A LIVING HISTORY OF WPI

An Interactive Qualifying Project Report

Submitted to the Faculty

Of the

WORCESTER POLYTECHNIC INSTITUTE

In partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

Allison Berube

Christopher P. Bitzas

Jared P. Hill

Jeffrey D. Moore

June 2, 2000

Professor Christopher Brown, Advisor

Abstract

The purpose of our IQP was to evaluate how science and technology affected Worcester Polytechnic Institute. We used video-tapped interviews to obtain opinions of members of the WPI community on the topics of the Plan, academics, social life, athletics, and the student/faculty, teaching/research relationships. From the responses we evaluated the data and made conclusions about how WPI has changed what it needs to do to change for the better. These conclusions in part include increasing the student population to field more competitive athletic teams; the more active a president is the more of an impact he or she will have on WPI; technology such as the internet and email have increased student/faculty interaction despite a drop in face to face contact; the WPI Plan and its project based program has helped WPI students have a positive impact on society and technology. As part of the project we also produced a video that addresses the subjects that are in the paper. A look at WPI through "living history" will help many see the changes at WPI due to many technical and social elements.

Acknowledgments

We would like to use this section to take the opportunity to thank the individuals, who made this project possible. We greatly appreciate and thank the seven members of the WPI community who gave up time in their busy schedules to be interviewed. Also, we would like to acknowledge the members of the Instructional Media Center who allowed us to borrow the equipment needed to conduct the interview. We would also like to thank them for their help in organizing our videotaped interviews into one 42 minute long tape. Lastly, we would like to thank our advisor, Professor Christopher Brown, for his advice and help over the past three terms. Without his direction, we would have been disorganized and lost.

Table of Contents

Authorship Page

We prepared a video documentary with this project. Our group conducted the interview with Professor Van Bluemel, Professor Len Polizzotto, Professor Allan Hoffman, Dean Bill Grogan, and Bill Trask. Amish Patel and John Pattison conducted the interview with Professor Leon Graubard and Professor Helen Vassalo. Each group transcribed their own interviews and extracted the clips they wanted to include in the video. John Pattison then did the final editing of the video in collaboration with the Instructional Media Center at WPI.

1.0 Introduction

Worcester Polytechnic Institute was established in 1865 as the Worcester County Free Institute of Industrial Arts. Since then, there have been organizations, papers, books, and interviews that preserve the cherished history of the Institution. This project simply supplements the work that has already been done. However, this project is slightly different.

The objective of our project is to document a "living" history of WPI. What this means is that we conducted videotaped interviews with several faculty and staff members (active and retired) on the subject of the history of WPI. These interviews are valuable because a video, in many cases, allows the viewer to understand or relate to the interviewee better than reading a transcript.

We conducted the interviews with the objective of focusing on the relationship between WPI and technology. How technology has affected WPI and how WPI has affected technology is the focus of our project. Since this project is on the history of WPI, we also looked at some other issues, such as the athletic program, social life, and the administration. It should also be noted that our project focuses on the period of time that our interviewees cover.

This project is a worthwhile effort because it will leave volumes of videotaped material in the library and provide an insight into the recent history (about the last 40 years) of WPI. This project is an extension of a previous project and it is our hope that this project will be a foundation for future projects.

There is not a great deal of history of WPI on video to supplement the excellent literature on the subject. Our project was actually preceded by another similar project. The previous project was done earlier in the year and included but one interview. Our project extracts from 7 interviews conducted over the last 3 terms and one from the 1975 edition of The Peddler. Our

interviews covered many different issues related to the school, as well as some specific topics that dealt with the interviewee.

This project fits the IQP requirements because it links technology and society. The first way it links them is by applying technology to history. We videotaped the interviews and then made a documentary that dealt with 14 different aspects of the history of WPI. The second way was how we researched the affect that technology has had on the WPI society and the WPI educational process, as well as the affect the WPI educational process has had on technology and society.

The video supplements our paper and therefore, according to the IQP standards, our paper is not required to be as extensive as a typical IQP. However, we did not take that into consideration when writing the paper. We treated it as if there was no video and the only part of our project was the paper.

2.0 Literature Review

The following Literature Review provided the background information necessary to better understand the project goals outlined in the Introduction. We will first give details regarding the general history of the Worcester Polytechnic Institute. We will then define and discuss the WPI Plan as it relates to WPI. Next, we will examine tenure and how it is associated with the student body. Finally, in this section we will give a brief overview of the usefulness of interviews and how best to conduct them in relation to our goals.

2.1 Worcester Polytechnic Institute

Worcester Polytechnic Institute, located in Worcester, MA, is the nation's third oldest private engineering college. It has awarded graduate degrees since 1898, adding new programs regularly in response to the developing needs of the professional world. Presently, WPI offers the master's degree in 15 disciplines and the doctorate in 14. It currently has a student body of over 3,600 men and 1,000 women. Currently, students attend WPI from almost every state and over 60 foreign nations (WPI Undergraduate Catalog, Worcester, MA, 2000).

2.1.1 Founding WPI

The Worcester County Free Institute of Industrial Science, as WPI was first called until 1887, was founded in 1865 by John Boynton, Ichabod Washburn, Seth Sweetser, David Whitcomb, Emory Washburn, and Stephen Salisbury II. Although, Boynton and Ichabod Washburn died before the opening of the school, the first two buildings established on the campus were named after them. These two buildings that are frequently referred to as the "Two Towers," were named Boynton Hall and Washburn Shops. While the school was made up of

only two buildings, there were also votes being taken to shape it into a curriculum. The first formal vote, which indicated the kind of education to be expected from the Institute, was recorded in October of 1865, when it was agreed that a "professorship of engineering and one of chemistry" be established (Tymeson, 1965).

WPI opened on Tuesday, November 10, 1868 as an all-male school. Charles Thompson, who was inaugurated as president after the school opened, said, "We cannot receive any women without undertaking to instruct all competent women who apply. This we have not room for now. It is our purpose to throw the school open to youth of both sexes as soon as we can (Tymeson, 1965)." WPI operated entirely as a male school until 1968, a century later, when the Board of Trustees approved the acceptance of women undergraduates.

John Boynton and Ichabod Washburn had similar ideas for starting a school. Boynton wanted to start a school where young men could go to learn to become manufacturers or mechanics. Washburn, however, wanted to establish a Department of Practical Mechanism, a type of school that taught technical skills through apprenticeship. When Boynton and Washburn converged, through the help of many, a school was established that would blend theory learned in the classroom with practice in the shops. That same basis on what WPI was founded can still be seen today through WPI's motto, "Lehr und Kunst" or Theory and Practice."

2.1.2 History

The History of WPI has been recorded through the literature of books like Two Towers, the Tech Bible, and Seventy Years of the Worcester Polytechnic Institute among others. We used the information provided by these books to accurately document the history of WPI and relay it in our paper. From this information, we were able to create a timeline (see Appendix J) to allow

easy access to events through the WPI's history. The administrations of each WPI president were also included in our timeline to emphasize each president's major contributions to WPI during his term.

Charles Thompson, the first president and professor of WPI, served from 1868 until 1882. He was responsible for setting up the original curriculum and choosing the first faculty members. The first teachers included Harriet Goodrich, a mathematics teacher, George Gladwin, an artist, George Alden, a teacher of theoretical and practical mechanics, and Thompson himself, a teacher of chemistry. During Thompson's presidency, Boynton Hall, and Washburn Shops were the only buildings on campus but were soon to be followed by others.

Dr. Homer T. Fuller succeeded President Thompson. His presidency ran from 1883 until 1894. During his time as president, there were many changes. In 1887, the school's name had changed from the Worcester County Free Institute of Industrial Science to the Worcester Polytechnic Institute. A school seal had been adopted in 1888. Professor Alonzo S. Kimball, a physics professor, designed the seal that is still used today. It consisted of two open books and an arm and hammer. The books stand for learning and theory, while the arm and hammer represent skilled art and practice.

New buildings were also being constructed. The Power Laboratory, originally intended for experimentation with electricity and magnetism, was built in 1886, and Salisbury Laboratories was built in 1889 for many different functions. This building held mechanical engineering, physics, chemistry, and a brand new discipline at this time, electrical engineering.

In 1894, Thomas C. Mendenhall became the third president of WPI. Another building was completed during his time here. It was named Mechanic's Hall, currently called Stratton

Hall. Mechanics Hall was mainly a mechanical engineering building. Edmund A. Engler, (1901-1911), took over presidency after Mendenhall.

By Engler's time, Electrical Engineering had become the predominant major. The number of majors in Electrical Engineering equaled the number of graduates of all other departments; it was evident that accommodations would soon have to be made for this greedy innovation which gave signs of encompassing almost every area of human activity (Tymeson, 1965). Because of this, a new building was constructed mainly for them. It was built in 1907, in the shape of an "E," and later became known as Atwater Kent Laboratories.

Alumni Field (1914) and Alumni Gymnasium (1916) were the next additions to WPI. The Alumni Association funded them. With the establishment of Alumni Gym and Field, an athletic program and physical education program had been added. This occurred during Ira H. Hollis' presidency, which ran from 1913 until 1925. The fifth president of WPI was formerly the dean of the Engineering Department at Harvard University and chairman of the Harvard Athletic Commission.

Admiral Ralph Earle, the Tech's sixth president, attended WPI himself as an apprentice in 1892. He saw through many projects at WPI. Under him, Sanford-Riley, the school's first dormitory, had been built, and a swimming pool had been completed. President Earle died in 1939 after he collapsed giving a chapel talk to his students. Professor Francis Roys, head of Mechanical Engineering, took over in the interim until Admiral Wat Tyler Cluverius became president.

