior, that may be psychology, that may be marketing, it could be finance. Because entrepreneurship is cross-disciplinary, you can take any one of the traditional functional areas and say, Okay, so how can I do this kind of research in the field of entrepreneurship?”

Curriculum

The first entrepreneurship course specifically called an entrepreneurship course was offered in 1986 and was called Principles of Entrepreneurship. The next course after that was Technological Entrepreneurship and that was a field-based project practicum kind of course which put students directly into the Incubator and Tech Park companies doing a field-based project. Those two courses have continued to be kind of the backbone of everything else we do.

For example, just this year we have made a pact with the School of Engineering to offer that two-course sequence specifically for engineering students in their senior year. And we think that’s a major initiative for us in terms of outreach to the other schools. Until the late 1980s, the basic entrepreneurship curriculum was “Principles of Entrepreneurship,” “Technological Entrepreneurship” as the practicum course, “Industrial Marketing,” which continued to have a large part of entrepreneurship in it, including a marketing project with a company and “New Ventures,” which is kind of a capstone MBA course for entrepreneurship. Up until a year ago, people who concentrated in entrepreneurship took at least three out of those four courses.

Now that all dramatically changed when I got the National Consortium of Entrepreneurship Centers grant to do “Infusing Entrepreneurship,”² because what that really did was cause me to begin to explore where entrepreneurship is throughout the curriculum and to figure out what was missing and what other courses we should introduce. And so, now, literally a year later, we are prepared to quantify entrepreneurship in terms of this set of courses.

Graduate Concentration

The easiest way to understand this is all graduate students concentrating in entrepreneurship take “Principles of Technological Entrepreneurship” and “New Ventures.” Those are the fall and spring courses that are kind of the capstone courses. All students concentrating in entrepreneurship take one of the two practicum courses, either “Starting Up a New Venture,” which is a business-plan writing class for the people in the class who are interested in starting their own business. Or they take “Practicum in Technological Entrepreneurship,” which is a project with an existing company. And then they take two of a set of six entrepreneurship courses; they get to pick two from a list of six. So those are the core entrepreneurship courses and that number is 10.

But then we have seven courses in the core MBA program that have such a

significant component in entrepreneurship that we count them and the label we give them is “Core Courses Included in the Entrepreneurship Curriculum.” We try to make our students understand that when they’re taking those classes, a large part of what they’re learning directly applies to entrepreneurship.

Undergraduate Concentration

For undergraduates that want to concentrate in entrepreneurship, the approach we’ve taken is to say, “If you’re a management student, you have a tremendous amount of background in a general way that prepares you for doing business and so much of that applies regardless of the context. But now to get the special information and attitudes and experiences to prepare for doing something entrepreneurial, we say you’ve got to take a set of four courses.”

The first is the undergraduate version of “Principles of Technological Entrepreneurship,” which we simply call “Introduction to Technological Entrepreneurship.” Secondly, they have to take a course, a new course we’re offering, called “Innovation, Invention and Entrepreneurship,” which we’re just starting that this fall and it will have both graduate and undergraduate versions. It’s also cross-listed, so we expect a large number of science and engineering students in that class. The third course is one of the two practicums, which also will have an undergraduate version. And the fourth course in this concentration is kind of a negotiation between the student and me and the undergraduate advisor. We sit down and say, “Let’s look at your track record and what you want to do and figure out where there are gaps in your preparation.” And we ask them then to take one of the higher-order courses in the elective courses in one of the functional areas that will help fill the gap that we’ve identified. So the undergraduates have basically four required courses, one of which is a negotiated elective. That’s the curriculum.

Developing Curriculum

Now if I were going to advise someone in developing a curriculum, I’d start with three general suggestions. One is you need to look and see what your marketplace wants. That’s not a revolutionary thought for people who are in business, but it’s amazing to me how often people neglect that.

The second is to look at the specific strengths and interests of your faculty and how they may reflect the kinds of things that could be taught in entrepreneurship courses.

And the third is to look at the institution as a whole and get some sense of its focus. I think you also look to your other external constituencies—in our case the key group is the alumni—and see where their strengths and interests are. If you look back on the early days of entrepreneurship inside the business school, the real driver was that the dean was out there trying to raise money; he found out

that the people with a lot of money were entrepreneurs and in our case they were all technical entrepreneurs.

Therefore, having a focus on technological entrepreneurship made sense for us. But I think there's one other step and that is, so often the first approach for people who haven't had any significant curriculum in entrepreneurship is simply to say, "Okay, what's the first course I should offer?" Or "what's the first two-course sequence I should offer?" And I think a much stronger approach is to look and see where those courses are going to fit into the whole spectrum of intellectual and real-world activity with the idea that you will eventually, if not immediately, want to tie the entrepreneurship courses into everything that's going on, simply because entrepreneurship is cross-disciplinary.

Therefore, if you start by making some assessment of the general intellectual territory you want covered in the curriculum, then the second step would be to look and see where that intellectual territory is already covered in existing courses. The third step is to design the new courses to be connected to, if not integrated, with the rest of the program that the students are going to be taking. I think if people started out with that, rather than doing what I did, which was to wait until I had the catalyst of the grant from the Kauffman Foundation to push me to do it, if instead you start to do the assessment and see where entrepreneurship already exists in your environment, both inside the courses and inside programs, then the start-up of the curriculum will be much more powerful.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

You can have a center in name that has a budget and really has perhaps one key faculty person or administrative leader and a secretary, we would not consider that to be a center. It may have a name on it, but it's not a center. The center implies at least some level of critical mass—something more than the one-man or one-woman show. And that's probably most easily measured by the extent of the program or programs that are offered by the center, all of which fall under the curriculum, research and outreach domains.

But if there is enough evidence of something significant going on in those three domains, then it's fair to say there have got to be enough people working on it to create that kind of critical mass and if you follow it back, there is going to be more than the one person with the secretary. They may not be full time. There are some institutions, and ours is one of them, that really go out of their way to pull in the non-entrepreneurship people to significantly connect them into the program. And so, you have a core group that usually has to be three or four key people at a minimum and then their challenge is to extend the boundaries of the center to be more inclusive to create that critical mass.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?

Entrepreneurial Leadership

Without a doubt, launching an entrepreneurial program or entrepreneurial center is an entrepreneurial activity itself. That is, typically you're starting with limited or no resources, not enough people, no history and lots of uncertainty. So having an entrepreneurial leader or champion is critically important. Now, that's at several different levels.

You need that kind of person taking the lead on the development of the program or center, but within the institutional environment you also need a champion at the high level who becomes the sponsor, the protector, the supporter, the access point, the gateway to resources. In our case it has been the president of the university. We have been very fortunate and I think it was because of the power and success of the first president 20 years ago to identify this as a critical opportunity for the university, that subsequent presidents have simply followed that pattern and have continued to serve on the advisory boards for our entrepreneurship programs and have continued to promote entrepreneurship with our primary donor pool, which is not particularly difficult, given the fact that so many of them are successful entrepreneurs. But to have that leadership at the level of the president and the trustees has been critically important, not only in terms of resources but also in terms of visibility in our various constituencies.

So the starting point is people, no question about it. Champions at the highest levels and then program leaders who are powerful go-getters, program-builder type people.

Ability to Raise Funds

Second is the ability of the leadership and the champions of the program or the center to raise funds.

Developing a Network

And a third success factor is building a network of people, both inside and outside the university.

REASONS TO START A CENTER OR PROGRAM

I think the fundamental issue is: Is there a demand? I would say once you get past the issue of demand, if you look at what's going on in our world—the pace of business activity is increasing, the degree of uncertainty, the rate at which organizations are transforming themselves and changing is increasing—all that adds up to increased uncertainty, increased demand for thinking and acting outside the box, greater creativity across a variety of dimensions and I think also the need for people

to take more responsibility for their own careers and their own success. The days of going to work with a good professional job at GE for the rest of your life are probably pretty much gone. There is evidence out there about the rate at which people change jobs and the number of different careers they're going to have throughout their lives. I happen to think that entrepreneurship as a general skill and attitude as well as a knowledge base is great preparation for the way the world is today. It's cross-cutting, it's based on a whole style of thinking that's related to uncertainty and change.

HOW WOULD YOU START ONE TODAY?

People

If we're talking about a center or program, there's kind of a core. You can have a program affiliated with the university that can have a significant impact on the university but not be a center within the university. And there are places that do that very well. The program may even be organizationally separate, not-for-profit, but there is a symbiotic relationship: the university has students working over there and faculty doing research over there and the program is feeding off the connection with the university.

You can have a symbiotic relationship and I think you can apply the label "program" to it. "Center" to me implies something that is different. It's inside the walls, so to speak. It's part of the organization. In this case we're talking about universities. Fundamentally, you need to have a core group of people. The core group of people have to have the capacity to pursue the objectives of the center or program. And, depending on how broadly that mandate is defined, you'll need different kinds of people.

I think, at a minimum, you need to have the strong leader—let's call that person the administrative and intellectual leader. If the mandate includes only outreach, for example, if it's just outreach programs, you can do that with a very strong leader and one or two key support staff people, assuming that there is a receptive audience among the constituencies you want to work with. But if the mandate becomes one that includes outreach, teaching and research, then you've got to find a way to have a core team that involves both kinds of people: program developers and managers on the one side and on the other side academic people who are comfortable in the academic environment and are effective and have the ability to connect to other faculty. Those are the core people.

Advisory Board

Having an advisory board is extremely important and valuable if it's done right. It can also be done in such a way that it is, on balance, more of a detriment than it is a help. A lot of it has to do with setting up the objectives and the expectations of the members of the advisory board and what their role is and how they contrib-

ute. If it's advice as opposed to governance, that's a significant difference right there.

On the problem side, if you haven't defined the objectives and the relationships clearly, you run the risk that you have very strong capable people on the board who are dictating the direction of the program and treating the staff like they're their own staff. The result is that the program doesn't get the attention it should because the staff is running around trying to support the particular, specific interests of some of the strong advisory board members.

On the positive side, the real issue is how you get the advice and beyond that, how you get contribution from the advisory board that they have the ability to offer but often don't have the time to make. That, I think, goes back to the strength of the leadership of the program or center and the relative importance in the total universe of the university as reflected in the leadership in the university, the president and the trustees. Our advisory board is an interesting one, because we historically had very strong advisory boards for the Incubator and the Tech Park and then, when I started the Center for Entrepreneurship, we did start an advisory board right from the beginning. It was a fairly loose relationship and it was the kind of thing where we'd piggyback advisory-board meetings on major events and had a lot of the entrepreneurs back, because a lot of these people are coming from the west coast and all over the country. Well, that kind of loose advisory board relationship that had maybe 10 or 15 of our strongest supporters involved went through a dramatic change when the new dean came in and raised the bar, so to speak and said entrepreneurship clearly is our greatest strength at this point. He abandoned the old, large, relatively ineffective advisory board that had evolved through the school and co-opted my advisory board and made it the school's advisory board. So we now have the advisory board for the entire school that is 80 percent entrepreneurs whose original connection was primarily through the entrepreneurship arena. And as you would expect then, my advisory board has several of our largest single donors, it has eight of our strongest entrepreneurship supporters and I think two of the 10 are trustees of the university.

Raising Money

As for actual figures on how much is needed to start a program, this is the mental math I do. Our Center, as it has historically been operated, needs nominally \$250,000 a year. So, I think in terms of a \$250,000 operating budget and, therefore, by our math, that says you've got to have a \$5 million endowment. Our institute says you get 5 percent. And they're trying to take into account inflation by only giving you 5 percent.

So when I go out to ask for endowment then, I would name the director's position for \$2 million, which would be \$100,000 a year, which, depending on the person, comes close to covering their full salary and ask for \$3 million to name the Cen-

ter, which would throw off \$150,000 and then the two combined throw off the \$250,000. I think right now the typical endowed chair at RPI is \$1.25 million plus or minus a quarter million. And even then, that's not enough, because if you want to fully fund an endowed chairholder, it depends on what department you're in, but you're probably talking about needing \$125,000 to \$150,000 to do that, including fringe rate and everything else.

And so you really need more like a \$2 million endowment to really start getting in the ballpark. I don't see it jumping that fast. I think, in the next campaign, endowed chairs are likely to be \$1.5 million. And then that covers maybe half of the real cost of the person. There are obviously naming opportunities at the same kind of level and it may come in as an endowment, or it may come in as a multi-year commitment for expendable dollars at a certain level.

For example, one of our alumni wanted to establish a program for project management that would be a bridge between engineering, architecture and management. And you know, we negotiated a deal where we have one professor who is focusing on that and creating a course. And they get the equivalent of a \$200,000 endowment in the form of yearly expendable funds. So, in terms of our professorships, the typical thing is there are endowed chairs which you would say typically go to full professors and then there are endowed junior faculty positions. Usually if you're working with your university relations or university, whatever you want to call them, they'll create these naming opportunities. They're very creative that way. The tricky part is that we have these endowments that were significant when they were given 10 years ago or even five years ago, but now don't begin to cover the costs of what they're supposed to cover. And that's really hard. It's kind of difficult to change the names because somebody else comes in, so you end up creating some new position or some new center or something. That's a tricky game.

GROWTH AND MAINTENANCE ISSUES

I think the third easiest thing to do is to start up an outreach program. But do it in a modest way. You can start up a modest outreach program relatively easily. The next most difficult thing is to start up a research program. And I think the most difficult thing is for a university-based entrepreneurship center is to do outreach in a way that transforms the environment. And I think that's where the big growth opportunity is. That is, you get places like Baylor and RPI and CMU sitting in cities that are not, any way you cut it, Boston or Silicon Valley and not even Austin and probably not even Boulder or the Boulder/Denver area. And it's harder, much harder for us to create the critical mass, for lack of a better word, that becomes the catalyst for transforming the local economy. And yet that's the great challenge. If you do all the things right and you create the synergy among them and you have the capacity to stimulate the creation of new ventures, then you have the opportunity to transform the local economy. And fundamentally

that's what you'd like to do. Frankly, the idea of training world-class entrepreneurs who then move to Route 120 or Silicon Valley is not my idea of great success. I think the toughest part is that if you have some success, based on your relatively modest start, the pressure to expand is huge, for a whole variety of reasons. And very often the problem is that you can't grow the budget and the staff fast enough and well enough to keep up with the pressure to grow the program or center. And the danger is twofold.

One is the people that were successful in your modest program get recruited to go do the same thing at a higher level with a better budget and better support in another location and you lose your talent. Or, alternatively, you keep your talent, and you just burn them out. It goes back to this issue that all entrepreneurial ventures face and that is, how do you manage growth? I think part of it is having strong leadership and strong champions within the organization and strong advisory boards that are helping keep the strategic focus, helping keep the directions in mind and making sure that the path, though challenging, is doable.

I think the biggest problem and I see this all over the place, is the response to opportunity-overload to try to do too much and then you fail to do some things well that you really need to do well or you spread yourself so thin that you have this whole portfolio of programs, and they're relatively low-impact or relatively superficial. They look great on paper, but when you actually start looking at impact, it's just not that great. The pressure to expand comes from a variety of sources. This goes back to the discussion about having an advisory board that really helps or an advisory board that hurts. If the leadership and the champions and the advisory board don't have a clear understanding of what they're doing and how they're doing it and over what time, the worker bees can be put in a position where they're trying to manage and sustain too many things. I think the pressure comes from the fact that the success generates visibility which attracts donors, which also sets up expectations among donors and among other constituencies within the university and definitely in the community.

Without a doubt some pressure is generated through top-25 lists, top-5 lists, self-imposed competition among colleagues. I think on the one hand, at the level of the colleagues, there are some natural competitive juices flowing. But much more so, I think, there are cooperative and collaborative and supportive relationships. I mean, 95 percent of the relationship I have with our colleagues is something that's supportive and collaborative and how can we advance the cause. But the institutional pressures are very different. We believe that, certainly in technological entrepreneurship, if not in entrepreneurship in general, we're absolutely in the top five in the country. And yet our rankings don't show that. I haven't even seen it, but the dean said that in *US News and World Report* we were ranked twenty-third in entrepreneurship. So you can imagine that those who have a huge stake in our rankings, particularly the admissions office and the dean and the fund raisers and the president, say, "Hey, how come the rankings don't match up with

what we think the reality is? Are we misjudging ourselves or are we not doing what we've got to do to play the rankings game?" So, yes, ranking is a tough one, there's no question about it. And if you asked me why we're not ranked in the top five, I can tell you I absolutely believe that the dominant factor is that our attention has not gone into PR and communications. It's not for lack of reality. The problem that causes us to divert significant time and talent and resources into playing the PR game.

ANY OTHER SUGGESTIONS FOR THOSE STARTING A PROGRAM?

Attract the Right People

I think that without doubt, no hesitation on my part, the key is attracting the right kind of people and we've talked about what that means. I mean, you just don't get it done unless you have a Nancy Upton or a Don Sexton or a Jack Thorne or a Bill Bygrave type person who just takes it on as the challenge of a lifetime and does it for the love as well as the money. This person becomes the catalyst for attracting attention from the top if it's not already there, attracting dollars from donors, attracting students, attracting faculty. I think it is an entrepreneurial venture. I think it's very hard, because the fundamental culture of academia is not aligned with the culture of entrepreneurship. I'm constantly amazed at the stories I hear about some of my colleagues at other universities where the academic traditions are much more rigid and entrenched. Then by comparison, you look at these schools that have somehow or another just said, "Forget that, we're going to jump out of the box in a whole different way."

Create Linkages

I think how you build the linkages between these programs is a critical issue. I mean that's what makes the critical mass, that's what makes the synergy work. And the really successful program is going to succeed in making those connections strong, dynamic, very active, and in the end, that will be probably the major contribution. It goes back to the idea of the entrepreneurial venture. You've got to start with a Nancy Upton, but if all you have is one unbelievably bright, hard-working, capable person and nobody else except maybe a secretary, it stalls at a certain level.

The way it grows from there is by building the connections and the synergies.

CURRICULUM ADMINISTERED BY THE CENTER FOR ENTREPRENEURSHIP OF NEW TECHNOLOGICAL VENTURES

Undergraduate

Principles of Entrepreneurship

This is an introductory course for initiating a new business venture and developing it into a self-sustaining and profitable enterprise. Provides understanding of the process whereby a person decides to become an entrepreneur, screens opportunities, selects an appropriate product/market target and obtains the necessary resources. Also, provides the theoretical and practical knowledge for the preparation of formal business plans for the development of new products, processes and services and for the financing of new enterprises.

Introduction to Technological Entrepreneurship

An introductory course for initiating, developing and sustaining a new business venture, which also provides the theoretical and practical knowledge for the preparation of a feasibility study that analyzes a business opportunity and which can be used as a precursor to a complete business plan. The graduate version of this course, titled Principles of Technological Entrepreneurship, is required for MBA students opting for the entrepreneurship concentration.

Invention, Innovation and Entrepreneurship

Creativity is the starting point for technological entrepreneurship, i.e., the conversion of an idea into an invention into an innovation and ultimately into a product or service that may be commercialized through a new venture, either in an existing firm or in the form of a start-up company. Through interaction with the faculty and guest speakers, students will increase their understanding of the creative process and some of the tools that can be implemented to stimulate and/or manage individual and collective creativity. In addition, through application of these techniques in course activities, students will explore and attempt to enhance their own creativity. The graduate version of this course is required of MBA students in the entrepreneurship concentration.

Practicum in Technological Entrepreneurship

The objective is to learn, by practical field work, how successful new technological ventures are created, developed and financed. Students work in teams to prepare business, marketing and financial plans for selected companies. Guidance is given by experienced entrepreneurs and consultants. The output of each team is a formal report to the sponsoring company, with specific conclusions and recommendations. Graduate version of this course is also required of MBA students with entrepreneurship concentration.

Additional Courses Required for MBA Students Opting for the Entrepreneurship Concentration

New Ventures

Analysis of new ventures, characteristics of people who successfully start new companies, identification of a market niche, establishing and building an organization, beginning to produce the first product, marketing the first product, financing the new company and making the transition from a new company to an established company. The course is structured around a series of case studies and visiting experts/entrepreneurs who can address the issues of each case.

Starting Up a New Venture

An understanding of the critical issues related to starting up a new business is gained through team-based experiential learning. Small teams of students develop a comprehensive business plan that can be used to raise money for a new or relatively new venture. The business plans are eligible for submission to the Rensselaer Business Plan Competition. The experiential learning process is enhanced through team meetings with faculty and/or course advisors and through oral presentations to the entire class.

Financial Markets & Institutions

Focus on financial markets, new instruments and techniques for financing, risk management and its application to financial institutions. Overview of U.S. financial system, the Federal Reserve system and monetary policy. Emphasis on impact of technology on securities markets and banks. Discussion of current issues in securities markets and banking, such as securitization, financial derivatives, junk bonds, bank failures, mergers and acquisitions and international banking.

Industrial Marketing

Principles of marketing and technical selling of industrial products: computers, semiconductors, machine tools, petrochemicals and other high-technology products. The course surveys the state of the art of industrial marketing and introduces students to the concepts, analytical tools and techniques applicable to the development of industrial marketing strategies in the area of product planning organizational buyer behavior, technical selling, industrial advertising and pricing.

Management of Technological Innovation

The course deals with the process of technological innovation. The managerial problems involving the relationships of technology with strategic planning, marketing, finance engineering and manufacturing will be covered. The specific problem of forecasting the business results of R&D projects under conditions of

high uncertainty and risk and the “selling” of these projects will complete the course. The knowledge gained will be applied to the preparation of business plans by class teams.

Designing for Innovation

This is an experimental course offered through the Mechanical Engineering Department which links the creative product design process with a plan for a commercializing a new product. Typically teams of management and business students collaborate on a project linking product development and entrepreneurship.

Research and Development Management

The course deals with the responsibilities of and operating problems faced by, managers of research and development. The following areas are included: technology forecasting, technology planning, selection and evaluation of R&D projects, resource allocation, planning and control and measuring results of R&D. Particular attention is given to creative problem solving, motivating and managing creative individuals, barriers to innovation and organization alternatives for R&D, including matrix and project organizations.

Core Courses Included in the Entrepreneurship Curriculum

The following courses are required for all MBA students. They have sufficient entrepreneurship content, and we work with the faculty teaching these courses to ensure compatibility with the entrepreneurship program. We explicitly consider these courses to be part of our entrepreneurship curriculum.

Design, Manufacturing and Marketing I

Two-semester sequence that follows the flow of activities within companies that leads to the creation and distribution of new products. Emphasis on identification of consumer needs, manufacturing processes and issues required to make the product. Integration across the disciplines of marketing, design and manufacturing because the challenge in companies competing in global markets is to break down the barriers among the traditional functions. Two-semester team project.

Design, Manufacturing and Marketing II

This course continues the new-product development process from DMM I with a focus on cost analysis and the development of a marketing plan for commercialization of the new product. Measures of post-introduction performance are also considered. Continuation of two-semester team project.

Designing, Developing & Staffing High Performance Organizations I, II

A year-long sequence concerned with different ways organizations change and

learn, in response to and utilizing technology. Taking a systems approach, implications for the organization and for people are considered with topics such as: team building, motivation, communication, decision making organizational design, staffing and election, compensation, reward systems, evaluation, labor relations and job design. The interface of initiatives such as business process redesign, continuous improvement and information systems with people systems are themes of the course.

Technology and Competitive Advantage

A capstone course, aimed at developing students' understanding of the relationship between business strategy and technology. The process of converting technological opportunity into competitive advantage is viewed from the perspective of both large, established companies and new ventures. This is part of a two-course sequence.

Strategy, Technology and Entrepreneurship

A capstone sequence in policy and strategy, aimed at developing students' understanding of the relationship between business strategy and technology. The process of converting technological opportunity into competitive advantage is viewed from the perspective of both large, established companies and new ventures. This is part of a two-course sequence that begins with Technology and Competitive Advantage.

Financial Management and Valuation of the Firm

Course develops a working understanding of the major investment and financial decisions of the firm, with emphasis on the role of technological change in financial decision making. Topics include: net present value and its application, capital budgeting, corporate financing decisions, venture-capital financing, debt policy and the interaction of investment and financing decisions, portfolio theory and capital asset pricing, capital budgeting (uncertainty) and options and their application to technological choice.

¹ See Appendix for RENTEC description.

² A copy of the report may be request from the Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation.

UNIVERSITY OF COLORADO AT BOULDER

THE DIRECTOR AND THE SCHOOL

Denis B. Nock is the Director of the Center for Entrepreneurship, University of Colorado at Boulder. Co-Executive Directors are G. Dale Meyer, the Ted G. Anderson Entrepreneurship Professor in the College of Business and Juan A. Rodriguez, Professor of High Technology Entrepreneurship in the College of Engineering.

Description

In 1995, with insight into current business development and with a vision toward the future, the Center for Entrepreneurship was established as a joint program of the Colleges of Engineering and Business. The Center enhances the earlier educational offerings, adds a broader focus on entrepreneurial issues and programs of interest to students aspiring to participate in new ventures and growth-oriented firms. One specific niche of the Center is the broad-based management of emerging technology-oriented enterprises. Through our courses and programs, the Center's mission is to provide a "living laboratory for entrepreneurship."

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

The University of Colorado at Boulder is a state university with 24,440 students. The undergraduate student population is 19,640 very strong and the graduate is 4,800. First off, we are a research university. There are certain departments in this university are highly rated like our physics department, that is rated No. 1 in the country by *U.S. News and World Report*. We are strong in biology, and our engineering college is highly ranked. Academically, the University of Colorado at Boulder ranks well among public universities.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

Boulder has a population of 96,000 and is one of the most highly educated cities in the country. Approximately, 88 percent of our adult population has one or more years of college, and 58 percent are college graduates and 38 percent have advanced degrees. There are a number of federal research laboratories here. IBM has a major facility and, again, it's a very research-oriented, high-tech center. We have a well known, but fairly modest, incubator. We have a well established and premier entrepreneurial community. According to the Corporation for Economic Development, Colorado is "the best state in the nation for business." *Inc. Magazine* ranked the City of Boulder "Best of Show," the best city in the United States to start a new venture. So among our entrepreneurship program's greatest strengths is the community's entrepreneurial friendliness.

STATISTICS ABOUT CENTER OR PROGRAM

Year Started

We started teaching basic entrepreneurship courses about 10 to 12 years ago. We had an overview course and an entrepreneurial finance course at the graduate and undergraduate level. In May of 1995 we decided to establish a center for entrepreneurship as a joint program of the Colleges of Engineering and Business, a unique situation. Prior to that, Dale Meyer spearheaded the curriculum and outreach efforts. Although the Center is relatively young, Dale has been very committed since 1991.

We offer one of the true Ph.D. Entrepreneurship programs in the country.

Faculty and Staff

Only tenure-track faculty members teach entrepreneurship courses. There are currently seven faculty members teaching entrepreneurship courses with two more to be added in the next year or so. Three of these teach entrepreneurship full-time. Staff consists of myself (Denis Nock) and a half (shared) assistant. I do no teaching. Dale Meyer oversees the academic side and I cover the rest.

Funding

Operating Funds

Our budget is fairly modest. To date, our emphasis has been on building the program, not on fund-raising. Be that as it may, in the Center's first year funds received will be double what we spend. As we build the program for the long-term, we expect to name the Center after a major donor, have at least two endowed chairs and four endowed professorships. We also expect to establish an endowed "Entrepreneur in Residence" program. We have a number of other future programs that will all need to be funded. When I signed on as Center Director, my only request was that I not be made a fund-raiser for the first year or so. My plea was to let us build the program and make it worthy and deserving of financial support and then go out and raise the funds. This request has been 100% honored. So far, this definitely appears to be a sound strategy.

This year, the business school provided \$50,000 to the Center and engineering \$25,000. Next year, Engineering will allocate \$50,000 and Business \$25,000. The third year, both schools will contribute \$25,000. Thereafter, we are to be self-sustaining.

CU-Boulder has become almost a quasi-state university. At one time, the State of Colorado funded more than 50% of the university's budget. It is now down to about 11%.

Grants and Contracts

To date, we have received several grants and a number of program related gifts. A three year grant from the Price Institute has been enormously helpful and we have received three grants from the Kauffman Foundation and one from the Coleman Foundation. We have additionally received a number of smaller gifts from a host of individuals for scholarships, our intern program, etc.

Endowments

We have one endowed professorship (The Theodore G. Anderson Entrepreneurship Professorship). Fund-raising will be on our next Advisory Board agenda for the first time, as we are beginning preparation to launch our first fund-raising campaign. We have a number of board members who clearly have the capacity to be significant donors to our program and we are hoping that two or three will step forward and lead by example. An endowed chair for our program requires a minimum of \$1 million and \$500,000 for an endowed professorship. Over the next few months, we will be creating an extensive menu of donor opportunities.

Other Funding Sources

Our board, on its own initiative, has come up with an innovative idea to create a \$1 Million Center Venture Fund that will be managed by a group of area venture capitalists. The fund will take equity positions in second and third round financings of new and emerging Colorado ventures. Had this fund been in existence over the last few years, it is likely that it would have done extremely well.

THE COMPONENTS OF YOUR PROGRAM

Outreach

One of the first things I did after becoming Center Director was to go out and personally visit with 19 other university entrepreneurship programs. I talked with some additional universities by telephone. I also interviewed about 50 faculty members and then, a month or so later, about 80 or 90 entrepreneurs. As I talked with other university entrepreneurship programs, I learned that they were all distinctive and that their programs were customized to their university and location. For instance, St. Thomas University in Minneapolis has an especially strong outreach component. We, on the other hand, are focused more internally because our local Chamber of Commerce has a Small Business Development Center that does very well. There is no need or point, to our duplicating their efforts. We definitely are a research university and our faculty does academic research in the area of entrepreneurship, but our program, to the best of our ability, revolves around how we can best benefit students. Students are at the center of everything we do. In terms of outreach, we do hold monthly faculty/entrepreneur luncheons and will soon launch a Quarterly Entrepreneur

Roundtable Breakfast Program. The Center is the education sponsor for the Ernst & Young Rocky Mountain Entrepreneur of the Year Awards Event. We maintain a close working relationship with the Boulder Technology Incubator and the Entrepreneurial Education Foundation in Denver. Our students are privileged to participate in the Annual Venture Capital in the Rockies Investment Showcase. At the showcase, approximately 400 venture capitalists from around the country come in to hear about 15 venture funding presentations. Our Entrepreneurship Summer Intern Program is one of the strongest components of our program and extensively involves our area entrepreneur community. This summer, largely due to our Kauffman grant, we were able to place 32 interns, mostly MBA students, with entrepreneurial companies. Dean's Awards for Entrepreneurial Excellence are presented in both the Colleges of Business and Engineering each year.

Research

Dale Meyer is our primary researcher. He has a Kauffman grant right now for an entrepreneurship academic research project that he is working on with several Ph.D. students. Juan Rodriguez has a \$100,000 grant from a donor to do "Entrepreneurial Models Research" that relates to the high tech industry. We have Dean's Academic Entrepreneurial Research awards that come out of the center, that are for \$10,000 each. These are awarded to faculty members on a competitive basis each year. We do not do any applied research, it's all academic research.

A significant portion of our budget now goes to support research. We encourage cross disciplinary research through summer grants on which the faculty bid. For this summer, we put out the request for proposals and we got 6 or 7. Two of those are in strategic management, a couple of them are from finance, one from marketing, one from information systems and one from human resource management. So we see the research as cross disciplinary, though it needs to have some application. In other words, it cannot be so esoteric that nobody in academics would ever be able to benefit from it. So, we support the professors' research programs, which they then turn to the entrepreneurial orientation. We want the research we support to be able to find its way into rigorous refereed journals. For example, in the last two years we have had from among our faculty, five articles published or accepted for publication in the Journal of Business Venturing—along with Entrepreneurship Theory and Practice—the most rigorous journal dedicated to entrepreneurship.

We are also participants in the Entrepreneurship Research Consortium that is being administered by Paul Reynolds. Our funded research includes a Kauffman grant to study alliances between large corporate firms and smaller entrepreneurial firms. Other research interests include new venture creation, venture capital decision-making, habitual entrepreneurs and angel capital. Every year we present at Babson's research conference.

Curriculum

We believe first that students should be well rounded in the fundamentals. They should know, particularly, finance and marketing. Without that grounding we do not feel entrepreneurship courses can mean that much. At the undergraduate level, we offer five courses (one in the College of Engineering) and an internship.