President Cluverius served in office from 1939 until 1953. He finished projects that President Earle had envisioned or started himself. A footbridge, connecting the east and west sides of the campus was built and named the Earle Bridge. Also, Alden Memorial Auditorium

was built in 1939. George Ira Alden, a former professor of practical and theoretical mechanics, made this auditorium possible. Its original function was that of a library and various offices. Today it is used for all different types of functions such as concerts, musical and theatrical performances, dinners, and dances.

By this time, WPI was getting crowded and almost every department was looking for more room. Higgins Laboratories, named after Milton P. Higgins a former superintendent of Washburn Shops, was built in 1942 to become the new home of Mechanical Engineers. Up until 1942, Mechanical Engineering had been located in Stratton Hall.

In 1953, Alvin Cormeny became president, taking over after President Cluverius. Kaven Hall, a civil engineering building had been erected under Cormeny's presidency. Its shape was made into a "C," just like the electrical engineering building is shaped like an "E." He served as president until 1955.

From 1955 until 1966, Arthur Bronwell served as WPI president. A dormitory and a new physics building were added under his leadership. The physics building was named Olin Hall by the Olin Foundation and the dormitory was named Morgan Hall. This hall was named for the Morgan family, which had served through three generations of trusteeship in a continuous leadership from the time of the Institute's founding (Tymeson, 1965). Morgan Hall also held the first dining hall for students. There was also a curriculum change after a two-year study of academic development that gave students more options. After contributing much to the school, he resigned in 1962 to become the Dean of Engineering at the University of Connecticut.

In 1963, WPI's third dormitory was opened. It was named Daniel's Hall, after Fred H. Daniel's, a WPI graduate. Also, the George C. Gordon Library, Goddard Hall, and Harrington Auditorium were opened. Goddard Hall, also a gift from the Olin Foundation, was established

in1965. Named after Robert Goddard, the father of modern rocketry, Goddard Hall was built for the chemical engineering and chemistry departments. Gordon Library was established in 1967, after George C. Gordon, a WPI graduate. Prior to Gordon Library, the library was located downstairs in Alden Hall. In 1968, Harrington Auditorium was opened. Its space is mainly used for athletic events but sometimes holds social affairs. These buildings were constructed under the General Harry Purnell Storke's presidency.

Also under his leadership, in 1967, WPI began administering degrees other than science and engineering. The humanities, management, and economics were all new programs added to the WPI curriculum. "The Goat's Head Pub," mostly a senior hangout, was also added in 1967. It remained a pub until 1984, when it was later changed to Gompei's Place, the campus pizza parlor.

Another great transformation, which occurred under President Storke, was the acceptance of women into the WPI undergraduate program, after the approval from the Board of Trustees. Lesley Small, the first female graduate of WPI, graduated in 1972.

Storke's presidency ended in 1969, when George W. Hazzard succeeded him. One of the most vital developments to happen at WPI occurred during his time as president. The WPI Plan, which was started in 1970, changed the educational system at WPI by incorporating projects, classroom learning, humanities, and social sciences. The master's program at WPI also underwent modification. It was changed so students could receive their Master of Science degree in only one extra year. This was implemented in the fall of 1975.

Throughout the years, WPI's student body continued to grow in size. Two new residence halls were completed to accommodate for this. Stoddard Residence Center opened in 1970 and Ellsworth/Fuller Apartments opened in 1973. This continued to happen until more residence

halls were added to provide incoming freshman with guaranteed housing. Founders Hall (1985) equipped with the second dining hall of the campus and Institute Hall (1989) were the last two added to WPI.

Dr. Edmund T. Cranch, inaugurated in 1978, like many of the other presidents, oversaw many physical changes to the campus. Stoddard Laboratories was added onto Washburn Shops in 1984. There was also a major remodeling of Alumni Field. The OmniTurf and the all-weather track were the major changes on the field. Cranch resigned in 1985 as 12th president of WPI.

Following Dr. Cranch was Dr. Jon C. Strauss. Before coming to WPI, he was the vice president of the University of Southern California. During his time as president, he focussed his attentions on WPI's image and the faculty. He served until 1996 when President Edward A. Parrish, the 14th and current president, was inaugurated. President Parrish has concentratesd his efforts on the WPI Plan and Global Opportunities. While he has been in office, there have been numerous renovations to the residence halls Ellsworth/Fuller Apartments, Sanford Riley, Daniel's Hall, and Morgan Hall. Currently, the WPI Campus Center is being built between Olin Hall and the Higgins House. Its function is to be the link among all aspects of WPI.

2.2 The Plan

Up until 1970, WPI's curriculum was inflexible. There were not many options students had when it came to their schedules. However, under George Hazzard's presidency, WPI embarked on a new type of undergraduate program. It was called the WPI Plan. Today the Plan still emphasizes "Lehr und Kunst," or "Theory and Practice," the motto of WPI. The goal was to get students to learn in the classroom and then practice what they learned in real life settings

through projects. The WPI project program prepares graduates for their future professional lives by helping them learn how to identify open-ended problems (Undergraduate Catalog, 2000).

Under the Plan, WPI students are required to complete three projects, the MQP, the IQP, and the Sufficiency. Also students must fulfill distribution requirements. Together the MQP, the IQP, and the Sufficiency ensure that WPI graduates will be competent in their field as well as being aware of the society around them.

The Sufficiency, usually done first in the sequence of projects, is completed after taking 5 courses in the Humanities or Arts. These courses must all be connected in some way. With the knowledge from these courses, each student will produce a critical or research essay or, in combination with an analysis, short stories, poems, works of music or musical performances, visual art, or dramatic performances (Undergraduate Catalog, 2000). This ensures that students will be well-rounded individuals who are aware of culture and society, not just the technological aspects of it.

The IQP or Interactive Qualifying Project presents an issue that relates science and technology to the society around them. The objective of the IQP is to enable WPI graduates to understand, as citizens and as professionals, how their careers will affect the larger society of which they are part (Undergraduate Catalog, 2000). WPI has many different opportunities for students who are completing IQPs. Currently, projects are available on campus as well as at 15 different residential sites throughout the world.

In the Major Qualifying Project, students are given problems similar to what they may see in real job experiences. The qualifying project in the major field of study should demonstrate application of the skills, methods, and knowledge of the discipline to the solution of a problem

that would be representative of the type to be encountered in one's career (Undergraduate Catalog, 2000). Like the IQP, project sites are available at various locations.

Another aspect of the WPI Plan is every student must fulfill the necessary distribution requirements. Each major has their own respective requirements, however, the minimum academic credit required for the Bachelor of Science Degree is 15 units. Other course work is considered to be that of free electives. Two units should be allotted to the Sufficiency and the required Humanities and Arts classes, while there should be one unit for IQP, and one unit for MQP. In addition, two-thirds units in social sciences and 1/3 unit in physical education are required.

2.2.1 Development of the Plan

Before 1970, WPI had an extremely rigid curriculum. Many faculty and administrators wanted to loosen up the program because they felt that undergraduate engineers were being held back and not allowed expressing their thoughts. They also felt that students were not ready for the real world because they were not prepared for anything. As a result, a planning committee of six was appointed to assess this problem. After two years of extensive research, they developed the WPI Plan. In May of 1970, the faculty voted to accept it with a vote of 92 to 46. What the Plan emphasized was project-orientated programs where graduation is based on them. The Plan was established and the MQP, the IQP, the Sufficiency, and the Competency Exam were created. These became mandatory requirements for every undergraduate.

The school also allowed students develop their own curriculum with their advisor. To ensure academic proficiency, students were required to take the Competency Exam. It was a weeklong exam where engineering students would have to design something with previous

knowledge from course work and also take an oral exam where a board of faculty would ask various questions related to their field. It was a difficult exam where about one third of the students failed every time it was taken. The Competency Exam ran for fifteen years but was discontinued for several reasons. After the Competency Exam was abandoned, distribution requirements were added to guarantee students were getting the necessary fundamentals. At first, they were broad. However, over the years, WPI has been going back to a stricter curriculum.

The Plan also changed the academic calendar. WPI previously had 15-week semesters with 5 or 6 classes a semester. With the implementation of the Plan, they were changed to 7-week terms with 2 or 3 classes a term. The goal was to allow students to be able to concentrate on three classes instead of being overwhelmed with trying to complete five. The grading system underwent modification also. The grades were Acceptable with Distinction, Acceptable, and No Record.

Although the WPI Plan has been revised several times, it still instills the same objectives, to produce competent graduates who are ready for the professional world with a background in many different aspects of life.

2.2.2 The Impact of the WPI Plan

The Goal of WPI was to produce "technical humanists," engineers aware and able to take into account the societal as well as technological impact of the problems they would be dealing with. Also, engineers who were motivated and capable of self-sustaining education and of adapting to new and future demands for skills which many not have been envisioned by anyone at the time of their undergraduate education (Cohen, 1975). To assess if WPI was in fact

producing "technical humanists," a study was done by K.C. Cohen, in collaboration with the National Science Foundation. The focus of the study was to see if the Plan's program goals were being met and if the educational procedures were producing the expected goals.

A comparison was made with two other non-plan schools, Clarkson College of Technology and Stevens Institute of Technology. First student competency was examined. The Engineering in Training test was, at the time of this study, considered significant and a good measure of the value of a person as an engineer. WPI plan students total average grade was 83.34%, while non-plan student's grades were 78.37%. Sponsors of projects were also asked to rate project groups in terms of preparation, imagination, interactions, and aims achieved on a scale of outstanding, good, average, fair, poor, and no opinion. The majority of ratings fell under the categories of outstanding and good, while there were only a few cases in fair and poor categories. In terms of measurable competency it seems that the WPI Plan is attracting a competent group of recruits and that those in the program perform exceedingly well in job-orientated projects (Cohen, 1975).

Next, student's self-concepts were investigated. Through a series of interviews and open-ended essay questions, students felt that the WPI Plan was making them more self-confident and others would feel that they were well educated. When asked about their greatest accomplishment at WPI, most people saw it as project work. They felt they became more aware of society, were more aware of their potential as engineers, and were able to work with people better through the experience of project work.

Prior to coming to WPI, 42% referred to the Plan and 24% for course offerings as reasons for coming to the school. Educational goals, when WPI was compared with CCT, were higher.

Thirty-two point two percent of WPI students planned on going to graduate school while only twenty-seven point eight percent of CCT students planned on going.

This outcome has showed that WPI students are graduating as more competent engineers who feel that an ability to work with ideas, the development of a capacity for life long learning, being of service, changing the world, and higher educational goals are extremely meaningful to them (Cohen, 1975).

2.3 Tenure

One major area of this project is the exploration of tenure and the effect it has on student faculty relationships. In order to do this, we must first understand what tenure is and how tenure is achieved.

2.3.1 Defining Tenure

One formal definition of tenure, as stated by Guralnik and Neufeldt (1997) is the following:

> Tenure: The status of holding one's position on a permanent basis, granted to teachers, civil service personnel, etc. on the fulfillment of specified requirements.

Tenure depends almost exclusively on research and publication. Therefore, it is imagined that is where the faculty's principle attention is directed (Smith, 1990). Since every faculty member must be evaluated every few years Smith (1990) feels that this debilitating process of constant review takes literally uncounted faculty hours, causes much grief, and often results in highly questionable or blatantly unfair decisions, leading, to that wonderfully revealing word, to "terminations," or more happily, to tenure.

2.3.2 Effects of Tenure

If professors are continuously striving for tenure, then in turn they are also striving to publish and do good research. Even the most brilliant teaching will not save a young assistant professor if he/she fails to achieve the minimum standard of research/publication (Smith, 1990). As a result of this, many professors are spending vast amounts of time conducting research and not enough time there for their students or in the classroom. The undergraduate students are the ones to suffer. It sometimes makes students feel like they are not an important part of the university or college when they receive less consideration than necessary for them.

Smith (1990) explains that to some faculty, students are the enemy. It is the students who threaten to take up precious time that might otherwise be devoted to research. Research deprives the student of what he or she deserves-the thoughtful and considerate attention of a teacher deeply committed to teaching; in short, it robs the student of an education. Most of the research conducted does not even benefit society in any way. Also, it is often financially costly to the school.

Some argue that professors who research more and compete to be leaders in their field tend to be smarter and more knowledgeable about their field of study. This in the long run, will be beneficial to students because the smarter the faculty, the smarter the students. However, two studies were done that prove otherwise. Martin Finkelstein (1984) was unable to find any grounds for the proposition that "good research is both a necessary and sufficient condition for good teaching." He reached the conclusion that "research involvement detracts from good teaching. Another research study done by Hugh Brown and Lewis Mayhew concluded that there is no relationship between teaching effectiveness and research productivity (Smith, 1990).

Not all faculties believe research is their first priority. Some believe that the general term "Publish or Perish" should be changed and made to "Teaching or Perish." Smith (1990) relays that many professors "agree that their interests lean toward teaching (as contrasted with research) and agree that teaching effectiveness, not publications, should be the primary criterion for promotion of faculty."

The truth of the matter is that professors involved in publications and research as a means of securing tenure are inclined to spend less time with their undergraduates, whether it be in teaching them, or with outside assistance. Ultimately, teaching should be the number one priority of professors.

2.4 Interviewing

An interview is defined simply as conversation with a purpose. Specifically, the purpose is to gather information (Berg, 1998). As part of our project, it was our goal to obtain information from various faculty and staff about their experiences at WPI. We went about researching the different aspects of interviews until we were satisfied with one that work for us.

2.4.1 Types of Interviews

There are three major types of interviews. They are standardized interviews, non-standardized interviews, and semi-standardized interviews. Standardized interviews are structured interviews where the interviewer reads from a script of predetermined questions. Every interviewee is asked the same questions in the same order to obtain a response. This provides the researcher with complete control over all aspects of the interview. Standardized interviews are not appropriate when a flexible method is needed or when a researcher wants to capture the rich, detailed data that can be gained (Doyle, IGSD).

Another type of interview is the non-standardized interview. This interview is almost the opposite of the standardized interview. The interviewer does not have a planned set of questions. In a non-standardized interview, interviewers must develop, adapt, and generate questions and follow up probes appropriate to the given situation and the central purpose of the investigation (Berg, 1998).

Lastly, the semi-nstandardized interview is located somewhere between the standardized and the non-standardized. This method of interviewing allows a previously determined set of questions but does not limit the interviewer to just them. They are allowed to digress. Interviewers are also admitted to modify questions depending on how the subject answers previous questions. The interview style is usually conversational. It is more of a qualitative interview than anything else is.

We chose the last method, the semi-standardized interview as our type of interviewing method. The freedom and flexibility that comes with this type was what we, as a project group, were looking for, to be able to obtain a vast amount of information without restricting the subject.

2.4.2 Designing the Interview

Berg (1998) says that in order to draw out the most complete story about various subjects or situations under investigation, four types or styles of questions must be included in the survey instrument: essential questions, extra questions, throw-away question, and probing questions. All types of questions were used in our interviewing schedule with the exception of extra questions.

Essential questions deal with the main purpose of the research. These questions do not have to be placed successively. Questions that are added to the survey instrument in order to check the creditability of the subject are extra questions. These were not put into our interview because of the lengthiness of our subjects' answers. Throw-away questions are incidental or unnecessary for gathering the important information being examined in the study (Berg, 1998). They usually occur at the beginning of an interview to develop rapport between the interviewer and the interviewee. Lastly, probing questions are questions to extract additional information from the subject of to elaborate more on their answer.

There were some problems that we wanted to avoid when creating our interview. Affectively worded questions, double-barred questions, and overly complex questions are among the more serious ones that plague interviewing (Berg, 1998).

The problem with affective words is that people tend to hold back answers because of the negativity of the question. For example, Berg (1998) says the word *why* tends to produce in most people a negative response. A more casual approach should be taken. Double-barred questions are questions that address two different issues. When subjects answer double-barred questions they sometimes forget to address the other topic or do not answer it as effective as they could have if the questions were separated. Long, involved questions are also a problem. These complex questions usually confuse subjects and again, the effectiveness of the answer is decreased.

Question sequencing must also be addressed. The order should be logical so the subject can follow along. Interviews typically begin with mild, non-threatening questions concerning demographic matters. As the interview conversation proceeds, more complex and sensitive questions may be introduced (Berg, 1998).

2.4.3 Contacting the Subject

In order to go about getting interviews, we first had to contact our subjects. According to Doyle (Handbook for IQP Advisors and Students), the first step is usually to send potential interviewees a letter that briefly describes the research project, why they have been chosen, an why participating in your study is worth their time and effort. After choosing our subjects, a letter was sent out to them asking them for their assistance with our project. Also, if they did agree to do the interview with us, we asked for their consent to video tape them.

3.0 Methodology

The goals of our project were to record how science and technology affected WPI and its immediate society and how educational changes also affected this society. We were able to identify these changes through the use of videotaped interviews, researching books, and interviews from past WPI yearbooks. From these methods, we were able to analyze their results and determine the affects WPI experienced over a period of time. Lastly, we developed recommendations on improving the interview process from our experiences to future group attempts at this particular project.

3.1 Data Collection

In this project, we conducted videotaped interviews with numerous professors at WPI. The videotaped interviews gave us a wide range of information and opinions. The interviews were conducted with five professors on campus and two semi-retired members from WPI. Additional data that we could not collect by videotaped interview was collected by information provided in books and past interviews with professors from WPI yearbooks.

3.1.1 Interviews

We started collecting our information through the use of semi-standardized interviews. We used a casual, interview setup located in some of our subject's offices or in larger, more open surroundings. Numerous, pre-determined questions (see Appendix A) were asked to each subject. The format of the interview allowed us to ask all our interviewees to answer the same initial set of questions. This format also provided us with the ability to ask follow up questions on a particular topic if the subject had a strong feeling about it or knew a lot of information on the topic.

During the course of the interview, the subject was recorded with a video camcorder provided by the Instructional Media center, with his permission. A group member questioned the subject from a point off to the left of the camera. This location allowed the subject to answer questions directly to the person off camera, and not look directly into the camera and possibly get distracted. This format of having the questioner to the side of the camera and instructing the subject not to look directly into the camera gave an ideal and natural look to the interview. After the interview was finished, a group member transcribed the videotape into written data for additional research. This process sometimes took ten hours for a one-hour interview.

We started by interviewing five professors currently on campus at WPI. These five subjects were individuals directly involved with the educational, scientific, and technological aspects of WPI and its surroundings. Each of these individuals had been involved with WPI at different times in the past and provided a diverse amount of information and first hand opinions. We excluded interviewing individuals who had no previous affiliation with WPI, for example newly hired professors, who did not attend the university, due to their knowledge of only present day WPI history and information.

Since we wanted to interview subjects who had been involved with WPI for many years and experienced the changes that we desired, we broadened our subject pool to members of the WPI community who had recently retired or had taken a lesser role. After researching by word of mouth and club affiliation, we found and interviewed two well-respected subjects: a former Dean of WPI and a former member of the Career Development Center at WPI.

In order to obtain information valuable to our objective, we asked a set of pre-determined questions to each of our interview subjects. The questions (see Appendix A) allowed for each subject to either give narrow or broad answers depending on the information each subject had about the topic. Since most of the subjects were friendly and open, we were also able to ask spontaneous questions off the list that provided us with additional information from the subject on a particular topic.

In each interview, our goal was to have the subject provide us with information about the numerous changes experienced by WPI over a period of time. The questions were asked in the same order for every subject. These questions were based on themes we wished to explore and address pertaining to our objective.