In the graduate program we offer four courses. One course we introduced last fall, "Projects with Entrepreneurial Companies" is an independent-study course limited to 12 second-year MBAs. It is already our jewel. We plan to add a course in entrepreneurial marketing.

In the fall, the most popular course in the CU Business School is one called "Profiles in American Enterprise." It is offered both semesters and 40 percent of the invited presenting CEOs will be with entrepreneurially-oriented companies.

We have a whole area in the MBA on technology and innovation where we teach entrepreneurship from the perspective of technology. We have one of the best non-master's programs in telecommunications, about 15 years old in the engineering college. Many of our MBA entrepreneurship students do a double degree. They do a degree in telecommunications because so many of the companies in the telecommunications industry are entrepreneurial companies. So we not only have our mainline courses but also have support courses that are totally turned toward entrepreneurship. This semester we have turned an existing course in management consulting, we have made it a management consulting to small and medium-sized enterprises or emerging growth companies. So our consulting course at the master's level is now oriented toward smaller entrepreneurial businesses.

All of our courses do field projects. We call our program a living laboratory for entrepreneurship. At the master's level in entrepreneurial companies courses, we carefully match students with a company, really carefully match them. The students not only do a project, but they also get the view of the company from the top level, from the strategic level. This is a course where the students spend at least (and usually more than) ten hours a week elbow to elbow in the company. Both the undergraduate and graduate level programs are very oriented towards experience in entrepreneurial companies.

We are always exploring. We are very interdisciplinary. So we will make proposals to each of our other centers for entrepreneurship curriculum ideas. We have Information Systems people, Marketing people, Finance people, even Accounting. We are looking at how better to design an accounting system for smaller entrepreneurial firms. We are looking at legal issues for entrepreneurial and small businesses. What we are doing is not creating something out of thin air, since the primary thrust of the whole college is interdisciplinary, we get proposals from other disciplines that we can turn toward this kind of enterprise.

There is no push to integrate across campus, although one of our other, ultimate goals is that we would offer the program, as is, in the College of Business, a little different program in the College of Engineering and then we aspired for one entrepreneurship course in many colleges around the university. In each instance we customize to that individual school, because entrepreneurs clearly are not all housed in the business school. Indeed, in this community they probably come more out of the sciences than they do out of the business school. So, that would be our ultimate objective.

Until entrepreneurship started to take off in the most prestigious schools, it was a hard thing to sell. Now that the importance of entrepreneurship in economic development is pretty apparent, almost all of the major schools are doing something with it. It seems as if almost every week I hear of another endowment happening. It's easier to convince the faculty across disciplines that it is an important thing happening. It also helps to have a dean who is totally committed and other administrators at higher levels. People begin to get excited. One strategy that works is to go cross-disciplinary with teachers who have been proven to be excellent teachers. In other words, not just to say, "Well, who is going to do this," but to go for the very, very best proven teachers. We have now 8 or 9 professors who have all won teaching awards in their own original disciplines before they turned their interest into the entrepreneurship orientation. Once the excitement is there, other people want to do it. It's a wonderful period we are in. It is to be hoped that, we who are interested in entrepreneurship and emerging enterprises can keep it going. We have to deliver good programs and good research so that the excitement will continue. Our mission, our strategy, everything that we do, we do on an outreach basis and distribute our useful research to the entrepreneurial community. Our primary focus is no doubt on students.

Integrated Learning Lab

Since we are a center of a joint venture with engineering, we are constantly looking for ways to work with engineering students and physicist students. We have a brand new building called the Integrated Learning Lab; where a junior, senior and a graduate engineering student work in teams. We're at a stage now where an engineering group will get a product or process idea and those teams will be joined by our entrepreneurship students to put the business overtone on it and the right business plans based on technology originally developed by the engineering students in the learning lab. We also have a memorandum of understanding with our office of technology transfer in intellectual resources. They've just set up a non-profit organization and our students can use those intellectual properties for a time while they see whether they can build a business plan to make it a viable commercial product for profit. This has to be okayed by the engineer or scientist or creator in the university. We have probably had 7 or 8 companies created in the last three or four years through that process; it's a real living lab.

Executive Education

We are in motion, we have retained consultants and are doing studies now about introducing executive education and the proposed cores would revolve around innovation management, but that's still in the exploratory stage. CU does extensive continuing education and we intend to introduce some entrepreneurship courses there, but that's an entirely separate division. So as we set up our program and prioritize how we could have the greatest impact first, we left that down the line because we want to do the things that we have control over, that we can do ourselves first and then we will get to some of those others later. I totally agree that executive education and continuing education should be strong components of a good program.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?

Advisory Board

We are privileged to have a very active and dedicated Center for Entrepreneurship Advisory Board. When we formed the board, we thought it would meet twice a year. At the first meeting several board members spoke up and said, "No, we want to take our board role more seriously and meet every other month." They have done so and their input has been invaluable. Their participation in and support of the program has been extraordinary. The board is comprised of the deans of both colleges, the two co-executive directors, two student representatives, myself and 27 entrepreneurs.

Teresa Ayers, Biostar, Boulder, Colorado

Peter Behrendt, Exabyte Corp., Boulder, Colorado

Steve Bosley, Bank of Boulder, Boulder, Colorado

Bob Charles, B & J Enterprises, Lafayette, Colorado

Frank Day, Rock Bottom Restaurants, Boulder, Colorado

Robert Deming, Toastmaster, Inc., Denver, Colorado

Charles Drexel, DXL, Palos Verdes Estates, California

Michael Franson, The Wallach Co., Inc., Denver, Colorado

George Heinrichs, SCC Communications Corp., Boulder, Colorado

Paul Jerde, Requisite Technology, Boulder, Colorado

Robert Knollenberg, Sensor Technology Development Fund, Boulder, Colorado

Bob Kyle, Dearborn Publishing, Chicago, Illinois

Sherri Leopard, Leopard Communications, Boulder, Colorado

C. J. Lett, Bison Energy Corp., Wichita, Kansas

Mary Beth Lewis, Wild Oats Markets, Boulder, Colorado
James Linfield, Cooley, Godward, Boulder, Colorado
Rick Patch, Sybase, Boulder, Colorado
Andre Pettigrew, State of Colorado, Denver, Colorado
Bill Phillips, Storage Technology, Longmont, Colorado
Misha Plam, Sievers Instruments, Inc., Boulder, Colorado
Gary Powell, KPMG Peat Marwick, Boulder, Colorado
Courtney Price, Entrepreneurial, Education Foundation, Denver, Colorado
Jeffrey C. Reiss, New Networks, Inc., Boulder, Colorado
Kevin Smith, Ernst & Young, Denver, Colorado
Roger Smith, Smith Venture Group, Palo Alto, California
Liz Snowden, Informed Access, Boulder, Colorado
Nathan Thompson, Western Automation Laboratories, Boulder, Colorado
Thomas G. Washing, Sanitas Capital Management, Boulder, Colorado (Chair)
Jack Woodhull, Logicon, Inc., Torrance, California
Robert W. Yates, Newport Corp., Newport Beach, California

University of Colorado - Boulder

Ross Corotis, Engineering, Dean
David Levin, Undergraduate Student Representative
Dale Meyer, Business / Co-Executive Director
Denis Nock, Center Director
Jillian Pitt, Graduate Student Representative
Juan Rodriguez, Engineering / Co-Executive Director
Larry Singell, Business, Dean

Faculty Support

The entrepreneurship program has been generally accepted by the faculty. I am not saying that every faculty member says, “this program is the best thing we have ever done” but it is an accepted and respected program in the College of Business. An important reason is that from the outset tenure-track faculty members have been recruited to teach entrepreneurship courses and they are among the best and most respected faculty members in the College of Business. As further evidence of this, two of our entrepreneurship faculty members are on the executive committee of the college. Our entrepreneurship faculty is also very cohesive. Clearly, we are blessed in this regard. I sense this is not necessarily the case at a number of other universities.

The number one strength of our program is our faculty. Whether you are in academia, business or government, you are only as good as your people and our faculty is committed and they make our entrepreneurship courses live. The fact that we are located in an entrepreneurial mecca is also important. Our advisory board, comprised primarily of successful entrepreneurs, has been extremely helpful. This is how we enhance the “real world” experiential aspects of our program. At the outset of each semester, faculty members let me know the topical guest speakers they would like to have for their course and I line them up for them. We have numerous field projects, for both individual students and for student teams. Our MBA Entrepreneurship Summer Intern Program is a real strength. More than 400 students were enrolled in entrepreneurship courses this past year. Next year, almost all MBA students will take entrepreneurship courses. We have come a long way in just one year and the “real world” orientation of our program is what especially appeals to graduate students.

Entrepreneurial Environment

Again, the premier entrepreneurial community that surrounds us is an enormous asset for our program.

REASONS TO START A CENTER OR PROGRAM

The number one reason has to be the very meaningful learning experience that we are providing students. We are having a major positive influence on students lives and career direction, especially at the graduate level. I am not sure what the typical MBA profile is, but if you look at our MBA's, not very many of them are here preparing themselves to return to the corporate world. Colorado is a hotbed for dynamic, emerging growth companies. This is what turns them on and where they hope to be when they receive their MBA degree.

I need to be clear that our program is not geared toward encouraging students to go out and start new businesses the day they graduate. A certain number of students do start their own businesses when they graduate each year, but the purpose or mission of our program is primarily to prepare students to take their place with emerging growth companies and have a much better chance for success than they would have had if they had not participated in our program.

HOW WOULD YOU START ONE TODAY

Learn From Others

The faculty interviews that I conducted early on were done to learn how our program was viewed as I arrived and then to determine what they would like the entrepreneurship program to be “tomorrow.” Those were my two main questions

with the faculty. Then I went out and visited other university entrepreneurship programs. I found these sessions to be invaluable. Without exception, my meetings with other universities were open, candid and enormously helpful. I returned to Boulder with more suggestions and program ideas for our center than we could implement in a lifetime. All these ideas were compiled into a comprehensive memo. This led to a half day meeting with our two deans, co-executive directors and others. We distilled the ideas down to those that were deemed best for our program and prioritized them so this would be our focus going forward. Next followed the development of a strategic plan for our center. I honestly believe that visiting and conferring with other university entrepreneurship programs saved us about three years in our planning process. When you have the opportunity to confer with Bill Sahlman at Harvard, Gerry Hills at the University of Illinois at Chicago and a number of others, you come away enlightened and loaded with ideas. The most exciting part of the process was coming back to Boulder and identifying and customizing those ideas that best fit our program those that will work best with our university, students and entrepreneur community. To the best of our ability, this is what we have done.

Meet with the Entrepreneurial Community

I then talked with 80 or so area entrepreneurs. In advance of meeting with them, they were sent a two page synopsis of the entrepreneurship program we were envisioning. In one on one meetings, I then asked, "What do you think?" Their input was also enormously helpful mostly in terms of where they thought we should place our emphasis. These visits were also helpful in terms of their understanding our program vision, what we were about and what we hoped to accomplish.

ANY OTHER SUGGESTIONS FOR THOSE TRYING TO START A PROGRAM?

Strategic Plan

Once our defined mission and strategic plan were in place, we then established forty-some key benchmarks. These benchmarks and our progress in achieving these are closely monitored by our advisory board at every meeting. This is the main way we measure and/or chart our progress as we proceed through the year. Entrepreneurship and everyone's combined definition of entrepreneurship can be as big as all outdoors. We have therefore found it crucial to hone in and focus on where we can do the greatest good with our program. It seems like several times a day someone comes up with a wonderful new idea. You have to be careful to not head off in too many directions. In our case, we have a three year plan that spells out very clearly where we hope to be in three years. At the end of our first year, I am pleased to report that we are half way there in implementing our three year plan and momentum for our program is definitely accelerating.

Key Players

Our faculty is definitely number one. The entrepreneurship faculty is the core of our program. The support our advisory board has provided has been incredible and we have been blessed with the total commitment of our dean. But in terms of making the program happen, the entrepreneurship faculty is key.

Entrepreneurial Passion

In starting and building a university entrepreneurship program, to me there are a lot of parallels to being an entrepreneur and starting a new business. It sure helps to have a passion for what you are about. You also should have a vision, not necessarily your personal vision, but a well-defined vision put together with your faculty and other key players and then you had better be a builder. The director's role is to cause a whole host of people, within and without the university, to believe in the program and to work together to make it happen.

Oftentimes, the director has to be the catalyst and the driver to move the program forward. Just as entrepreneurs tend to be thwarted at every turn, there are endless hurdles and obstacles in moving a university entrepreneurship program forward as well. You have to be persistent, tenacious and undaunted in moving your entrepreneurship program along, step by step.

Build on Your Strengths

There is another point we have not covered that could be helpful. As your readers compare their program with those included in your book, it is imperative that they build their program on and around their own university's strengths. Another university entrepreneurship program may do something that works really well for them, but it may not fit well or represent a strength for your university. Your trying to do something similar could prove an uphill battle. Pick elements of your program that are right and will work well at your university.

Enjoy the Students

Nothing I have done in my entire career has proved so satisfying nor offered as much enjoyment as I have experienced here working with students. In fact, it's everything. I would go so far as to say that if students do not turn an entrepreneurship program director on, I would suggest they may be in the wrong line of work.

The culture in academia is different than what I have experienced heretofore in the private sector, but in reality the job is the same charting a course, moving programs forward and getting things done. You just work with different people who sometimes have different perspectives. People need to buy in and have input and ownership in what you are about. When you encounter resistance, you just have to work harder. Before I came on board as Center Director, I was told

by many that I would be frustrated, get discouraged, have trouble gaining faculty support, etc., etc.. I can now tell you that most of what I heard along these lines simply proved untrue. Building an entrepreneurship program is like building anything else if your program is well thought out, worthy, affords significant benefit and deserves support, you will likely receive support. On the other hand, if what you are about has not been adequately thought through, if you have gone off half cocked, the program is thin and/or you are off in a wrong direction, then you probably don't deserve and will not receive support. It is no different whether you are at a university or in the private sector.

The key is to think your program through up front, do all you can to achieve faculty buy-in early on. In establishing a new center at our Business School, you will never get all members of the faculty to buy-in, but we do enjoy support from a large percentage of the faculty and, to my knowledge, there is zero opposition to our program.

GROWTH AND MAINTENANCE ISSUES

Integrating Entrepreneurship into the Engineering School

Today, our program is primarily in the College of Business. This is because there is a need and commitment to the program in this school. The dean, faculty and advisory board are all on board. The entrepreneurship program represents a superb opportunity to build a true center of excellence within the college. In Engineering, they say "we are glad to have the program, but the college is already highly ranked, our graduates are in great demand and the program is not as critical for us as it is in the Business School." So we are moving more slowly and our progress thus far has been very gradual in Engineering. Frankly, we have been so busy and preoccupied building the program in the College of Business, that it has been just as well that there has not been more demand to move faster in Engineering. However, we will begin shifting our emphasis next year and will be devoting more time to entrepreneurship in Engineering.

How Do You Measure Success?

One way might be to define your goals and definitively spell out where you want to be in three or five years. Plain and simple, our goal is to be as effective as we can be and to be a top ranked university entrepreneurship program. In so doing, we want to first and foremost provide maximum benefit to students and to make sure our program is for and entirely revolves around students. Other measures might be the student demand for entrepreneurship courses, the number of new ventures started by students, how many MBA students join entrepreneurially-oriented companies upon graduation, etc. The amount of funding generated in support of the program is another measure.

Expand Advisory Board

We have a 27 member advisory board. We plan to increase the board to 37 members in the coming year.

Re-institute the Engineering/BS Degree

For a number of years there was a five year engineering/business BS degree. It was discontinued about ten years ago for unknown reasons. Clearly, some of the most successful alums in the College of Engineering obtained this joint degree. Accordingly, we are exploring reinstating this degree.

Enhance Curriculum

Once you start a center, there can be considerable pressure by different groups, peer groups, advisory boards, etc., to continually grow and expand the program. This is not always wise or healthy. Generally speaking, we feel very good about where we are with our program and are excited about the future of our center. I am sure we will be adding another course or two along the way in the Business School and we definitely hope to introduce a couple entrepreneurship courses in the College of Engineering but for the most part we will devote our energies to improving and refining what we already have. For example, we will be doing everything possible to enhance the quality of our student field projects and intern experiences. When we have an opportunity to pause and reflect, we need to review all that we are doing now and determine what new programs or initiatives we might advantageously consider. What is it we might do from here that would have the most positive impact? How can we devote our time, energies and resources to achieve the greatest good? For example, as of now it is not our intent to add a Family Business Program. This is an "in" thing to do right now. Many universities have them. For now, we just feel there are other things we can do that will provide greater benefit to our students.

FastTrac

I will mention one thing we are doing now where we are sort of pioneering. The Entrepreneurial Education Foundation is headquartered in Denver. They have done a marvelous job of introducing FastTrac throughout the US and Canada. University entrepreneurship programs have been fairly guarded in their use of FastTrac. Faculties are not always receptive to FastTrac, it being an outside program. Right now, we are using FastTrac in our MBA Entrepreneurial Environments course. Professor Dale Meyer teaches part of the course and Mac Davis with the Entrepreneurial Education Foundation teaches another section of the course using FastTrac. So far, it seems to be working well and our faculty is comfortable with it.

COURSE OFFERINGS AT THE CU CENTER FOR ENTREPRENEURSHIP

Entrepreneurial Environments

Exposes students to the environment of entrepreneurship among firms varying in size from start-up through the later stages of organizational life cycles. Case studies and guest lectures by entrepreneurs highlight this course.

Entrepreneurial Finance

Addresses a variety of topics including financial valuation, sources of funds, structures and legal issues in arranging financing, private and public venture capital markets and preparation for and execution of an initial public securities offering.

Business Plan Preparation

Involves completion of a sophisticated business plan within task groups (teams) from the original concept through all the elements of a professionally written business plan. Provides students high interaction with entrepreneurs, building to and concluding with a spirited business plan competition.

Entrepreneurship and Small Business Management

Examines the development of emerging ventures from the entrepreneurial perspective. A significant component is researching entrepreneurial companies.

Engineering Entrepreneurship

Analyzes the organizational elements of the entrepreneurial corporation including the interaction between the engineering functions and the other components of the organizational structure.

Small Business Strategy, Policy and Entrepreneurship

Emphasizes planning, organizing and operating small business firms and examines the role of the entrepreneurs in conception organization and development of firms. The use of small business case studies is extensive in this course.

Projects with Entrepreneurial Companies

Second-year graduate students are individually matched with an emerging entrepreneurial company to work directly with management on a project that has strategic and developmental significance for the company's future success.

THE UNIVERSITY OF ILLINOIS AT CHICAGO

THE DIRECTOR AND THE SCHOOL

Gerry Hills, Director of the Institute for Entrepreneurial Studies and Coleman/Denton Thorne Chair in Entrepreneurship, University of Illinois at Chicago.

Mission Statement

The mission of the Institute for Entrepreneurial Studies is to expand awareness and knowledge among students, entrepreneurs, professionals and academics regarding new venture opportunities and methods for creating and growing enterprises.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

We have 25,000 students, by far the largest university in the Chicago area. In the Business School we have 3,500 students. We have major undergraduate programs as well as our MBA program and Ph.D. program. The Ph.D. program was started about eight years ago, but we've kept it small and focused more on quality, particularly given in the market situation, instead of trying to grow a large Ph.D. program. In terms of accreditation, the University of Illinois at Chicago, Loyola University, DePaul University, Northwestern University and the University of Chicago are all members of AACSB. We're also in the top 70 of the Carnegie Foundation's Research One Universities. This may surprise a few people, because our campus is only 28-years-old, but we've come a long way in fewer than three decades. UIC is a campus that is highly ranked in several different areas.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

We have three million people in the city proper. Of course, Chicago is the third-largest city in the country. The metropolitan area has seven million people. The University of Illinois at Chicago is located on the southwest edge of downtown. There is an elevated train stop on campus which takes you to the second-largest business community nationally in seven or eight minutes. We have nearly 200 acres of campus. Although UIC is a substantial campus and is not downtown, it still provides an urban feeling and setting.

STATISTICS ABOUT THE CENTER/PROGRAM

Year Started/Size

The Institute for Entrepreneurial Studies was started in 1982. We have 27 people who work directly in the Institute and in other affiliated programs.

Faculty/Staff

We have a total of 14 full-time and part-time faculty. Eight of those are full-time, including two faculty who have administrative positions, including heading up our Family Business Program and our Minority/Women Business Program.

Funding

Our initial funding was through the Coleman Foundation, particularly the endowment for the chair that I hold. They have also been generous year after year in providing additional, significant operating monies. All the entrepreneurship faculty are paid internally by the university, through the departments or the dean's office. We receive a modest amount of funding from the dean's office for chair support. We are hoping to pursue additional endowment moneys in the next two years. I have been giving that considerable thought and working with our development people.

We net out significant support from our business owner program, which is a Certificate program. The Chicago Entrepreneurship Hall of Fame also yields significant resources, particularly to fund MBA and Ph.D. candidates to work in the Institute. We have three major sponsors for the Hall of Fame, including the leading investment bank in Chicago, William Blair & Co., one of the large banks, LaSalle Bank and a leading law firm, Lord, Bissell & Brook. They lend the prestige of their companies and the contacts that they have to further help our Institute.

In addition, we have a number of business owners who make annual donations to the Institute. Several of these people are members of our Hall of Fame. Each year, the Hall of Fame members fund at least two MBA assistantships for the Institute.

COMPONENTS OF YOUR INSTITUTE

Outreach

Entrepreneurship Certificate in Business Administration

This program is for entrepreneurs who are already operating companies. It meets Friday and Saturday, twice a month for five and a half months for a total of 22 days. It's primarily designed for business owners who do not have any formal business education or degree. It is like a mini MBA, except that it's extremely

applied. Part of the program is taught by our faculty, and part of the program is taught by professionals outside the university as well. We normally run six groups a year of 20-25 people. Some of the business owners help us by providing practical input and practical design for the program. The price is \$6,500 to attend, which on a per-hour basis is very reasonable, but it is a significant amount. The program really has a substantial impact on their businesses. We have received positive, flowing feedback from people who tell us that it has had a huge impact on the growth of their business—on how to manage growth and how to expand. Each participant writes a strategic plan. We have average ratings from participants of 9 on a 10-point scale. We offer this in partnership with the Center for Enterprise Development.

Entrepreneurship Hall of Fame

Another major outreach program is the Chicago Area Entrepreneurship Hall of Fame. It was the first event to recognize entrepreneurs in the Chicago area. In the last few years, Ernst & Young has developed their Entrepreneur of the Year event here in Chicago. We really believe that ours is not only the oldest but also the most prestigious event recognizing entrepreneurs in Chicago. Each year we have 400 people in attendance for an absolutely world-class recognition event. We recognize in any given year as many as 20 outstanding business owners. This past year their companies ranged in size from annual sales from about \$3 million to annual sales of \$1.3 billion. The huge advantage of doing this event is that it puts us in a very good relationship with the leading business owners of Chicago. We then build on that relationship and have them come to campus and speak to students. Having a major, well-established entrepreneurship recognition event has worked out really well for us. We develop many great relationships. For example, the founder of Helene Curtis was a recent lifetime achievement winner—they grew the company from zero to \$1.2 billion in sales before they sold last year.

Collegiate Entrepreneurs Organization (CEO)

Another major outreach effort each year is our Collegiate Entrepreneurs Organization and Conference. It is held over three days and is a great motivational and informative day for students. The cumulative effect of spending this amount of time off campus, hearing from numerous successful entrepreneurs really has a huge impact on the students. We envision having 20,000 students in chapters on 500 campuses. Our first National Conference is this year.

Minority and Women Business Owner Programs

This new College program was created to serve minority- and women-owned businesses. Students work in teams in the near Westside community of Chicago with both African-American- as well as Hispanic-owned businesses. The mission is to increase economic development in Chicago by providing emerging minority- and

women-owned businesses with resources to advance their enterprises. Linkages with urban community organizations and the business community characterizes the efforts. This Center for Urban Business is led by Crendalyn McMath.

We have Friday Forum meetings, where, at no charge, minority business owners and women business owners can come to campus and hear from not only faculty but also leading people in the community on various subjects such as evaluating opportunities and hiring people.

Family Business Council

The College also has a very successful family business program with more than 50 family business owners. We have nationally famous speakers and small group meetings for the family business owners, spouses and their children. That has become a very successful program under the leadership of Dennis Dubois.

Research

Entrepreneurship/Marketing Interface

We've differentiated ourselves from other centers by focusing on entrepreneurship and markets and marketing. We host an annual Symposium on Marketing and Entrepreneurship Research each August, typically in conjunction with the annual American Marketing Association Educators' conference. We've held the UIC research symposium on marketing and entrepreneurship since 1986 and deliberately limited attendance to scholars who are presenting papers.

Each year we publish a book entitled *Research at the Marketing Entrepreneurship Interface*. It has become an international meeting. We've held the meeting twice in the leading business school in Europe, INSEAD. As a result, it attracts excellent researchers from around Europe and Asia. We strive to shed real light on entrepreneurship and particularly on issues related to markets and marketing. We are also co-founding on a *Journal of Marketing and Entrepreneurship Research*. In fact, we are doing this with some talented professors in England. It will be an international journal.

Philosophy of Research

We focus on empirical work, but we also try to foster good conceptual studies as well. One of the greatest needs in the entrepreneurship field has been the development of conceptual models upon which to base further research.

How Research Is Conducted and by Whom

We have a growing number of faculty in the college and beyond who are full-time entrepreneurship faculty, heavily involved in entrepreneurship research. Tom Lumpkin has already published in the top two management discipline journals:

The Academy of Management Journal and the *Academy of Management Review* and just received an acceptance for the *Strategic Management Journal*. Rod Shrader produces the same quality work.

Integrating Research Across Campus

As far as integrating it across the campus, there is certainly potential there. For instance, one of our leading history professors has some interest in looking at the development of entrepreneurship historically in different parts of the United States and the world. Other disciplines in which we look forward to integrating research with include psychology, sociology and especially, the medical field. We have 5000 medical students and a large medical faculty and we carry out research in conjunction with them and some of our science faculty in relation to the commercialization of their technologies and their inventions. We do that through our Technology Park. We also have a Bio-Technology Incubator, owned by the university, which supports several start-up bio-tech companies.

I am involved in judging a student inventors' fair every spring, in which the College of Engineering has student teams that develop potential products and potential businesses. There is a growing opportunity for further integration. I have a funded project to approach virtually all the departments on campus and systematically identify their potential interest in entrepreneurship.

We are a member of the Entrepreneurship Research Consortium, headed by Paul Reynolds nationally. We're also one of eight members of the Entrepreneurship Education Research Team conducting a longitudinal study headed up by Zenas Block at NYU. We are involved in these consortia, which offer the opportunity of going beyond small sample studies.

I am also involved in opportunity-recognition research. The marketing discipline has contributed volumes on *evaluating* market opportunities, but has done virtually nothing on the sheer perception of potential opportunity. The entrepreneurship field, on the other hand, has begun to focus research on this very important subject. I have had one substantially funded project on surveying entrepreneurs about their perceptions regarding opportunity-recognition processes.

Curriculum

When I came to UIC as holder of the Denton Thorne Coleman/Chair in Entrepreneurship in 1982, part of my charge and what I wanted to do was to create a center and a curriculum. We have nine courses that are specifically entrepreneurship courses. Most of these are offered at the undergraduate and graduate level. We have two other courses that are very related so that serious entrepreneurship students would take those courses. Our curriculum model is somewhat of a blend of the business life-cycle model and the functional model. We have an MBA Concentration and an undergraduate Certificate Program.

We've gone through a major revision of our MBA program in the last two years and have now been requiring *all* of our full-time MBAs, regardless of their concentration, to take a course in Entrepreneurship Opportunities and Creativity. We focus on identifying opportunities, evaluating opportunities, creativity and case analysis. We get the students involved in interviewing entrepreneurs and bring in a number of entrepreneurs as speakers. It is more feasibility oriented rather than business plan oriented.

A new development is our Ph.D. seminar in entrepreneurship. We're increasingly getting more and more Ph.D. candidates involved with the Institute and supporting research. We had a Ph.D. candidate who started teaching entrepreneurship in the Spring 97 semester. The Ph.D. seminar will put us among a very small group of universities that are offering an authentic entrepreneurship Ph.D. seminar. There are probably several Ph.D. seminars that have an entrepreneurship component, but this is a complete entrepreneurship seminar from start to finish. There are only five or six such seminars nationally.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

Certainly the heart of any center has to be focused on students and on the curriculum, but I hasten to add that I don't think that is sufficient. In any research-based university, there should be an active research program and a number of other elements, including reaching out to the community. The array of programs and events that we offer could be a menu for people starting other centers.

Once again, I think some type of entrepreneur-recognition event is very important. In our case, it happens to be for the entire Chicago area, with major sponsors. There are so many benefits that result, particularly if you don't limit the winners to too small a number. In a city the size of Chicago, you can have 20 or more people inducted in any given year and still know that you are leaving out many people who deserve to be in it.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?

You must find people who know the subject area, are fervently committed and are going to put in long hours to try to make a difference.

Another success factor, I think, is having people who have an ability to not only bring in resources (which is essential given the limited amount of funding available from within the university), but who also are able to creatively visualize programs that will really make a difference. Potential funders who can take satis-

faction from funding programs will sell satisfaction to other potential donors. If donors don't take special satisfaction out of providing the IR monies, then it is not a good transaction.

Of course you also have to have good people around you. It is like "Entrepreneurship 101"—you must try to hire good people to work with you. I've been fortunate in that regard to have staff people who are hardworking, conscientious and bright.

REASONS TO START A CENTER OR PROGRAM

We change the way our students think and their vantage point. Entrepreneurship cuts across all the functional departments in the business school and in fact, ideally cuts across almost every department in the university. It is important to have a center that can address the entrepreneurial needs of all departments. It is also clear that by having a variety of outreach activities in today's environment, the program provides a very positive bridge between the university and the community.

HOW WOULD YOU START ONE TODAY?

People Necessary

Until recently, the greatest challenge with respect to legitimacy was from the academic community. Today the biggest challenge may be seeking resources outside the university. You really need somebody who will champion the cause. The field is not so legitimate that you don't run into its detractors. You don't want someone who just wants to be a manager of a center but rather somebody who has a heartfelt commitment to the need for attention to entrepreneurship.

Advisory Board

We have an active advisory board and constant contact with leading business owners in the community. Much of this contact is one on one rather than group meetings, however.

Endowment Campaigns

For an endowment, I think it would be an \$8 million endowment for a named center. A chair endowment would ideally be \$2 million and a professorship more like \$500,000 to \$1 million. The payout on endowments in our case is about 5 percent. I would think that other than the salary of the lead person and the course teaching, just to get started, you need at least \$40,000 annual income. I'm tempted to say \$100,000, because then it starts to become significant. You must assume that one objective of a new entrepreneurship center director is to raise outside monies.

Raising Research Money

Research depends totally on how much and how expensive it really is. I must say, I have never had much luck talking to potential donors about conducting research. I think it is fairly rare that you can get potential donors, particularly entrepreneurs, excited about paying for research. I think research just gets funded along with the other elements, without emphasizing it a lot, even though I certainly believe it is a critically important part of any entrepreneurship program.

GROWTH AND MAINTENANCE ISSUES

Further Program Development

At this point, the entrepreneurship field is beginning a decade of integration. We are already seeing the integration of entrepreneurship into other business courses and also into non-business courses throughout the university.

Another frontier I see is the possibility of one day having a department of entrepreneurship within the business college. One university is actually discussing the possibility of creating a School of Entrepreneurship. It would be a high level entity within the business college.

We also need to offer two credit hour entrepreneurship courses for all students campuswide.

Our entrepreneurship-program coursework has a way of imparting the feeling of what it is like to be out there “on the edge.” Students get to feel the uncertainties, on a small scale, before they seriously think about getting involved in a bigger way in the years to come. I think there are more and more programs that are becoming more oriented toward students starting businesses right away, upon graduation or soon after graduation. I no longer think this is inappropriate.

More and more we are orienting our curriculum and our programs toward start-ups in the near term and for some MBA students who have recently graduated and might even be working in a corporation. Students are being encouraged to consider starting businesses upon graduation and a year out or two years out. We’re building more mentors into our program and focusing on business plans as a stepping stone more than we used to. We have the beginnings of an entrepreneurship clinic, where there are mentors, faculty and others available for students who want to pursue their ideas.