Each interview subject responded to the set of questions differently. Some answered quickly, while others had lengthy amounts of information on a topic. It was for this latter percent of subjects that we were able to ask additional questions that were not pre-determined. These questions evolved from an idea that the subject brought up in his answer and group members would ask a question related to this new topic.

3.1.2 Books

In order to ask the appropriate questions in the interviews, we used information gathered from books on and about WPI from the Gordon Library at WPI. These books on the history of WPI allowed us to develop many themes, that we could then turn into questions. The books presented a basis as to how WPI was as a whole in the past. This allowed for us to ask the interviewee questions in the interview pertaining to themes developed based on the past and present at WPI.

3.1.3 Yearbooks

We were able to attain additional information about WPI from written interviews. These written interviews were interviews conducted by WPI students from the past with WPI professors. The interview information was presented in WPI yearbooks, referred to as The Peddler. A group member evaluated the written interviews and extracted the appropriate information. This information was then immediately transcribed for further analysis.

3.2 Data Analysis

We used only the method of interviewing to obtain data for our objective. For each interview, we separated the subject's answers and recorded the results. By comparing each of the subjects' interview answers, we were able to get a clear idea as to how the history of WPI was affected and how our themes were related. From the data, we were able to reach multiple conclusions.

We were able to reach these conclusions by dividing up each interview transcript into different sections. These sections were answers based on topics that we wished to address. In order to address the right topics, we had to relate our questions to each subject around our objective. After we developed the right kind of questions, we were able to use each subject's answers and compare how these answers related to our objective.

3.2.1 How Questions Related to Our Objective

We asked each subject questions that we wanted to use to compare certain themes and their changes over the history of WPI and its surroundings. We based our questions on the affect of the Plan, the changes in athletics/attendance, the student-faculty relationships, the importance of teaching vs. research, the evolution of social activities, the influence of e-mail vs. academic advising, differences in the way the administration ran the school, and the overall academic changes on campus. Each of the subjects were presented with these ideas and asked their opinion.

3.2.2 How Answers Related to Our Objective

The answers provided by each of the subjects touched on all of the themes we wished to address. We grouped each of the responses into theme areas in order to strengthen our overall objective. The diverse group of subjects and their answers gave us enough information on each theme to establish confident conclusions toward our overall objective of how science and technology has affected WPI and its surroundings.

3.2.3 How the Interview Relates to WPI History

To accurately gain information on the historical changes at WPI, we geared our interview toward subjects who had experience at WPI and who were involved with the university for a number of years. This experience and knowledge presented us with important information on all our themes over many time periods at WPI and allowed us to form a timeline showing the affects on WPI at different dates.

The interview process allowed us to ask subjects their opinions on matters concerning the general history of the university. The general history focused on many changes at WPI at different times. With the interview, we were able to take the subjects' answers on these changes and use the responses to document the many changes at the university in areas relating to social, athletic, academic, faculty, students, and administration.

One of the most important areas we wished to address in our project was how the installment of a technical based curriculum, such as the Plan, had an affect on WPI and its community. The interview was an excellent tool in gathering this information for it allowed us to probe the subjects for their opinions based on their first hand knowledge of the Plan. Many of our subjects were directly involved with the planning of this academic change, while others were students at the time.

3.3 Recommendations for Interviewing Process and Questioning

Since this project was fairly new, we wished to address other ways to help improve the data collecting process and interviewing methods to future project groups. New methods could be the addition of other topics to cover in the objective or a different/altered list of pre-

determined questions that could be asked. Both of these methods will allow for additional responses and new information that could be used toward the objective.

3.3.1 Other Topics to Cover or Focus On

By changing or adding additional topics to the interview, future groups could touch new themes as to how science and technology have affected WPI over time. These topics could include the enrollment process; the hiring of outside faculty members compared to hiring WPI affiliated teachers, the affect on the students and teachers from the upgrading of buildings and new buildings, etc. Different topics, such as the ones above, will open new doors in addressing the changes experienced on the WPI campus from the answers provided by the interviewees. Interviewees would express other reasons as to how history has adapted or repented over time with the influence of these changes.

3.3.2 Supplementary Questions

Aside from developing new ideas and themes to address, future project groups could ask subjects additional interview questions. The project group could change these questions. Previous questions could be used again along with new questions focused more directly on certain themes, rather than on an overview of multiple themes per subject. Future groups could spend more time asking these new questions and dig deeper into the affect of a particular theme toward their objective.

4.0 Results

The sources for our results were compiled from a number of different types of places. We used mainly literature sources written about WPI, past WPI yearbooks, and especially interviews. The majority of our results consisted of interviews of people who are affiliated with WPI, past and present. The interview results are separated in two different ways. The first is by the different themes that are present in each interview. The second is a combination of the interviewee's relationship with WPI and the length of time in which they were affiliated.

4.1 Interview

There were a plethora of themes that surfaced during the interviews. Each individual was asked the same list of questions, unless they had already answered a question with a previous answer. The list of questions may have been altered depending on the specific relationship with WPI that the interviewee has. Our questions were specified to make the interviewee focus on the overlying themes. We had each interviewee state who they were and what their involvement is with the school. Supplemental questions were added spontaneously if the opportunity occurred during the interview. These questions consisted of tangent topics that the interviewee discussed.

We interviewed seven individuals associated with WPI. We attempted to interview a variety of different people. Each person had their own distinct relationship with WPI depending upon their position and length of time spent with the school. The interviews tended to last approximately an hour focusing on the different themes of academics, administration, sports, and social activity. The data relating to the specified themes was organized according to the person who stated it.

4.1.1 Allen Hoffman

Professor Allen Hoffman of the mechanical engineering department has been with WPI since he was an undergraduate. He received his Bachelor of Science and Master of Science from WPI in mechanical engineering. He also has a doctorate from the University of Colorado. He returned to WPI in 1970 and has served on the faculty ever since. He is currently the head of the biomechanical engineering department, which is a division of the mechanical engineering department. Professor Hoffman is also in the WPI Hall of Fame for track and field. His length of time spent as a student and professor at WPI, as well as his athletic background, gives him a unique perspective on WPI.

Professor Hoffman's general opinion of WPI's progress over the years is a positive one. He attended the school when it was much different. There were Saturday classes and compulsory ROTC when he was an undergraduate. The school became co-ed at the same time he returned as a teacher. The Plan was implemented just as he was about to start his career. His opinion of the Plan is that it made the students much more suited for the careers they wish to pursue. He believes that the Plan puts more responsibility on the students and prepares them better for life ahead.

Professor Hoffman's view on academics is that he feels that the students of today are not as "hands-on" as the students of the past. On average, students today go to 15 hours of class. When Professor Hoffman was here as an undergraduate, they attended 28 hours of classes and lab a week. The students of today follow much more of a "learn on your own" type philosophy.

Regarding administration, Professor Hoffman stated that there were many more teaching assistants, TAs, then there are now. More importantly, the push for research and national prominence has created a different focus for professors. At first, professors were pushed to

incorporate the Plan. Now the push for research is much more emphasized. He also gave much credit to Ex-president Harry Storke for his work in initiating the Plan.

According to Professor Hoffman, the athletic program was organized completely different when he was an undergraduate. There was no such thing as division one, two, or three. Schools competed according to their size. As a co-captain of the track and field team and a socially active member of the faculty, he remembers a time when sporting events were packed with faculty and students. It was impossible to get a seat at a basketball game. He explains that now that the school is just a place where the faculty comes to work. It is no longer the center of their social life.

The most obvious social difference that was pointed out by Professor Hoffman was that the school did not turn co-ed until 1968. Greek life was much more prevalent because the majority of the school was male. Roughly 80% of all male students participated in Greek life. The overall population of the school was smaller. Professor Hoffman explained that some classes were most likely completely chosen alphabetically. This meant that your friends were people in your classes, which all had the same first letter of their last name.

Not only did WPI change but Worcester did as well. In the 60's, Worcester was a mill town. Now there are places such as the Worcester Centrum, surrounding colleges, and a much larger bar scene that tie the whole social life together.

4.1.2 Van Bluemel

Professor Bluemel has been in the world of academia all of his life. He went directly from graduate school, in 1966, to teaching in the physics department. He is the what he called a

"plan-jock", which refers to someone who was highly involved in implementing the Plan when it was first introduced. He is currently a physics teacher in the physics department at WPI.

Professor Bluemel's responses to the questions asked of him were filled with emotion and personal insight. In regards to the school's development, the Plan was not only important but also essential. He was one of the people who worked extremely hard to make the Plan work. When they first instated the Plan, Professor Bluemel felt that none of the faculty knew what they were doing. It took a lot of adjustment from the old system. The discrepancies ranged from something as small as the fact that the school had no policy on how to expel students to something as large as developing a solid project program with adequate advising. Professor Bluemel stressed the importance of the Plan and pushed WPI toward the university it is.

The Plan and academics go hand in hand. As a professor for so many years, Professor Bluemel has seen the change and addition of many undergraduate majors. His philosophy is that there is a four-year-gap between the popularity of majors. Usually the situation is that the incoming freshmen choose a major on what field is hiring at that time. The problem, Professor Bluemel says, is that by the time the students' four years as an undergraduate are over, the job market has changed. The two majors that have improved and attracted many, are computer science and biotechnology. Those two majors did not exist at WPI when Professor Bluemel was beginning his career. Through the years, electrical engineering and mechanical engineering have always been popular and strong constants.