Research Trends

We have an exploding interest in entrepreneurship among our faculty. There are now several faculty members at UIC who have been at the college for quite some time. They’re very talented and do very good research. We’ve gone through a

decade or two of legitimization in the entrepreneurship field and it is now being viewed as sufficiently legitimate by more researchers

The quality of research in the entrepreneurship field has improved significantly over the last five years, due in part to Ph.D. students who are doing dissertations on entrepreneurship and who have done good-quality database studies. I hope we can continue to both improve the quality of research and at the same time remain focused on important research issues. One research trend has been the conduct of larger-sample entrepreneurship research. This is very important and a very positive development.

Differentiation

I think, not unlike entrepreneurial areas starting whole businesses, that we are probably increasing and going to see centers trying to differentiate themselves in some way. As more and more centers come on stream, there will be a greater attempt to select an area of excellence to better position themselves relative to the other centers. I think in our case, the Marketing Entrepreneurship Research Symposium has helped our reputation nationally and internationally. Locally we are well positioned with some of our outreach programs.

The various awards we have received also help with credibility internally and externally. These include the Top 25 *Success* magazine ranking, Outstanding Innovations by the Kauffman Foundation, Model Program by the U.S. Association for Small Business and Entrepreneurship, the Ernst and Young Entrepreneurship Supporter Award, the Freedom Foundation Award and the Sales and Marketing Executives of Chicago Award.

COURSES OFFERED IN THE ENTREPRENEURSHIP CURRICULUM AT THE UNIVERSITY OF ILLINOIS AT CHICAGO

Entrepreneurship: Opportunities and Creativity

This course focuses on identifying and evaluating opportunities, creativity and case analysis. We get the students involved in interviewing entrepreneurs and bring in a number of entrepreneurs as speakers. It is more feasibility oriented rather than business plan oriented.

New Venture Formation

This course deals with the business-plan development phase and is more oriented toward companies that are already up and running or that are at least beyond the idea stage and are going on to another stage of development.

New Venture Financing

This course is very much a finance course, and it has all the topics you might expect as far as financial-feasibility analysis, break-even, as well as attention to cash flow and cash management and personal financial statements. It goes all the way through cashing out and the evaluation of businesses at the point when one might consider selling or in some way realizing their gain.

Special Topics in Entrepreneurship

This course gives students a lot of flexibility to select topics that they have a particular interest in. It might be franchising, selling or negotiation, creativity or whatever the subject might be. In the first couple of class periods, in a very real sense, we design the course and the students work on these projects, periodically reporting out to the class as to what they are finding and sharing their knowledge on the subjects as they relate to entrepreneurship. This course is designed, in part, to reflect an assumption that entrepreneurship students would prefer to design their own course rather than be told what to do!

Field Projects in Entrepreneurship

Another course is a field-project course, where the students work with businesses in the community. There is some reading and attention to consulting which puts the students in a position to learn about doing consulting and also gives them insight as to how to use consultants. Another part of the course is to carry out a consulting project, where the students actually work with an entrepreneur client and carry out a project, such as writing a business plan.

Entrepreneurship and Legal Issues

This is a case and project course that focuses specifically on numerous legal issues that pertain to new ventures and smaller companies. Illustrative topics include the legal form of organization, noncompete agreements, intellectual property and copyrights and buy-sell agreements.

Entrepreneurship and Strategic Planning

This is a new course that has substantially modified the business strategy course, with focus on new and smaller enterprises, guest entrepreneurship speakers and other unique features.

Family Business

This course focuses on the unique dimensions of mixing personal goals and family dynamics with the operation of an entrepreneurial company. Cases and speakers emphasize the psychology and sociology of the family business.

Innovation and Technology Management

The focus in this course is on technology commercialization and, with cases and projects, serves students with a special interest in technological entrepreneurship.

New-Product Planning

At the core of entrepreneurship and new-venture creation is the development of new products. This course shares the latest knowledge in new-product development which has application to entrepreneurship and corporate intrapreneurship.

Ph.D. Seminar in Entrepreneurship

This course presents the conceptual and empirical foundations of the entrepreneurship field and identifies research opportunities for the Ph.D. candidates.

UNIVERSITY OF MARYLAND, COLLEGE PARK

THE DIRECTOR AND THE SCHOOL

Charles Heller, Dingman Clinical Professor of Entrepreneurship, University of Maryland, College Park.

Description

The Dingman Center facilitates, supports and encourages entrepreneurship and new enterprise growth within the Mid-Atlantic region. Since its inception, the Dingman Center has become a major resource for emerging companies in the area. The Dingman Center offers a variety of successful programs and services, including: the Mentor program, Mid-Atlantic Investment Network (MAIN) and Baltimore-Washington Venture Group. In addition, the Center hosts many seminars, round tables, workshops and short courses throughout the year. The Maryland Business School's academic program in entrepreneurship—administered by the Dingman Center—consists of undergraduate courses and an entrepreneurship concentration in the MBA program. In the fall of 1992, the Dingman Center inaugurated the Lamone Entrepreneur Scholars program. Lamone Entrepreneur Scholars are selected on the basis of their business plans for new ventures. The Scholars receive annual stipends of \$3,000 as well as advice from the Dingman Center mentor corps to aid the implementation of their business ideas. Proceeds of The Dingman Center Entrepreneur Invitational support the Lamone Entrepreneur Scholars program.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

The University of Maryland, College Park is one of 11 campuses in the University of Maryland system. As the flagship campus, we are the largest university in the system and are considered the research university in the system. Currently there are 20,000 full-time undergraduate students and about 4000 part time. Graduate students, full- and part-time, number about 9,000. This totals to about 33,000. On our campus we have 13 colleges, 97 undergraduate programs, 87 master's programs and 68 doctoral programs.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

We are somewhat of an urban campus, even though we're sort of in the country, but we're just on the outskirts of Washington, DC. So we serve primarily the Washington metropolitan area as well as the Baltimore metropolitan area, although we are a statewide campus. Especially in terms of our outreach, we touch primarily what we call the Baltimore-Washington corridor. We get a lot of outliers,

as we have a very rural area of Maryland as well and western Maryland as well as the eastern shore of Maryland on the other side of Chesapeake Bay. We serve them as well, but because we're geographically quite a bit further removed, we don't have nearly as much activity there. Economically, we are growing. The part that's growing more than any other is the high-tech part, the I-270 corridor especially. There's a tremendous amount of growth there in the information and technology area and biotechnology area, primarily. And we have the same thing happening in northern Virginia. We also do outreach and attract students from northern Virginia as well as Washington, DC.

STATISTICS ABOUT CENTER/PROGRAM

Year Started

Well, the Dingman Center officially started in 1986 and I guess the start is related to when the initial seed money came in. And it really began as an idea of the then-dean of the business school, Rudy Lamone, and the idea was here for a long time but there was no money, so therefore there was no center. So the initial gift which came in 1986 was from Michael Dingman—\$2 million, which came in the form of an endowment—and the interest from that endowment was the initial seed money to begin the center. So that really marked the beginning of it. However, not much happened the first few years other than just a lot of planning and thinking. The activity really began in 1990. And that coincided with my coming in February of 1990 and defining what we should be doing, both on the outreach side as well as how we should design the academic program.

Faculty/Staff Involvement

The majority of our faculty are primarily adjuncts. That's done deliberately. We like to bring in people who actually are entrepreneurs and have been entrepreneurs. We have two full time: Rudy Lamone and I. We now have an executive-in-residence: Meg Vanderway. She will probably be here for two years. Her area of expertise is finance, she was a top producer at J. P. Morgan and she is really impressive. Can you imagine, 36 years old, top producer at J. P. Morgan. Staff includes myself as Director and five others, including: Assistant Director, Administrative Manager, Manager of Entrepreneurial Programs, Tech/SBDC Coordinator and a secretary. In addition, we have the equivalent of seven full Graduate Assistants working in the center. Several of our graduate assistants are half time the first year, and they become full GAs the second year.

Funding

Well, most of our money comes from one person, Michael B. Dingman. And it comes in two pots of money. One is the original \$2 million endowment, which

generates about \$150,000 a year in interest. And the second piece from Mike Dingman is what we call a Dingman Operating Fund. Mike also gives us a second donation of \$2 million, except that it's not an endowment. It comes to us in \$200,000-a-year pieces for 10 years. We are in the second year right now. Half of that goes into scholarships; \$90,000 of the \$200,000 goes to what we call the Dingman Entrepreneur Scholars' who have assistantships in the Center. The Dingman Scholars assist in the coordination our programs. Then, \$25,000 goes to research grants within the business school, and \$12,000 is a subsidy for the group field projects. \$25,000 is a stipend for the executive-in-residence. Then \$20,000 goes toward a major entrepreneurship conference which we run annually and which has turned out to be a conference for women entrepreneurs, that we've now run two years in a row. And then, \$8,000 goes toward the "Bahamas Programs." Mike Dingman is a resident of the Bahamas and part of the deal is to help him give something back to the Bahamas. So Rudy Lamone and I do some workshops for Bahamian business people. We are also helping to start a Bahamian-seed capital venture for Bahamian entrepreneurs. The rest of it goes toward general, miscellaneous expenses. So, those are the two major pieces. Our budget this year is \$800,000, and that accounts for \$250,000 of that, approximately. We have another small endowment which brings in about \$20,000. Then, we raise money through our Inner Circle. That brings in about \$100,000. We have a couple of fund-raisers, like our golf tournament, which this year is going to bring in about \$25,000, actual net proceeds. And then the rest of it is for fees for our various programs and contracts. Occasionally we have a Navy contract to run courses on technology transfer and commercialization. From the state of Maryland, we get a total of \$37,500. Our plans include trying to attract more grants and contracts as well as endowed chairs. I've been discussing the endowed chair with the business school's fundraiser, and we are going to put together some kind of strategy for doing that. We also receive funding from our Inner Circle. The Inner Circle is a group of individuals and firms who provide critical financial support to the Center. They also serve on the advisory board, thus lending leadership support.

WHAT ARE THE COMPONENTS OF YOUR PROGRAM?

Outreach

First, we defined our market. The market that we carved out for ourselves on the outreach side was not just small companies of any kind but specifically what we call emerging-growth companies—that is, companies that intend to and have a chance of becoming large. Which means that they are primarily technology-based companies—not exclusively, but primarily and it means that we don't deal, except on rare occasion, with the micro-businesses and mom-and-pop kinds of businesses. Those we refer to others who specialize in that sort of thing. So that's our market. I decided to split outreach into three parts and concentrate on those.

Mentoring

First was the mentoring of young companies. So, the first thing we decided to concentrate on was developing a mentor program for these companies. The mentor program consists of experts who are primarily, about 60 percent or so, successful entrepreneurs, either cashed-out entrepreneurs or entrepreneurs who are still doing it and willing to volunteer their time to us. And today we have about 160 mentors, all volunteers. In the mentor program we have probably about 50 to 55 cases that are truly active ones. There are a lot of dormant ones, too. And we've helped somewhere in the neighborhood of 300 to 350 companies in just about any area that you can name, any area related to business and management like helping them write a business plan and helping them with some of the very initial strategic planning, to some very sophisticated and more advanced things, like helping them through a merger or acquisition-type situation or getting into international business and so forth. So it varies from the basic to the sophisticated, depending on what the needs are. And our mentors pretty well cover all those areas. What I didn't mention is there is a fee for this. Our mentors are volunteers to us; however, we do charge a fee—we just raised it, as a matter of fact, to \$45 an hour.

Seminars and Workshops

Second, we started doing a lot of seminars and workshops. Their purposes are twofold. One is, of course, education and training, but we also use them for marketing the rest of our programs and activities. We move the seminars all over the state of Maryland, into Washington, DC and northern Virginia. Topics include business planning, turnarounds, intellectual property, company valuation, funding and marketing.

Investment Network

Third, we also started an investment network, which we call MAIN, Mid-Atlantic Investment Network, where we match companies with angel investors and we've been running that ever since; it now is taking on some new dimensions, and it's really effective this summer. We're merging our activities in that area with an organization called "The Private Investor Network," the acronym PIN, whereby our investment network is similar to some of the venture networks around the country which are passive type networks, where investors get reports and profiles on the companies and so forth. They all have a major flaw and the flaw is that they are passive and there is no way the center, like ours, the people running these networks, can syndicate these investment deals. You may have three investors in different places who are interested in putting in small parts and small pieces, but there's no mechanism for getting these people together. So, this private investor network that we've put together, together with the Mid-Atlantic venture association is actually going to put the companies in front of the investors in monthly presenta-

tions—sort of mini-venture or micro-venture fairs. So, that's new, and I think it'll make it much more effective. We are also very closely associated with the incubators in the University of Maryland System at College Park and Baltimore County. I serve on the boards of both of them, and they transfer funds to us each year in exchange for our helping the incubators. We sit on their evaluation boards for their companies, we have people who sit on the boards of their companies and we sit in on operation reviews, etc. Just about all the incubator companies are in our mentor program and the investment network and are frequent attendees of our events. Plus, we do some of our group field projects with the incubator companies.

Curriculum

We really began at the MBA level, because we had a tremendous amount of interest from the very beginning in starting an MBA concentration in entrepreneurship. We started with about four courses: venture creation, new-venture financing, team-building and new-venture opportunities. We have now grown that to 11 courses. Now that the MBA is no longer a lock-step program, it's really quite easy for a student to pick up, say, six courses in entrepreneurship. However, our requirement is four courses for a concentration. Two of these courses are required: new-venture creation and the financing course. We also have group field projects, which are now required of all second-year MBAs and we have special ones for our entrepreneurship students. The students in all the group field projects go out in teams, typically teams of four, sometimes five, with a faculty member leading the team in each case. They work with a company for a semester, and the company pays for this. The large companies, the typical non-entrepreneurship cases, pay \$4,000 to the business school for this. They're often strategic plans, they're often market-research studies and we've had several cases where students have set up accounting systems or total financial systems or done very specific kinds of strategic thrusts, looking at a company and deciding, for instance, whether or not it should be doing business in China. On the entrepreneurship side, of course those companies can't afford \$4,000, so we subsidize those out of the Dingman Center. We ask them to pay between \$500 and \$1,000 and then we subsidize the rest of it from some additional money we have in the Dingman Center. And we do about, on the entrepreneurship side, three a semester. We have one undergraduate course. The one undergraduate course is taught actually from the Baylor book, the *Small Business Management* book. We did not consciously decide to develop the MBA program over the undergraduate, but the emphasis at the Maryland business school is much more on the MBA program than anything else. We've been talking about expanding the undergraduate piece of this. We're getting a lot of demand not only from business students but also from engineering and computer science. We are considering an undergraduate field studies, in which students could work with the companies we're mentoring.

Research

The earliest research at Maryland involved dissertations such as Harry Sapienza's. Recently, we have received funding, actually from Mike Dingman, for research projects. The people who participate in this are from various departments around the business school such as strategy, finance and information systems. We require that the research have an entrepreneurship emphasis. In addition, we are participating in the Entrepreneurship Research Consortium that Paul Reynolds has put together. We are also in a mini-consortium with the University of Baltimore.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

I think that a Center needs to be a separate profit or cost center. The director should report to the dean of the business school, or, in some schools, it might be a vice president or president. The director should be at least the equivalent of a department head. A consideration is how a university itself defines centers. At some schools, you become a center just by calling yourself a center, whereas in other schools there are stringent criteria.

WHAT WERE THE KEY SUCCESS FACTORS IN DEVELOPING YOUR CENTER/PROGRAM?

Support of Dean and Faculty

There was a buy-in by the dean and the faculty and at the same time a buy-in by the local or the regional business and financial community. I think that was absolutely critical. And actually I saw that when I first came here. This was kind of a rogue center in terms of being accepted by the rest of the faculty. It took an incredible amount of work to get that acceptance. I worked really hard internally to get acceptance here and to get other people to recognize that entrepreneurship was really a legitimate academic pursuit and that people should get involved in it. And we've really gotten a terrific acceptance in the last three or four years. And of course, having the dean totally behind us has been incredibly important. In fact our dean, Bill Mayer, when he sells the Maryland business school, he sells it as having two distinctive competencies. One is entrepreneurship and the other one is information systems.