As far as administration is concerned, Professor Bluemel, continuing with his theme that the Plan is what makes WPI what it is, gives much credit to Ex-president Harry Storke. He stated that many of the faculties that were present at the beginning of the implementation of the Plan were not cooperative nor were they willing to make the effort to make the Plan work. They

were too concerned with their own well being. In turn, President Storke entrusted a much younger committee, which was going to give him and the Plan the time that they needed to work. On the other hand, Professor Bluemel was not impressed with Ex-president Strauss' as president. President Strauss, being a product of conventional engineering, was good with money and finance, yet not as good with people. He used to push the faculty for more research. Professor Bluemel cannot remember a time where he ever spoke of education.

Professor Bluemel remembered a previous athletic director by the name of Bob Prichard. Bob Prichard was known as the "four-ball man". When he was here baseball, basketball, football, and track were the four main sports. Almost everything else was a club sport. With the addition of women on campus in 1968, the school began to realize that it needed to broaden its athletic program.

Professor Bluemel's view of the social life on campus over the years is one of consistency. With the exception of less people involved with fraternities, Professor Bluemel states that people have been having the same conversations about social life for the last 25 or 30 years. The school has made great efforts to try to improve the social aspect of WPI, but has had little success. He provided a good idea regarding improvement to social life. Worcester is one the smallest cities with the most colleges. He believed that we should take advantage of the consortium and open social communication with the surrounding schools more than they are now.

4.1.3 Professor Graubard

Professor Graubard first attended WPI as a faculty member in 1969. He was hired to expand the department of Economics, Government, and Business, which is what it was called

back then. Before coming to WPI, he was involved in consulting and taught at Boston University, Northeastern, Brown, University of New Hampshire, University of Rhode Island, and Babson. Through a friend, named Professor Roddenbury, who encouraged him to come to WPI, he moved from Boston to Worcester and has been here ever since.

WPI was Professor Graubard's first engineering school. He was not sure how a technical school was supposed to be. His perspective is unique due to his field. He experienced and aided in the expanding of a technical school into a university. The Department of Economics, Government, and Business were transformed into the non-engineering departments of today. Social science and Management are examples of offspring of the old department.

The academic grading system that was in place at the beginning of Professor Graubard's time was one of AD, acceptable with distinction, AC, acceptable, and NR, no record. The idea behind this system was to take away from the overall grades. With the implementation of the projects, Professor Graubard was on the committee that coined the phrase IQP, interactive qualifying project. He was a witness to the academic development of WPI from solely a technical school to what it is now.

4.1.4 Leonard Polizzotto

Leonard Polizzotto, now a professor of Electrical and Computer Engineering, graduated from WPI with his Bachelor of Science degree in 1970. He also received his Masters of Science from WPI in 1972. During his college days, he was president of his class and captain of the wrestling team. As a student, and now as a professor, we felt that Professor Polizzotto would be a good candidate for our project in presenting to us his beliefs.

Professor Polizzotto expressed many opinions about WPI in regards to academics, administration, athletics, and social activities. Concerning academics, he felt that WPI went through a period of change; from a rigid schedule to a schedule where students could mold it in anyway they wanted to. As far as teaching, through his experiences, he feels that the quality of teaching is the same. However, now it is not always the first priority among teachers because of lack of time and pressure to do other things, such as publish.

Socially, when he was a student, it revolved more around Greek life. Without Greek Life, many students had no place to live because of the lack of housing. There were also more campus wide events than there are today. As the current wrestling coach of WPI, he sees first hand of the sports and athletic program. To him, they do not receive as much attention as they should and he wishes they would.

4.1.5 Bill Trask

Bill Trask was a former employee for WPI who worked there for many years. He was the head of the Career Development Center, although, it was not called that until much later. Regarding social life, Bill Trask, opinionated that back during the years from 1968 until 1974, there were a lot more concerts and socialization between students. The Goat's Head Pub, which opened in 1968, was the biggest social aspect of the school at the time. Mr. Trask felt that the students did not go to the Pub mainly for alcohol, it was more of a place for students to get to know one another and hopefully faculty and staff too. There is nothing like that now, but the opening of the Campus Center in May of 2001 could change that. He also believed that the student faculty interaction had gone down hill since professors were required to do research. Administration and faculty used to be more a part of the social life of campus than there is today.

Due to the fact that Bill Trask was an employer of WPI and not a professor, he did not have a lot of feedback on the topic of academics.

4.1.6 Dean Grogan

Dean Grogan was one of the individuals we interviewed who had extensive knowledge, history, and involvement with WPI. He was enrolled as a freshman at WPI in 1942 and went on to become a professor in electrical engineering at WPI many years later. He spent a time as Dean of Undergraduate Studies before taking a lesser role presently as an advisor in the Project Center at WPI. Dean Grogan's interview provided us with great inside knowledge into the WPI Plan and other academic changes at the university.

Dean Grogan's specialty for the interview was his vast knowledge on the development and affects of the Plan and academic changes at WPI. Dean Grogan was elected to the planning committee for the Plan in 1970, when the administration chose to experiment and change the academic curriculum. Dean Grogan was promoted to Dean of Undergraduate Studies overseeing the Plan's instillation and the eventual faculty vote. This experience allowed him to give us important inside information about the academic changes that occurred at WPI in this major transformation.

Dean Grogan spent a large amount of the interview discussing the changes caused by the implementation of the Plan. He also touched base on what he thought needed to be done to have WPI recognized more nationally. Other areas the interview tended to focus on where the athletic state of WPI, the social activity, and opinions on how the administration and faculty approached issues over the years.

The issue of athletics was a large topic of discussion for Dean. Grogan. In Dean Grogan's opinion, WPI needs to restructure the entire athletic agenda of the sports program. It wasn't necessarily the quality of the teams, but in his eyes, WPI had gone downhill in its competitiveness over the years, as compared to when he remembers when WPI beat Harvard in football his sophomore year. This downslide, he believed, was a large cause in the decrease in attendance.

Dean Grogan felt that athletics were the key to having the school recognized nationwide. He continually stressed that WPI needed to look into having a Division I-AA basketball team that would play better competition and give the students something to have pride in and want to attend a sporting event, rather than abandon the campus every weekend.

When presented with the question regarding the debate over faculty teaching versus research, Dean Grogan believed that while most teachers want to teach, they want "even more to survive." The administration's push for teacher publications and rise in college rank, in Dean Grogan's eyes, has made it tough for faculty to maintain a balance between teaching and research. With research comes pay raises, and Dean Grogan has seen a stronger nod toward research as being the primary goal, then when the Plan was initiated.

Dean Grogan felt that the involvement in administration, especially the president had continually set the tone on WPI's campus. As time went on, the more involved the president, the more changes in the university were seen. Without this involvement by the president and administration, WPI tended to stay in a rut.

In Dean Grogan's experience at WPI, he had seen the academic world of WPI turn upside-down. Beside the addition of the Plan, in his opinion WPI had indeed kept up with the times in the area of majors and courses. While he has made it clear that research funding has

separated WPI from other elite engineering schools like MIT, Dean Grogan felt that WPI has come a long way in the academic area of the undergraduate program. Biology, biotechnology, and biomedicine, majors extremely small in the past, now are a giant growing fields. Also, Dean Grogan made us aware of the demand of computer knowledge back in the early 1970's. Again today, the computer science department is one of the largest departments at WPI.

Dean Grogan stressed strongly that the social life at WPI has declined over the years. While he believed that a low standing athletic program has contributed to this decline, he also believed that the drop of fraternities as the social scene of the school has hurt too. Dean Grogan believed one of the best social aspects of WPI was the Goat's Head Pub. While it allowed people of legal age to drink on campus, the pub brought together the entire campus, like students, faculty, and high administration. Dean Grogan expressed that he felt something needed to be done to lift WPI out of this drought and return it to the pub days of the past.

4.1.7 Helen G. Vassallo

Professor Vassallo came to WPI in 1982. It was not the first time she had been to WPI. She taught here at WPI part time in 1967. At the same time, she was teaching biology at nearby Clark University. Professor Vassallo gave a unique perspective on WPI history. At that time, she was one of two female teachers on the tenure track.

She believed that when there were no women on campus, WPI males had to look to the surrounding colleges for female companionship. Professor Vassallo conducted an IQP on the topic of male and female opinion on the social life at WPI. The IQP concluded that the males felt cheated because of the lack of female companionship at the school. The idea of male/female

interaction at WPI was a wonderful thing according to Professor Vassallo because it was the social sciences and humanities, not just "radical-pie".

5.0 Analysis

In this section we will discuss and analyze the interviewees. The 8 interviewees have different opinions on different matters; therefore, we categorized this section in accordance to each topic. We used critical evaluation of each interviewee's transcript to gather the information relevant to our project. From this information, we were able to make conclusions and recommendations, as seen in sections six and seven. Each topic was discussed and the information included in this section was provided by the interviewees and can be found in Appendices B - I.

5.1 The WPI Plan

The Plan, implemented in 1970, was developed to combine theory and practice in a more effective way. In the middle 1900's the curriculum became very rigid and "text book". This means that there was no flexibility in the courses students took and the courses themselves consisted of basically lectures, homework, and exams. Boynton and Washburn founded the school to train men in the skilled arts, not to simply teach and examine. The Plan was developed to teach theory and then to apply what was learned. The WPI Plan exemplifies everything the founders had hoped for in the way of producing a qualified and skilled engineer.

5.1.1 Formulating the Plan

In the late 60's, the administration realized that there was nothing that set WPI apart from any other engineering school in Massachusetts, never mind the country. It was realized that the curriculum was rigid and that most of all the learning was done from textbooks. It was decided that there needed to be a change. At this time, Dean Grogan was the chairman of the curriculum

committee. It was this committee that began to try to loosen up the rigid curriculum of the institute. It was around 1965-1966 when they started to get the ball rolling, so to speak.