Business Community Support

Externally, it is getting the financial and business community to accept us. Volunteers are incredibly important to our outreach program. We depend almost entirely on volunteers. So, having people accept us and be willing to give their time as well as money to a certain extent, but more the time than money, have been very critical.

Independence from Bureaucracy

Another factor is independence from state and federal bureaucracy. As a state university, we have managed to stay pretty much independent. It's a good news-bad news kind of situation, because we get essentially no funding from the state, despite the fact that we're a state university. So, that's the bad news part, that we don't get any money. But the good news part is we've been able to do essentially anything that we wanted without having to be tied into some of the political issues and just being able to do what we feel the community wants us to be doing and what's required. That can become a problem on the outreach side, as I've seen at a couple of other centers that I've helped out. They get dependent on the state and their economic-development people. And I experienced a little bit of that myself. We ran a small-business development center here for a couple of years. It was kind of a unique SBDC, called the Manufacturing and Technology SBDC. We were an overlay over the various subcenters around the state of Maryland, dealing exclusively with manufacturing and technology companies. But I found that it started to affect the way we operated because of all the requirements not only the bureaucracy of paperwork but also starting to be driven by numbers. We may have one again, but I'm going to keep it independent of the rest of our operation, if and when we do.

REASONS TO START A CENTER OR PROGRAM

Well, in my view, it's being responsive to what's going on in the real world. Entrepreneurship is a hot area—it's one of the hottest areas in existence, in my view. And I think we're all on the crest of a wave right now. Why start one today? Because students are demanding it and, in terms of an academic program and because there are more and more businesses being started than ever before, the community has greater needs than it has ever had. So, I can't think of any better reasons than that.

HOW WOULD YOU START ONE TODAY?

People

If you're going to be purely an academic center, then of course it takes a faculty member who's really interested. I guess if I were starting one, on the academic side, I'd get a young hotshot who had just recently gotten a Ph.D. was really interested, really interested in entrepreneurship. But I think on the outreach side, you almost have to have an entrepreneur. Ideally, if you were to wrap it all into one person, you ought to have somebody with entrepreneurship experience who also has worked on the academic side.

Money

I think one could start a center on about \$250,000 a year. We started with about that amount, actually a little bit less. I think that would be about the minimum. We cover all of our own expenses. The only thing that gets covered from the general fund of the university is the tuition remission for our graduate assistants. To endow a center, the minimum, I think, is \$2 million. What generally happens, if one can raise \$1 million, is that the university will typically match either the entire amount or at least put in whatever else is required. For a chair, the official university policy is \$2 million. If we can raise \$1 million, the university will provide matching funds.

Advisory Board

A critical component is the advisory board. Ours is a combination of CEOs of local companies, entrepreneurial companies that have been there, the financial community and a couple of big six firms. So, it's a combination of people who help us make contacts when we're raising money, but it's not just for that. We really do use them for policy kinds of decisions. So, these are people who really understand our local community and we also have several alumni of the business school, so they also have some opinions about the curriculum. So it's a combination of people who understand what's needed in the community as well as what a business school ought to be producing. Our former dean, Rudy Lamone, conceived the idea of the Dingman Center. Rudy stepped down as dean in 1992 and came over to the center to run the academic program and be chairman of the advisory board.

Marketing

Marketing the center is critical, not only at the regional level but nationally—the brochure, newsletter, etc.

Learn from Others

GROWTH AND MAINTENANCE ISSUES

Succession

The succession issue is a very critical one. I'm expecting Rudy Lamone to retire in about two years. What I have decided to do is to bring in a young faculty member who will run the academic program and take over Rudy's spot—someone who could really run the entire academic side of the center in terms of both the curriculum and the research. And I feel very comfortable right now with my associate director, Sandra Nolan, being able to run the outreach part. There is also a possibility that our executive-in-residence (or an entrepreneur-in-residence; it will vary depending on the person) is a potential candidate for running the center.

Academic

We will continue to do what we're doing but do it a little better, improving the courses and the quality of our adjunct faculty. We need some kind of training for our adjuncts, such as a teaching seminar. We bring them in cold, and they don't even know how to write a syllabus.

Research

I would like to raise more money to support more faculty research. We need to make our current research more visible by presenting at the Babson Conference and getting our people in front of our peers in the entrepreneurship world. And, I think the fact of the matter is we all have to face this ranking stuff. You don't get ranking if nobody knows about you and what you are doing. Participating in the conferences is part of that.

Outreach

On the outreach side, the missing piece is trying to help people get start-up money. I'm not sure where we're going with it. I've already mentioned how we're improving our investment network. However, I have always wanted to start a seed fund within the Dingman Center. But it would be difficult because my minimum to do that would be \$12 million, and the overhead is so high. We would also like to keep better track of our MBA alumni. We're in the process right now of finding them, finding out exactly what they're doing and getting them to form an entrepreneurship alumni association. We continue with our newsletter. And we're starting an entrepreneurs' club for anyone interested in entrepreneurship, undergraduate or graduate. The club will have special events, special seminars and workshops.

CURRICULUM ADMINISTERED BY THE DINGMAN CENTER FOR ENTREPRENEURSHIP

Undergraduate

Introduction to Entrepreneurship

This course is about the process of creating and building new ventures. Through text, case studies, meetings with successful entrepreneurs and hands-on exercises, the course guides students in discovering the knowledge, concepts, skills, know-how, mind-set, resources and networks necessary to start and grow a business.

Graduate

New-Venture Creation

This course features the process of creating successful new ventures, including evaluating the opportunity, designing marketing strategies, forming the entrepreneurial team and obtaining financing. Students are exposed to the many facets of entrepreneurship through lectures, case analysis, workbook exercises and guest speakers. The major project is to write and present a business plan on a potential new venture. This is the keystone course of the curriculum.

Evaluating New-Venture Opportunities

This course focuses on the marketing tasks of identifying and evaluating new business opportunities by applying an opportunity model to actual business cases. The objective is to enhance the ability to determine quickly if an idea is an opportunity worth pursuing. Various opportunity sources—including research and development, patenting, licensing, franchising, contracting and business acquisition—are investigated.

New-Venture Financing

This course highlights the financial viewpoints of entrepreneurs and investors. The major sources of capital, including venture-capital firms, informal investors, banks, investment banks, suppliers, buyers and government programs and their evaluation criteria are reviewed. Case analysis presents various ways that entrepreneurial companies have creatively identified, negotiated and structured financing.

The Entrepreneur and the Entrepreneurial Team

This course helps students develop strategies for their careers as entrepreneurs by studying roles, team building and entrepreneurial behavior. Case studies of entrepreneurs and entrepreneurial organizations offer insight into the opportunities and challenges of recruiting, motivating and retaining team members. Successful entrepreneurs present their ideas and experiences in class lectures.

Corporate Venturing and Intrapreneurship

This course presents an overview of the venture process within corporations. The unique problems and opportunities for corporate entrepreneurs or intrapreneurs, are examined through case studies and guest speakers. Students study the entire corporate-venture process, from idea creation, selection and planning to implementation and evaluation.

High-Technology Entrepreneurship

This course deals with the special issues of technology-based companies. Topics considered include recognition of opportunities, business planning, marketing strate-

gies, financing for rapid growth and teambuilding. CEOs of successful high-technology companies are frequent guest lecturers and case studies are used in the course.

Franchising and Licensing

This course offers an in-depth look at two ways of building a business: franchising and licensing. The course explores the key structural, management and operational issues involved before the launch and how to sustain the program later. Specific issues such as structuring the franchise agreement and maintaining quality control are explored.

Industry and Competitor Analysis

This course provides students with the framework and tools for understanding the dynamics of industry structure and the interaction of competitors within an industry. Students apply the concepts learned in class to an intensive field project of an industry and competitors.

Sports and Entertainment Management

This course deals with the commercial transactions and negotiations associated with the sports and entertainment industries, including event management, licensing and sponsorship arrangements, athlete representation and television and music-industry contracts.

Technology Transfer and Commercialization

This course involves students in teams to perform commercialization studies and prepare marketing plans for technologies from federal laboratories. These technologies are based on patents and patent disclosures in various technical disciplines. Students also contact potential licensees.

Strategic Growth for Emerging Companies

This course focuses on the successful transition of companies from start-up through the establishment of a foundation for high growth. Using case studies, readings and insight of guest speakers, students examine the strategic management and marketing decisions vital to growing companies.

UNIVERSITY OF PENNSYLVANIA, WHARTON SCHOOL

THE DIRECTOR AND THE SCHOOL

Ian MacMillan, Director of the Sol C. Snider Entrepreneurial Center, the Wharton School, University of Pennsylvania.

SPECIFICS ABOUT YOUR UNIVERSITY OR COLLEGE

The Wharton School provides services in the Philadelphia area. We serve mainly the business school-community. The Center houses both the Wharton Small Business Development Center and the State Office Pennsylvania Small Business Development Center, which consists of 16 small-business development centers throughout the state of Pennsylvania.

SPECIFICS ABOUT THE COMMUNITY YOU SERVE

Philadelphia is a large urban center with a population of almost two million people.

STATISTICS ABOUT THE CENTER/PROGRAM

Year Started/Size

Founded in 1972 by Ed Shils, the Center is currently celebrating its twenty-fifth anniversary. It started as a very small program and over the years has grown tremendously. We now offer 13 different courses related to entrepreneurship or which we allow to count toward a major in entrepreneurship. The student body has about 2,000 graduate students and 1,500 undergraduates. At the undergraduate level, about one in three students are enrolled in entrepreneurship courses. At the graduate level, a little more than half of the students are enrolled in entrepreneurship courses.

Faculty/Staff

There are four standing faculty with the Center, three assistant professors and one full professor. There are also eight adjunct faculty, all of whom are entrepreneurs and teach only courses in entrepreneurship.

Funding

At the moment we've just negotiated a fairly significant endowment. The original center was also endowed with \$1.5 million, but now we've got a significant infusion of funds.

THE COMPONENTS OF YOUR PROGRAM

Curriculum

The Snider Center was the first in the United States to develop a full curriculum in entrepreneurial studies. Students select courses that range from corporate venturing, personal acquisitions or innovation and change to the start-up of new enterprises to small business consulting. The faculty constantly refines the curriculum, incorporating the latest findings from our research programs, the expertise of our visiting scholars and the challenges of the global international business environment. Growth of courses through co-opting other departments spreads the entrepreneurial influence throughout the Wharton School. There is a move toward specialized courses in entrepreneurship, and we have a fairly ambitious program here, with the students looking at medical-technology entrepreneurship because we have a very strong biotechnology school here, with which we work closely. Another development is that there are many entrepreneurial activities that have to do with real estate. So we have a program which is taught by our real estate department on real estate development. We recognize that as a legitimate kind of entrepreneurial effort, especially since most of the financially successful people made it on real estate. So that's the major evolution—more specialized courses. I think the other thing is that we incorporate much of our research into what we teach. My advance program in entrepreneurship takes a lot of what we're discovering in the research program and infuses it into the way we teach the advanced entrepreneurship course. The material I've done on planning under highly uncertain conditions has fundamentally altered the way to teach planning new ventures. We also have a Ph.D. concentration in entrepreneurship, which the student gets a Management Ph.D. but elects entrepreneurship as his or her major. We usually have two Ph.D. students at a time working with me on research and developing research capabilities, in a tutorial-style format. We don't have classes in it. We feel that professors get tenure from doing research, not from writing exams. So we teach them how to write papers and how to do research to get published.

Research

There are four research themes pursued here. First is we look at how businesses develop competence, because if you can't get competence, you die. And, if you can't recreate new competencies, you get hit by competition, and you die. Understanding the ways in which competence is developed is critically important.

The second area is rapid growth. How do firms sustain rapid growth? A lot of firms grow quickly then hit a wall, and then others seem to be able to grow into big firms. We are least concerned with small businesses. That's not our focus. Our focus is more on firms that create a lot of social wealth as well as wealth for the owner.

The third area that we are interested in is how to commercialize technology. There are many really big businesses of tomorrow that are going to be created out of technologies being developed today. How does a small company develop a way to take its technology commercial?

The fourth area is corporate venturing. Why can't large companies spin off into new businesses? That is to me as legitimate an entrepreneurial activity as starting by yourself.

There's another theme that overlays all of those, and that's to what extent does national culture make a difference. So, all four of those other things we need to sort of overlay on that, whether you are in the United States, Korea, Taiwan, England, France or Italy. Entrepreneurship and entrepreneurial effort tends to differ by culture. Our research is usually done by faculty and doctoral students, and we will fund outside our faculty as well.

Outreach

We are the main center for the Pennsylvania Small Business Development Center, and we've been handling about 10,000 inquiries a year out of those centers. Now those can be as modest as someone saying, "I'm having trouble managing my inventories. Can you help me?" to people coming in and saying, "How do you raise \$10 million to start a new company?" We have another outreach program in that we sponsor visiting scholars from overseas. These fall into two categories; those who come over to do research for their Ph.D. or for their post-docs and are generally people from Europe and Asia, and those who come over to find out how to run an SBDC; these are generally people from Africa and the Latin-American countries. We also have a student venture fund where kids can get up to \$50,000 to start a business on submitting a business plan.

A big piece of outreach activities is courses that we give at night to people who want to start new businesses. The beauty about this is that at nighttime there aren't too many classes, so you've got real estate that's not being used. At night people who are holding a job and would like to start a business can come to your classes. We process several hundred people a year who come through and take classes. I think that's a real contribution to the community, and it also gets local entrepreneurs wired. Someone's paying attention to the phenomenon.

IN YOUR OPINION, WHAT DEFINES A CENTER OR PROGRAM?

What really matters to me is the quality of the research that is being done. We have to be world-class researchers. Support from within the university is crucial and you earn that with top-notch research.

REASONS TO START ONE TODAY

The reason you want to start programs is that you can have a really significant impact on your community if you design programs in which the entrepreneurs in the community can come to you. One of the most important reasons is that it gives opportunities for students to look into starting their own businesses or be able to consult with others that do. In short, it enables them to take control of their own destinies, instead of having to rely on employment from some firm.

People Necessary

You've got to be very careful having chairs in entrepreneurship because there are not enough people to fill the chairs.

Money Necessary

There needs to be a lot of funding. Too many programs are started with too little funding because some dean who is keen for the fast buck has put together a program. So you've got to be tough minded and say to anybody who wants to make a donation to start a program, "This thing is going to cost you \$5 million to \$10 million, at least." Anything less than that is a waste of time. That's a key.

Advisory Board

You want to have a good advisory board with realistic entrepreneurs who are prepared to contribute not just advice but assistance as well, such as funding and providing access to the community for students. A board can play a very significant role. The most important success factors are solid funding and a very supportive entrepreneurial community where the board is prepared to contribute.

Endowment Campaigns

You need the support of your development office and what they need to do is identify people in the community—graduates are often times self-made entrepreneurs. So those are the two categories: those who have done well and those who want to give back to the program. It is very targeted. The way that you can phrase it is you don't go duck hunting. You go elephant hunting. Your development people need to identify elephants and let you loose on being able to hunt that elephant.

Establishing a Center Chair, Professorship and Research

I wouldn't establish a chair unless I knew there was somebody to fill it. This is the big mistake. Too many times, you have all of these chairs and there is no one around to fill them. There is a running list of how many unfilled chairs there are in the United States in Entrepreneurship and I think it's up around 55. As far as research goes, if you can pull it off, get funded programs. So there would be a

program for studying say, rapid-growth businesses or programs for studying medical entrepreneurship or whatever the case may be and get people to endow the program and then get a funds flow to support that research.

GROWTH AND MAINTENANCE ISSUES

Further Program Development

I think the important problem we are going to have to address is whether entrepreneurship is a growing wave or a wave that's going to subside. What I don't want to have happen and what we are trying to be very careful about, is to stock up with standing entrepreneurship faculty because the courses are enormously popular at the moment. As we found in Organizational Behavior for instance, that 10 years later nobody wants to take O.B. any more and you've got all these tenured professors. That's why we use the adjunct as the vehicle to control overgrowing. The adjuncts also bring to the classroom some really good insights and practical experience. They are by no means second-class citizens. Nobody teaches as an adjunct unless they've gone and done it themselves.

Outreach Development

We are going to go global. We've got a way of running small business-development centers that really works, and I want to have that same success worldwide. Our target areas are developing economies in Asia, Latin and Central America and Africa.