President Storke asked that the administration gather some insight on what the future of WPI was going to be. This became the Planning Committee; it consisted of 6 members, including Dean Grogan. The committee worked for 2 years and developed models, reports and plans. They worked closely with faculty, administration, students, and trustees. Professor Leonard Polizzotto was one of the students who was a working with this committee. Van Bluemel described the collaboration of these different groups of people on campus as "remarkable" simply because it allowed all these people to work together and get to know one another on a social level rather than purely an academic or administrative level.

Before they could reassess the curriculum, the Planning Committee had to develop a goal for the institute. The committee decided that the school should be a project-based institution. The curriculum, as well as graduation qualifications, would also be based on projects. The idea simply re-iterated the ideas of Boynton and Washburn. The Plan was to have students apply the learned theory to problems that simulate everyday situations of the real world through numerous projects.

The goal of the Plan was to develop an engineer who was literate in their major field of study, aware of the effects of science and technology on society, familiar with a portion of the humanities, and above all a self-learner, adaptable to the conditions of the working world.

5.1.2 Original Form of the Plan

Once the goal had been established and agreed upon, a method of implementing it into the curriculum was needed. Since WPI was now going to be a project based school, there had to

be projects to reflect the goal. The MQP (Major Qualifying Project), Competency Exam, IQP (Interactive Qualifying Project), and a Sufficiency were developed to carry out this task. Students were required to take 12 units of courses in addition to the MQP, IQP, Sufficiency and Competency Exam, however, there were no requirements in regards to what courses were required of what major. With the Plan, it was the student's responsibility to get his or her education.

There were two graduation requirements for a student to obtain a degree in a certain field. These were the MQP and the Competency Exam. Both were intended to make one prove their literacy in their respective field.

The MQP is typically a group project that is done within the major field of study. It was the idea of the Planning Committee that the students would get a problem, approach it, and solve it as a group. The MQP was intended to be an extensive project, much like the projects that come across the desks of professional engineers. Companies sponsor many MQP's. In the cases in which the MQP is done very well, the company may use the project for future use.

The competency exam was a 48-hour oral examination. Students had 2 days to prepare a report. For example, an engineering student would have a design problem, a scientist might have to go into the lab to do some experiments and obtain some results. Then the student would have to pass an oral examination that was based on the written report. A group of 3 faculty members would conduct the examination regarding the report. In many cases, there would be faculty from other disciplines there and the student would have to demonstrate their communication skills to someone outside of their discipline.

The committee desired that the students of WPI would be aware of the relationship between science and technology and society at large. The relationship is the impact of the effect

of technology on society and vise-versa. The method that was chosen was the IQP. Today, many IQP's are done all over the world, exposing the students to a real working environment. Like the MQP, many IQP's are done for companies that use the work of the students for their business.

The means of exposing students to segment of the humanities and Arts was the Sufficiency. It could be completed in any department of the humanities. The students would complete the Sufficiency independently. It was not a group project. The Sufficiency is not as extensive as the MQP or IQP as far as project involvement or length go, however, the students can gain a lot from doing a worthwhile Sufficiency.

The underlying idea of the Plan was to help the students become self-learners. It was important that they be able to adapt to different situations. It was the students' responsibility to obtain their own education. The students had to develop an academic program with their advisor that would instruct them properly in their discipline. With the MQP, IQP, Competency Exam, and Sufficiency, the course work was intended to be 25% project work. All this focus on project work makes for a self-learning environment in which the student learns to adapt different situations. This is very important for the working world because scientists and engineers must continually adapt to the changes in technology.

The academic program drastically turned around 180 degrees. It went from a mandated curriculum, to one in which the students designed their own program based upon the 3 projects and the Competency Exam. Another big difference in the academic program was the new format for scheduling. The 14-week semesters were done away with and the 7-week terms were introduced. This change intensified the courses immensely. Neither the faculty nor the students

knew what to expect or how to deal with it. It was simply a matter of trial and error and it took a lot of patience on both parts.

5.1.3 Implementing the Plan

The Plan was proposed to the faculty for a vote on whether or not to use it. It was passed by a 2-1 margin. There were faculty members who were completely in favor of it, who completely opposed it, and those who thought that it deserved a shot. The faculty as a group was very brave to vote the Plan in because it was something so new and different.

There were a few problems when trying to implement the Plan. Dean Grogan had personal doubts that it was ever going to work. A number of obstacles had to be overcome to get the Plan rolling

The first obstacle was how to advise all of these projects. This idea was new to everyone. No one knew how to advise a project because it was not a major part of the curriculum and now all of a sudden there were hundreds of projects. One of the projects was the IQP. This was very difficult. Once it was decided what areas were appropriate for the IQP, the faculty had to be trained in those areas. This training was necessary because the faculty at the time had only been involved with their own areas of science or engineering. They were trained in such areas as economics, government policy, and environmental subjects. It was difficult for the faculty to advise a project outside of their area of study because all of their time had been previously spent in their field. Situations that involve some degree of adaptation arise in the real world quite often. It was the committee's intention to make the students as adaptable as possible to those situations.

Another obstacle was coming up with projects for students to do. The committee had to experiment with different degrees of intensity and how sophisticated or involved the project would be. They wanted to collaborate with industry to produce some applicable projects. The intent was to have many industrial and off campus affiliations. This proved not to be a large problem. Alumni created projects and industry readily came with ideas as well. The projects became one of WPI's strong points that would set it apart from many other engineering institutions.

Yet another problem was the Competency Exam. No one in the faculty knew how to administer an exam like that. They had plenty of experience in giving comprehensive exams. However, to give an exam after 4 years of schooling to tell if a student is qualified to receive a degree is a much more difficult challenge. The administration hired faculty to come in over the summer and write the Competency Exam.

The Humanities Department, prior to the Plan, had been small so it had to be expanded in a significant way. Grants from the Melon Foundation, among others, helped to expand the Humanities department so that it would be able to handle the workload of the Sufficiency.

Needless to say, there was a financial obstacle. President Hazzard raised about 6 million dollars to implement the Plan. All in all, WPI had to pay for the faculty who helped write the Competency Exam, the experts who trained the faculty for the IQP, as well as expanding the Humanities Department to a sufficient size.

The whole process of implementing the Plan to a working level took about 7 years. Dean Grogan was asked to become the Dean of Undergraduate Studies. He was asked to oversee the implementation of the Plan and to make it work. During those 7 years, there were a lot of trial

and error type situations in the classroom and in dealing with the projects. After the 7 years, the Plan had been established and was in working order.

5.1.4 Changes in the Plan

The Plan was not perfect; no one expected it to be. Since the Plan was such a revolutionary idea, it was in effect an experiment. After it was implemented and fully working, only then could the administration begin to assess the effectiveness of it on the students.

The Competency Exam was good in the respect of demonstrating literacy in your field. It was given during the 4 breaks in the year, in other words, between each term. It demanded a lot of the students who were taking it, both emotionally and academically. Dean Grogan recalls that a constant one third of the students failed it each session. Some students took the exam several times before passing. Bill Trask remembered students who went "down the tubes because they failed the comp." Dean Grogan remembered parents calling him asking how come they paid so much money for their child "to be declared incompetent." It caused an incredible amount of academic and emotional stress even though it was not intended to.

It required a lot of time and effort of the faculty as well. There were far more students than faculty. In some cases, faculty members from the smaller departments were needed to sit on the boards of the larger departments because there were not enough faculty members to do all the work.

In the early 80's, the administration decided to phase out the Competency Exam. Dean Grogan mentioned two reasons. The first, an accrediting organization, ABET, wanted the school to show that each one of their students was learning the fundamentals of their discipline. This could not be shown with the Competency Exam. The only solution was distribution

requirements. The second reason was that the students would prepare for the exam by taking courses in their field of study only. For example, it became that Civil Engineering majors would have no knowledge whatsoever of electricity or chemistry. Again distribution requirements were the solution.

Van Bluemel recalls the Competency Exam as a very "labor intensive" system. He believes that the major reason for phasing out the exam was that the faculty did not want to do the work for it and other reasons were mainly rationalizations. In fact, Van Bluemel was on the academic policy board at the time of the phase out, and he stated that the ABET had nothing to do with making WPI phase out the Competency Exam and installing distribution requirements.

For the good of the college and students, it was decided that distribution requirements would be installed into the curriculum. At first, the Competency Exam was kept; however, it made the requirements for graduations very hard. The administration decided to phase the exam out completely. It turned out to be a trade off, Competency Exam for distribution requirements. Van Bluemel liked the Competency Exam because it allowed the student to demonstrate what he or she had learned. He said courses were not as effective when it comes to that. A good grade does not necessarily mean that the student learned a lot from that course, just as a bad grade does not necessarily mean the student did not understand the material.

Nevertheless, the distribution requirements were established. Initially, they were very broad. Over the years, the departments have played around with them as they saw fit. Today, there are departments, such as Chemical Engineering, that are very rigid in their requirements. There are also departments such as mechanical or electrical engineering in, which there are still many different ways to create a legitimate program.

5.1.5 Summary of the Plan

The Plan, overall, has worked very well. WPI is know for producing students that can work with people and approach a project in a professional manner. Professor Leonard Polizzotto was in industry for about 27 years. He said that other schools produce theorists that takes about five years before they are productive in an industrial setting, where as the students from WPI have already been exposed to industrial settings and can be productive from day one. I that respect the Plan was an excellent concept. WPI graduates have been taught theory, taught to apply theory, and taught to adapt in a professional setting. These criteria make the WPI graduate ready to make an immediate impact on society.

5.2 Social Life

The social life in college is a large part of any campus in the country, so there is no reason why WPI would be exempt from this category. In this section, we will look at how the social life has evolved over the years at WPI with respect to several topics.

5.2.1 Greek Life

In 1901, Phi Gamma Delta became the first fraternity on the WPI campus. Today, it is one of twelve. During the 60's and 70's, 80% of the population was in one house or another. Fraternities were the hubs of the social life on campus. Fraternities also were responsible for much of the housing of the upperclassmen. Every weekend there would be parties at the fraternity houses. Today, the role of the Fraternities has been reduced. Now only about 35 % of the male population are Greek. They still play a major roll in the social life of WPI; however, it does not necessarily revolve around them like it used to.