Research Trends

The major trends in research are going to be increasing toward rigorous and relevant work, in contrast to the work that's been done to date, much of which has been rather sloppy and irrelevant. In trying to find a niche, research work suffers in terms of relevancy, especially with sure kind of stuff, where you go out and find out what the gender is, the race is and so on. That doesn't add much. That may be good for policy decision making. But really understanding what drives success in entrepreneurship doesn't depend whether you are black or white or male or female. It just doesn't matter. What matters is how you put together a strategy, how you launch that strategy, how you run that company and how you manage the growth. Demographic characteristics really don't matter. Work that looks at how we build and grow enterprises is much more important.

ANY OTHER SUGGESTIONS FOR THOSE STARTING A CENTER OR PROGRAM?

Don't start with too little money. Just hang in there until someone comes with a big brass ring. Don't grab the first brass ring.

COURSES OFFERED IN THE ENTREPRENEURSHIP CURRICULUM AT THE WHARTON SCHOOL

Entrepreneurship

More of a seminar course than typical lecture, this course depends heavily on the active, enthusiastic participation of students. The course objective is to convey skills and modes of analysis which will be directly useful in the initiation of your own entrepreneurial venture.

Entrepreneurial Decision Making

This is the required entry-level course for all Entrepreneurial Management majors and, in turn, prerequisite to all other courses in the Wharton undergraduate curriculum in entrepreneurship.

Entrepreneurship: Implementation and Operations

This course is the sequel to MGMT 230. It focuses on implementation, deal structure and operations, with special emphasis on the psychological and sociological ramifications of entrepreneurial pursuit.

Field Work in Small-Business Planning

This course consists of lectures, case analyses, discussion groups and actual consulting engagements with local companies and addresses such functional issues as financial analysis, marketing strategy, accounting systems, strategic planning organizational structure and arranging financing.

Raising Capital for New Ventures

This is a comprehensive course that teaches students how to accumulate funds for new financial ventures. This is accomplished through presentations done before the class, along with weekly readings, discussion and guest lecturers. The students discuss current events, the impact these events have on existing business and how to react to these changing circumstances.

Launching New Ventures

Students select an enterprise from a selection described by *Champions* and participate in crafting this enterprise's business plan. The course introduces funding resources, first-sale candidates, possible vendors, etc.

Management of Technology

This course will address the significant issues related to managing technology in a corporate environment from both strategic and tactical perspectives.

Entrepreneurial Management

This course addresses the art of real new-wealth creation through the initiation of firms with high growth potential in evolving or renewing industries. In addition, the course addresses some of the personal issues surrounding an entrepreneurial career.

Strategic Management of Innovation

This mini-course will expose you to a mix of approaches and techniques that promote innovative thinking and entrepreneurial behavior in organizations.

Family Business Management

The management of growth in a constantly changing environment is the subject of this course, with emphasis on the need for continuous and effective business planning.

Chinese Business Enterprise in the Global Context

This seminar intends to help students gain a better understanding of the Chinese business enterprise: cultural underpinnings, competitive philosophies, business strategies and practices, the overseas Chinese family business (its structure, internal process and current challenges) and differences between Chinese management and other management systems.

Legal Aspects of Entrepreneurship

Venture Initiations/Personal Acquisitions

Venture Initiations/Start-ups

EXHIBITS

THE W.W. CARUTH CHAIR IN ENTREPRENEURSHIP

Statement of Mission and Responsibilities

Mission

The W.W. Caruth Chair in Entrepreneurship was created for the purpose of facilitating education and research inquiry into issues related to the “entrepreneurial process so that entrepreneurs may be helped in their efforts to start and operate their business and professors may become more knowledgeable in entrepreneurship educators.”

As the present Caruth chairholder, my mission is to advance scholarship in the area of entrepreneurship, especially as it intersects with the finance discipline. Responsibilities include the scholarship of teaching and research inquiry, limited interaction with and teaching of entrepreneurs within the business community and providing academic leadership both within the School of Business and on a regional and national basis.

Responsibilities

Scholarship of Teaching

Be both a facilitator of learning for my students and an influence for good in their lives—to affirm and encourage while pressing them to think more deeply, both analytically and creatively. Specific responsibilities include:

- Make the classroom environment challenging and fun, for both the finance students and the entrepreneurship students.
- Bring a balance among concepts, skills and current events.
- Develop a network of professionals to be used as resource people in the classroom, involving them in case studies to allow the students to have a “real-time” experience, where they interact with the executive who was actually making the decisions relating to the case.
- Provide some opportunity in and outside of class for the student to give thought to the values and habits important in being effective in their work and with their family.
- Mentor a small group of my students each semester and maintain the relationship after graduation.
- Continue to develop widely-accepted textbooks in corporate finance and in the management of small and entrepreneurial firms.

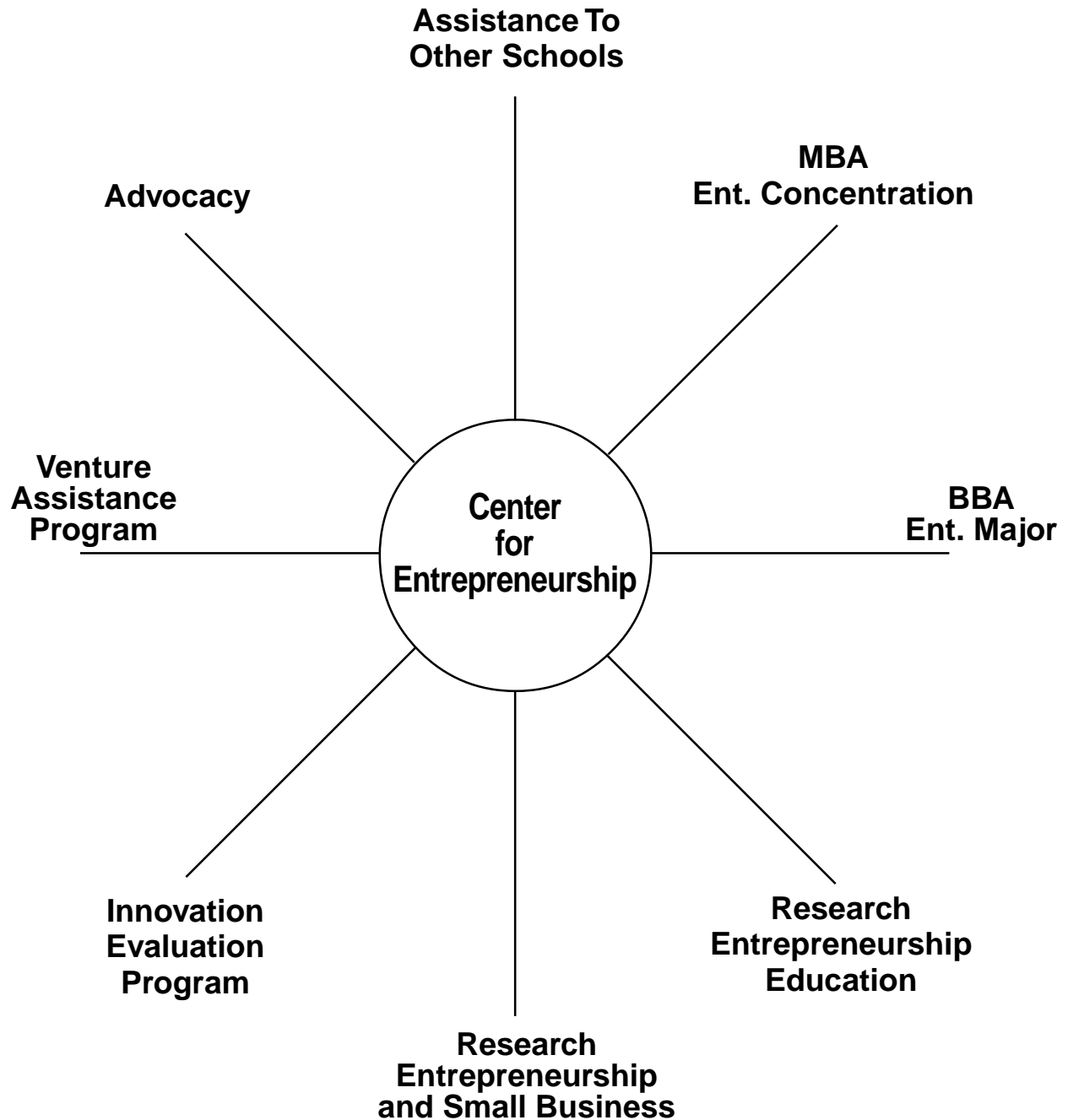
-
- Develop a network or cadre of academicians interested in risk capital and innovation.
 - Be actively involved in research and writing in the area of entrepreneurial finance—research that increases our understanding of the knowledge and skills needed by owners of smaller and middle-market firms in the financial management of their businesses. The research should be of a quality to be published in academic and high-quality professional journals, with an emphasis on the Scholarship of Research Inquiry.

Academic Leadership

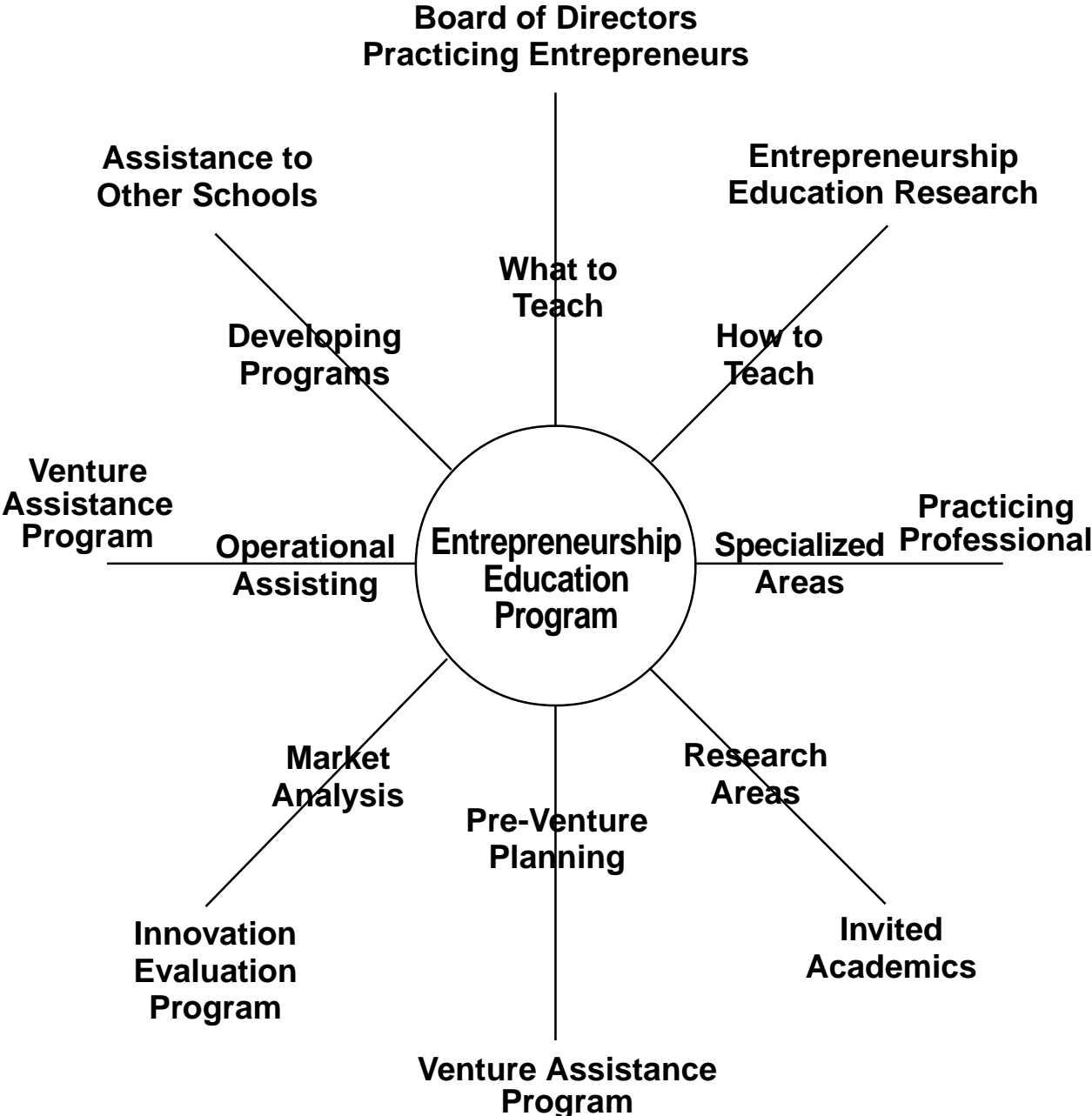
- Be responsive as to how I might serve the Department of Finance, the Center for Entrepreneurship and the school of business.
- Contribute to the finance and entrepreneurship academic disciplines and profession at a national level.

SCHEMATIC DRAWINGS FOR RELATIONSHIPS OF BAYLOR PROGRAM, 1984

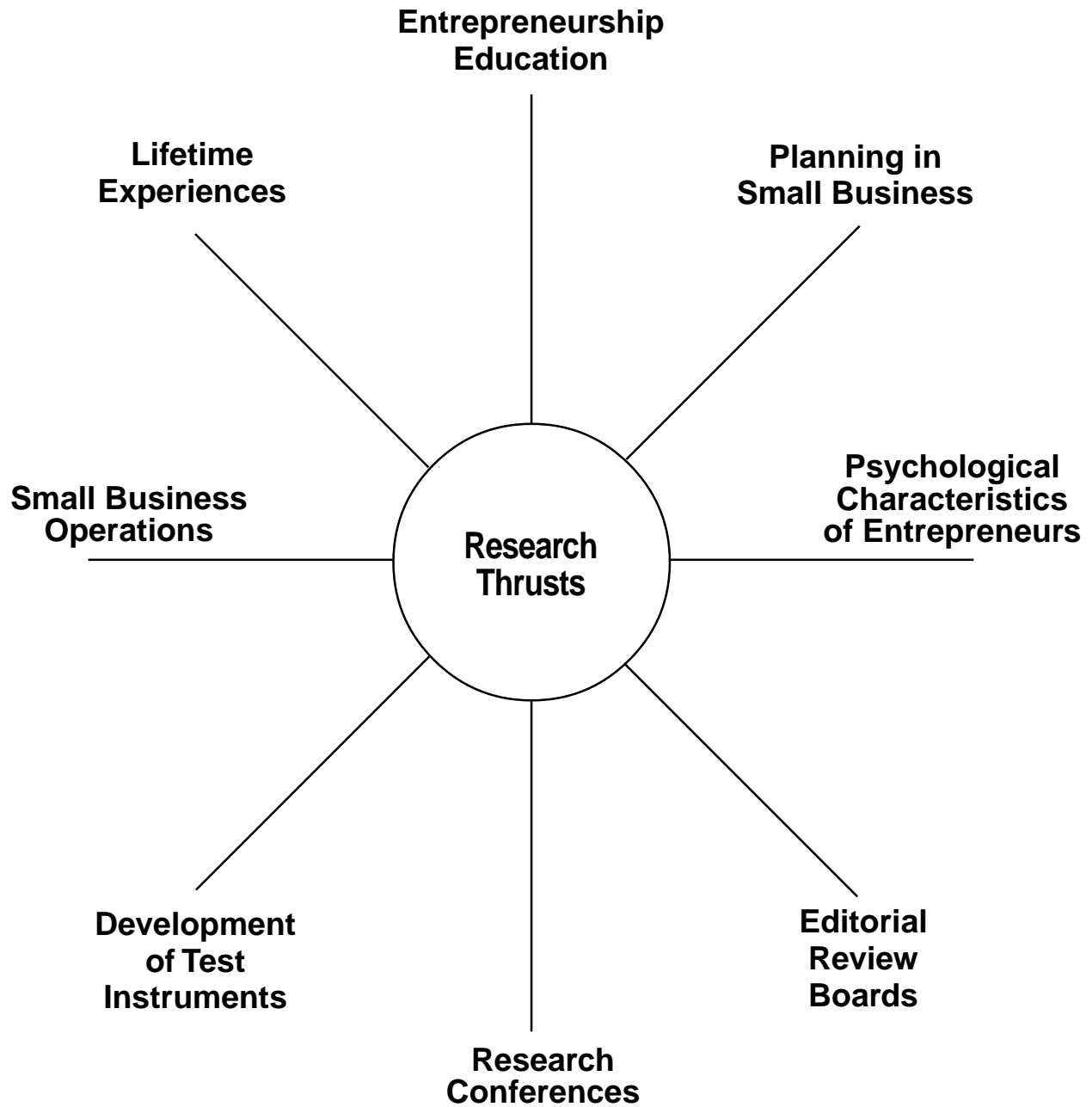
Center for Entrepreneurship Programs



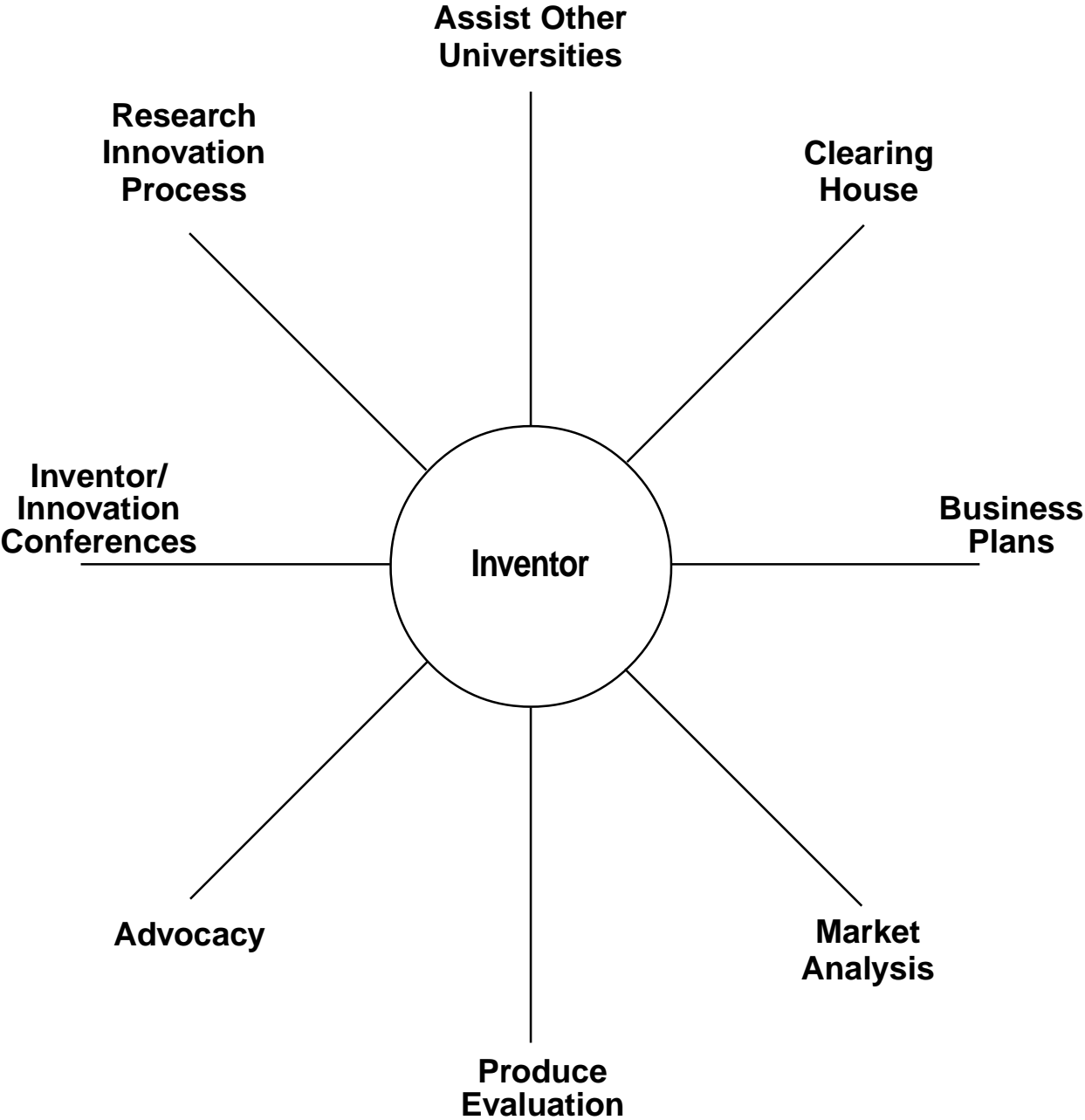
Entrepreneurship Education Programs



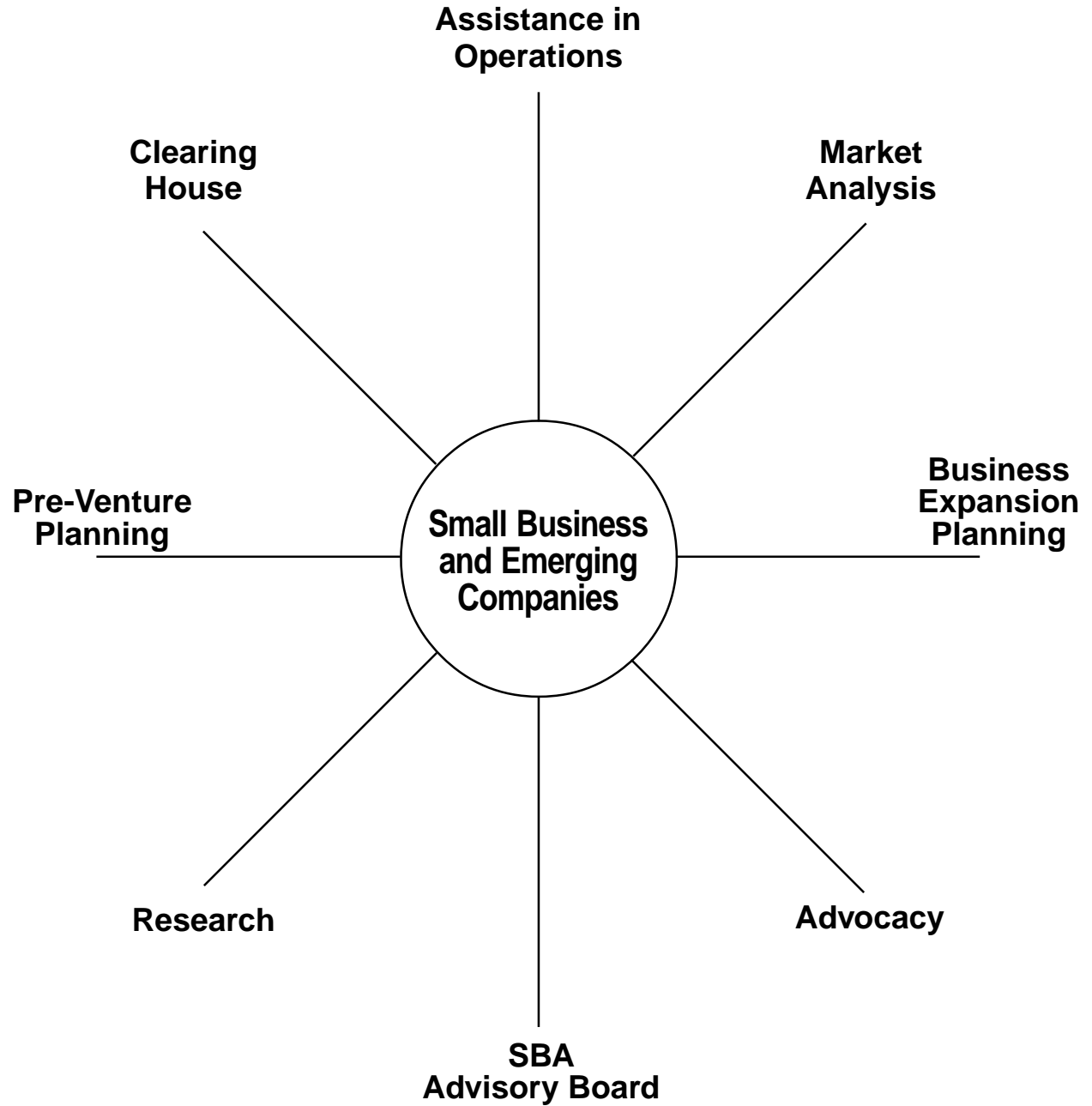
Entrepreneurship Research Thrusts



Innovation Evaluation Program



Venture Assistance Program



INNOVATION EVALUATION PROGRAM

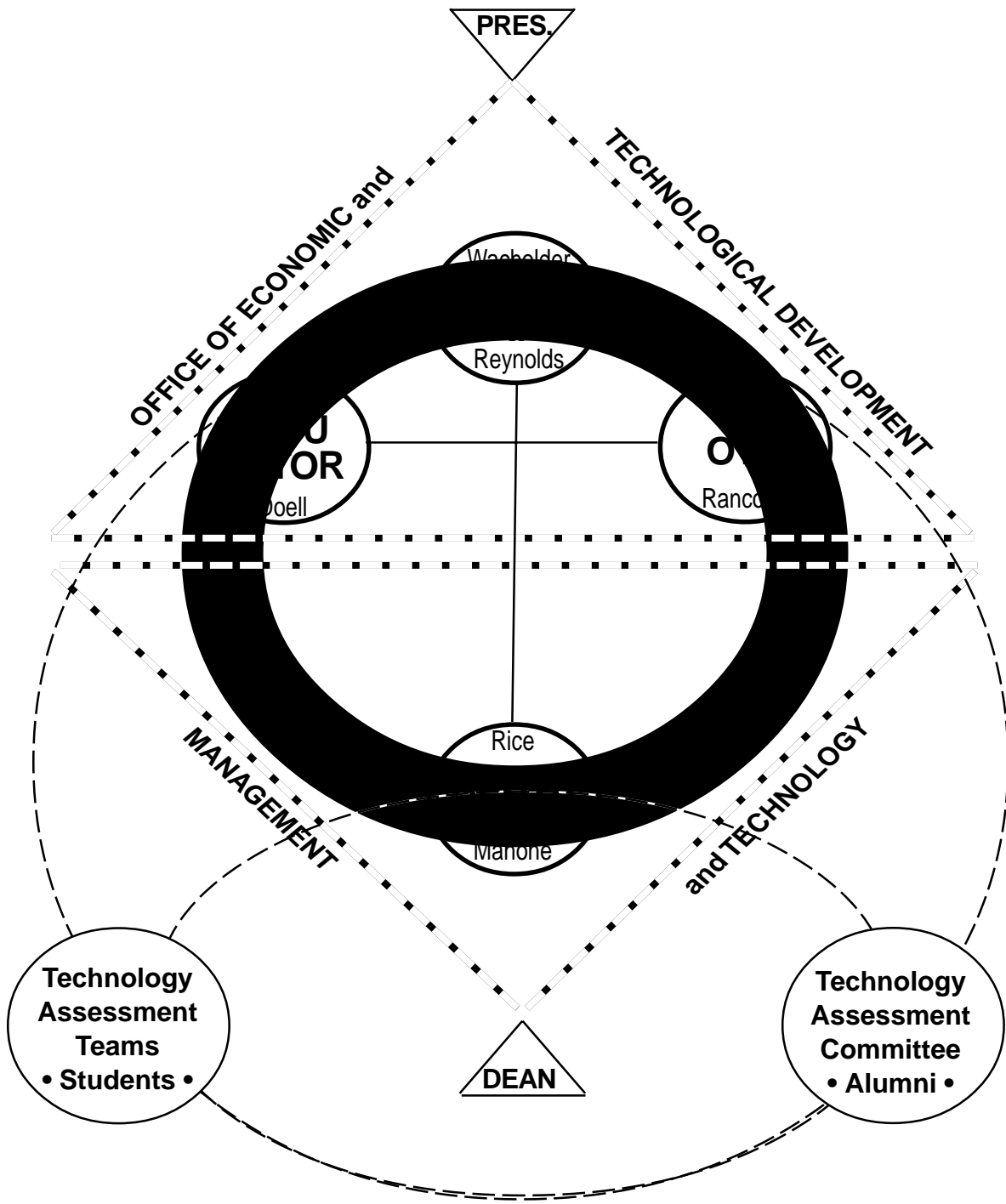
The Center for Entrepreneurship Innovation-Evaluation Program was initiated in 1980, when the original Innovation-Evaluation Program developed under a National Science Foundation grant at the University of Oregon was discontinued.

Baylor modified the program to reduce computer running time and has subsequently reprogrammed it to run on an IBM personal computer. Since the program was initiated in 1980, more than 600 inventions have been evaluated for commercial feasibility. Approximately 8 percent or 48 inventions, were judged to have a high probability of commercial success. Thirty-five products have been introduced into the marketplace.

Even though the program has received national and international publicity through articles in newspapers and magazines, many inventors are still unaware that honest, objective evaluations of the commercial feasibility of their products are available. The Center has recently directed its efforts to assisting other colleges and universities to establish similar programs. The long-range goal of the Center is to assist in establishing an Innovation-Evaluation Program at a college or university in each state in the nation. Programs are now available in the states of Wisconsin, Washington, Florida, Alabama, Louisiana and Texas. Baylor University has assisted all the programs except the one in Wisconsin. There are a number of other schools that are evaluating the feasibility of establishing programs. The Center staff has also worked with universities in Australia and Mexico. The status of their activity is unknown.

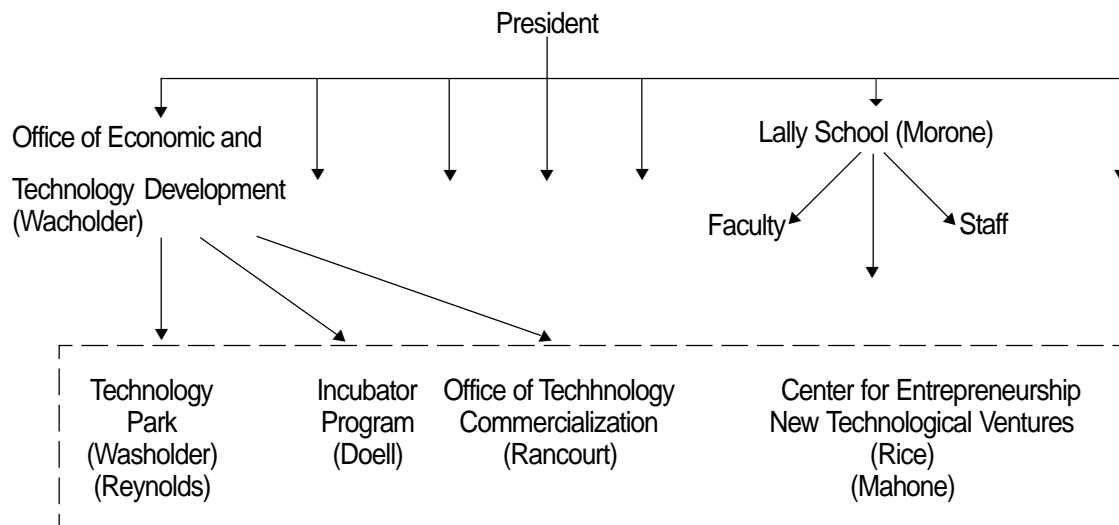
Baylor University has the only Innovation-Evaluation Program in the nation that was established without state or federal funding. It also has the oldest Innovation-Evaluation Program in the United States.

SCHEMATIC DRAWING OF RENTEC



**• RenTEC •
Rensselaar
Technological Entrepreneurship Council**

RELATIONSHIPS AMONG RENSSELAER'S ENTREPRENEURSHIP INITIATIVES



Rensselaer Technological Entrepreneurship Council (RenTEC)

Notes

1. Rice continues to serve as executive director of the Incubator Program and is also Assistant Dean of the Lally School of Management and Technology.
2. Doell is Associate Director of the Center for Entrepreneurship.
3. Both Washolder and Mahone have served as directors of the Incubator Program.
4. The Technology Park has a trustee level oversight committee.
5. The Incubator Program has an Advisory Board that includes the President, The Vice President of Finance, the Dean of Faculty, the Deans of Engineering, Management and Science; and several outside business leaders.
6. The Center for Entrepreneurship and the Lally School of Management and Technology share the same advisory board composed of about ten prominent business leaders, including two trustees.

**ORGANIZATIONAL CHART OF THE
UNIVERSITY OF COLORADO AT BOULDER**