5.2.2 On Campus Activities

One thing that unites the students on college campuses across the country is an on campus event. At WPI, campus wide activities seemed to have become a thing of the past.

During the 70's, concerts were a big deal on college campuses. Many performers got their start playing colleges. WPI was no exception. Bill Trask remembers Janice Joplin, James Taylor, The J. Giles Band, and Peter Paul and Mary. Allan Hoffman was an undergraduate here in the 60's and he recalls that concerts were not prevalent on college campuses during that time. Today concerts at WPI are not very big. They are not as important as they used to be.

Traditionally, WPI has always had a large percentage of the student body involved in athletics, whether it is varsity or club. Attendance to the athletic events has been another story in itself. While WPI students have continuously participated in athletics over the years the same constant does not coincide with the attendance level.

In the past, Bill Trask remembered the attendance being much higher than it is today. He recalled administration, faculty, and staff attending games with their spouses. Allan Hoffman, a WPI Hall of Fame Track Athlete, concurred that the attendance was much higher then than it is now. A common memory was of Alumni Gym being standing room only for basketball games with faculty and administration lining the entire balcony.

Professor Leonard Polizzotto was an undergraduate here in the late 60's and was involved in athletics, the wrestling team specifically. He remembers the athletic events as sparsely attended much like they are now. No one can really cite a reason for the decline in athletic attendance, but no one can deny it either. Despite the decline in attendance, the Homecoming football game has remained highly attended. However, this does not necessarily

mean that alumni are coming back to watch football games. For the most part, alumni come back to see friends and visit their fraternities or sororities, if they belonged to one.

One thing that has been agreed upon among the interviewees when it comes to an event that brings the WPI community together was the Goat's Head Pub. In 1968, two students, with the help of Harry Thompson, Dick Olson and Bill Trask, founded the Pub, in what is now called Riley Commons. It was only open to the students, who were at least 21 years old, as well as faculty and staff. In 1974, the drinking age was lowered to 18 years old so the Pub became open to almost 90% of the student body. It was great for people would congregate there and get to know one another. The Pub was always packed with students, faculty, and staff. The President was even seen in the Pub. It was a good atmosphere and it really brought the campus together. However it was shut down when the drinking age returned to 21 years old in the early 80's because in went from being available to 90% on the campus to only 20%. According to Bill Trask, to have such a huge part of the campus available to such a small portion of the body could not be justified, so it had to be shut down.

5.2.3 Addition of Females

Probably the biggest change in the social life at WPI was the admittance of females in the early 1968. Van Bluemel recalls that in the first year 2 women enrolled. The following year, about 18 enrolled. This may not seem like many but to a previously all male school, it is a huge change. WPI men had always looked to other Worcester area colleges for dates and that did not change all that much with the addition of women. Today, the ratio is approximately 4 men to every woman. In many cases, WPI men still look to the surrounding colleges for dates. However, the addition of females did make the campus a more civilized place.

5.2.4 Campus Center

Two Towers preached of a need for a campus center to bring together and untie the students. A campus center has been needed for years. WPI does not have the collegiate atmosphere that other colleges have with a campus center. Other colleges are open 24 hours a day, 365 days a year, whereas, WPI closes down every night.

A central location for the students to come eat, check their mail, get a cup of coffee, and just sit down and hang around together is lacking at WPI. The new Campus Center should help improve student life. At least that was the hope of Two Towers.

5.2.5 Summary of Social Life

The lack of an adequate social life at WPI has always been a problem and the students have always complained about it. Van Bluemel believed that it was because the students feel that the social opportunities were limited in Worcester. There have been efforts to enhance the social life, with the Campus Center being the latest attempt.

5.3 Changes in Academia

WPI is an engineering and science institution that has been a leader in undergraduate education for years. To continue to be one of the top schools in these fields, WPI has to adapt and change in accordance to the changes of the technological times. WPI's ability to do this depends greatly on its faculty and administration.

5.3.1 Keeping Up With the Technological Times

Before the Plan was implemented, WPI was just a regular engineering school. Once the Plan was initiated, WPI was doing some innovative things as far as a project based program. WPI really led the charge as far as the new way of teaching undergraduates.

Allan Hoffman thought that in a way, WPI had sat back on the undergraduate program it had developed over the years. WPI used to be at the forefront of the technology wave but has fallen back in the recent years. He believed that the project program, although still excellent, had become routine. Van Bluemel agreed that WPI was not on the forefront of the technological times. However, he thought that was just fine. He felt that to be on the forefront as such a small school would be too difficult. As a small primarily undergraduate school, WPI should do what WPI does best. Being on the second or third wave was fine for what WPI was trying to accomplish. WPI could still do important and interesting things while in that position.

Even though WPI was not on the cutting edge of technology, it still kept up with its progress very readily. A large part of keeping up with technology as an institution has to do with research, which will be discussed later.

5.3.2 Broadening of Majors

How a technical school reflects its status with technology is whether or not it has courses or majors for new up and coming fields. WPI has not had a problem with that. From Computer Science to Biotechnology to Fire Protection Engineering among others WPI has kept up with the times very well.

It is agreed upon that WPI has done a good job in providing majors for new fields. Early in the 70's, fields began to boom. Environmental issues became a large concern among people at

this time. The Civil Engineering Department noticed this and soon began to provide courses in the environmental field to keep up with society and its interests. Since then, it has evolved with the times to become the Civil and Environmental Engineering Department. A similar situation occurred with the Electrical Engineering Department. As the computer industry boomed and became a large part of society, the Electrical Engineering Department expanded to encompass the Computer Engineering Field. Now, much like the Civil Department, it has evolved to become the Electrical and Computer Engineering Department.

In the early 70's, there were a few courses taught in Computer Science. But that was all it was, a course. Now as technology has made advances and the field has become relevant, WPI developed a huge Computer Science Department. It is now one of the largest majors at the school.

Van Bluemel thought that the one area that had really gotten big recently was the area of the life sciences. Biology, Biotechnology, Biomedical Engineering, as well Pre-Medical majors are growing fast. Dean Grogan concurred that it was a rapidly growing field. In fact he believes that it will be one of the largest operations of the institute.

Management has come into its own, so to speak, as a major. Quite a few students at WPI have enrolled in this program. Fire Protection Engineering is a relatively new field in the world never mind at WPI. WPI happens to be one of the leaders in Fire Protection Engineering; incidentally it is a graduate program. Fire Protection Engineering is probably the most well know graduate program that WPI offers.

WPI has done a good job of adapting its educational offerings as technology changes. Professor Leonard Polizzotto believed that this was true. Van Bluemel also agreed. While he thought that WPI had done a good job, he believed that in some cases, there was too much

eagerness to keep up with technology, that WPI might get caught up in fads. An example of a fad, Van Bluemel said, is the push for distance learning. He did not believe the idea of training technicians so that they, with the aid of computers, can do the jobs of a number of other people was going to be very promising.

Overall, WPI has done a more than adequate job of keeping up with the technological times. This is evident in how the departments have expanded to accommodate the new fields. It is also evident in the level of the MQP's and IQP's. Dean Grogan felt that today, WPI offered so superb, mastery level projects that have had a positive in effect on society. For example, a project Dean Grogan was involved in was using TPS on locomotives on the Providence-Worcester Railroads. It would automatically interrogate the switches down the line to determine whether or not the tracks were in the right position. This prevented many accidents that were occurring because the switches were not working correctly. This was one project that has improved a product and improved safety or economic availability of a product. As far as WPI's academics have gone, it has kept up with the times in a very effective manner.

5.3.3 Research Based Institution

WPI has always been a primarily undergraduate institution that is focused on teaching. That was the main idea behind the founding of the school in 1865. For the first 100 years, it was a school that lectured and examined. Then, the Plan was implemented. The Plan changed the curriculum drastically, but it kept one thing constant, the focus on teaching. Dean Grogan stated that "...the Plan was created in a very pro-teaching environment, where research was secondary. I think we've gone around, where research is becoming primary and teaching is becoming secondary." Prof. Emeritus Bluemel has seen the emphasis for research increase significantly in

the last 15 years. There are advantages and disadvantages into turning to a research based institution.

There are advantages to being a large research institution. One is that good research institutions place higher in rankings that are put out by such magazines as U.S. News and World Report. These rankings give the school a better reputation and that is what the administration wants to see. Naturally, the administration puts a certain amount of pressure on its faculty to do more groundbreaking research. The reputation is important because it attracts applications, grants, endowment, and increases national notoriety.

The advantages, to students, of having faculty members whom are making groundbreaking research is that the more the faculty learn the more they can pass on. This is good in the long run because it keeps the students up to date and in stride with the advancements of technology. However, in many research institutions the faculty concentrates on research and not teaching. In this case, Dean Grogan believed that much of the learning occurred because there was a self-fulfilling prophecy. Meaning that learning from the faculty, who does the research, was indirect in the sense that students are surrounded by other highly motivated students so the education was a result of the student interaction. It is self-fulfilling because if the school is supposed to be excellent, it attracts very good students and they will have a good experience.

A disadvantage of turning to a research based institution is the faculty interaction with the students. WPI has traditionally been an undergraduate school in which the students have had good relationships with the faculty. Granted, when efforts are put forth towards one area, effort is taken away from another area. However, in WPI's education structure, teaching is the priority.

Having a faculty whose priority is research is beneficial. Groundbreaking research keeps the school in stride with technology, especially if it occurs on the campus. The students benefit in the long run. Research also generates large amounts of money, whether if it is in grants, endowments, or attracting students. However, WPI is an institution that focuses on undergraduates. Its undergraduate program is just as good or better than most engineering schools and that is what WPI should continue to focus on.

5.4 Tenure/Effects of

Tenure is a very important aspect for WPI professors. It provides stability for them. Once professors have received tenure, they are guaranteed their position on a permanent basis.

5.4.1 Criteria for Tenure

There are three main parameters for tenure. They are service, teaching, and research. Out of the three, tenure is mostly based on research. Research is more easily evaluated than the others are because it is far more concrete. Papers and citations can be looked at and then assessed (Grogan, personal interview, April). However, teaching can only be judged qualitatively because of the broadness of it. Time, commitment, and participation make up the category of service and they are also very hard to determine. Due to the fact that research has a lot to do with other aspects of the school, they are very important to others besides the professor.

5.4.2 Importance of Tenure

Because tenure gives stability to professors, it is very critical to them. It also helps with the advancement of their professions and almost always results in pay raises. Many people are

against what tenure is based on and many are for it. Former professor of physics at WPI, Van Bluemel, when interviewed by our project group said, "I'm a strong supporter of the tenure system. I've been on the tenure committee a couple of times and it's the most important decision faculty members can ever make. You really play god and my experience has been with the faculty on that committee take that very seriously and that tenure is extremely important for academic freedom cases. I have claimed many times that if we abolish tenure it would take about 15 milliseconds for someone to weight in and violate somebody's academic freedom by telling them what to teach, how to teach, or what not to engage in."

5.4.3 Effects of Tenure

Since professors are constantly aspiring for tenure, they are constantly involved in research. Time conflicts tend to become an issue. This is when students begin to suffer. Leonard Polizzotto (personal interview, February), has said that, "I find teaching to do it right, to meet with students, and to give them extra help or whatever you want to do, takes a lot of time. To also be a world class researcher takes a lot of time. There is not enough time to do both. It's very difficult."

When effort is put in one place, it is consequently taken from some place else. The administration's aim at WPI has been to advance knowledge and still keep a balance between teaching and research. Some faculty's specialties are teaching while others are research. Polizzotto (personal interview, February) felt that the student teacher relationship has become more impersonal because the more time professors spend up in their lab doing research, the less time they have for their students to come in and get help whenever they need it. There is less personal time between faculty and students.

One of the reasons research is emphasized by administration is because it betters the reputation of the school. The notoriety of WPI is increased when more people know about it. This in turn brings in more applicants and more grants. If whoever is giving the grant has never heard of WPI they may well be less likely to approve a good proposal than they would be if the same proposal came from a school they knew about (Bluemel, personal interview, March 2000). Research also augments the school's standings in polls. Polls such as U.S. News & World Report influences applicants when applying to school.

Many faculty also want be recognized by doing world class research. Besides the fact that they will probably receive tenure for excellent research, others in their field will also acknowledge them. They want to be known they want their names in books, they want to be references. They want to go to prestigious professional conventions and give papers. It's part of their profession to want to be on top of their field (Grogan, personal interview, April 2000).

WPI is mainly an undergraduate teaching facility, not a research institute. The teaching at research institutions is not always notable. The people that are the stars of research universities almost never see undergraduates (Grogan, personal interview, April 2000). The majority of the funding of WPI does not come from outside funding like other research schools. It comes mainly from undergraduate tuition. Therefore, that is where the concentration lies. Grogan (April 2000) feels that WPI cannot charge the kind of tuition that it is charging and not pay attention to students.

5.4.4 Changes over the Years

Over the years, there has been more pressure to produce outstanding research and publications. This is due to the increased strive for reputation and top rankings. However,

originally, it felt the need only to be teaching orientated. So essentially, the plan was created in a very pro-teaching environment, where research was secondary (Grogan, personal interview, April 2000). The goal of the college has never changed, to be able to produce competent graduates. WPI has always done this through outstanding teaching and advising.

5.5 WPI Instills the Ideas of the Founders

John Boynton and Ichabod Washburn had the ideas to found a school "that would elevate the social position of the mechanic and the manufacturer as well as teach technical skills through a sophisticated apprenticeship approach." WPI's motto "Lehr und Kunst" means Learning and Skilled Art. Learning refers to theory and Skilled Arts refers to practice. The school was organized on the basis that it would merge theory with actual practice in the shops. Theory and practice: two words that are the symbolized by the towers of Washburn Shops and Boynton Hall, have been the basis of WPI throughout it history. The Plan re-instituted all the bases that the founders had wanted to be present. It combines theory and practice in the project based program. The MQP, IQP and the assumed 25% of all coursework are the criteria that are used to make the dream a reality.

5.6 Athletics at WPI

In 1894, after years of disorder among athletics at WPI, an official athletic program was established. It was called the Athletic Association. Twenty years later, WPI's athletic field was completed and in 1915 the athletic gymnasium was launched. The athletic program has gone through many changes over the years but has always been a big aspect of WPI with a large percentage of the student body being participants.

5.6.1 Not Considered Important

As an engineering college, many people felt that WPI should be mostly concerned with academics and not as much with sports. It is not considered important by the majority of the school, and therefore the whole athletic program suffers. As a result of this, athletic attendance has dropped significantly over the years.

In the past, it was very common for faculty and staff to be seen attending sporting events. Many more students also used to be present at events. The school gymnasium and stands would almost always be filled for major sporting events such as football, basketball, baseball, track and field, and wrestling. This is probably due to the fact that the athletic schedule of WPI, many years ago, was often a tougher schedule than that of today. This seemed to generate a lot more enthusiasm in these certain sports (Hoffman, personal interview, October).

Today, outside participation of sports is almost the opposite. Faculty and staff are rarely seen at sporting events. Professor Hoffman explains that "The faculty live more distantly. It is just a place where you come to work. It's not a place that is the center of your social life (personal interview, October)." The same holds true for students. Without central pull on the campus, WPI students tend to do their own thing and not really associate themselves with other social events of WPI. If there was a big activity to go to, it would pull the campus together (Grogan, personal interview, April).

5.6.2 Addition of Females

In the fall of 1968, WPI announced that they would be accepting females as undergraduates. Professor Van Bluemel had some insight on the addition of females and the

sports program. He said, "I think the biggest change came when there were women on campus and I think it took about two years for people to realize you had to have athletic programs for women as well as men (personal interview, February). Before Title 9, which forced equivalent programs for male and females, it was not apparent that it was necessary to have athletic programs for women also. Many were added and currently, the women athletics program is just as involved as the men's and they continue to be as successful as the men are.

5.6.3 Perceptions of What Needs to Be Done

In order to remedy the situation of low attendance and participation in athletics at WPI, some feel that the best idea would be to change whom is competed against. When sports was at a high at WPI, many felt that the schedule was much harder. Dean Grogan added that, "We used to have a much better football schedule. When I was an undergraduate, we played Harvard, and we beat Harvard when I was a sophomore...we played Brown, Rhode Island. Now we are playing Worcester State and Fitchburg State (personal interview, April)." Professor Len Polizzotto also agrees with Grogan in saying a better schedule would create more enthusiasm.

A better athletics program would also enhance the school's reputation. Some feel that WPI does not have much of a social life. Without a social life, you cannot be one of the top schools all around. From an interview with Len Polizzotto (February), when asked about athletics at WPI, he said, "If we want to be someone else and improve our whole reputation, I think you have to do that on all fronts."

5.7 Student/Faculty Interaction

Since the beginning of WPI, students and faculty have always had relationships on different levels. Some relationships were purely academic; others were developed outside of the academic arena. Due to new graduation requirements, different social atmospheres, and technological advancements, student/faculty relations have changed drastically over the years. There is a thin line between what changes have been for the better or for the worse. Most importantly, the changes are what make up the communication at WPI.

5.7.1 Academically

There are two main time periods that apply to a purely academic student faculty interaction. The first respective time period is before the plan was instated and after the plan was instated. The second respective time period is before the frequent use of the Internet and email and after the frequent use of Internet and email. These two major changes in WPI, as a whole, had an even bigger impact on student faculty interactions, especially between advisors and advisees.

WPI's academic theme from its founding in 1865, was learning and the application of learning. The idea was that faculty taught theory and then the student applied the theory. The faculty had a specific way that they wanted to teach their students. When the plan was instituted, it forced the faculty to have to change their method and style of educating the students.

Directly after the plan was initiated, professors and other faculty members had no idea how to go about their jobs. With the element of new projects, there were many people who had doubts about it working. There were so many projects that they had no idea where they were going to find all of them, more importantly, how they were going to advise them. The school

sponsored a summer program just for the faculty. It was to ensure that the plan would work correctly and run smoothly. In order to do that, the faculty and the students had to have productive interactions or else the whole plan would fail.

Today, every student has an advisor that is a professor in his or her respective major. There is a scheduled academic advising day where all classes are cancelled and it is technically mandatory to meet with your advisor. The reality of the situation is that the degree of positive advising that a student receives depends solely on his or her individual advisor. Some faculty members make it their priority to see that all of the advisees have solid academic advice. Other advisors are hard to find and their time is scarce. However, project advisors bring a whole new dimension to faculty/student interaction. Over the years from the implementation of the plan, the faculty has learned to correctly advise a student and give them good guidelines for a successful project. Professor Hoffman stated that the faculty/student interaction during a project is of such high quality that when a student is out in the real world he or she will realize that they have been spoiled.

One of the most common sentences uttered in the classroom is, "Look on the Internet. You can find it posted there." Many professors have decided to post homework, solutions, study guides, general handouts, and even class notes on their respective web pages. Some students don't even have to attend class to receive a passing grade. Its negative effect is that it takes away from the faculty/student interaction. However, on a positive note, it makes things much more convenient for the students and faculty. The time and paper saved from transferring and copying documents over the Internet is extremely valuable to student and faculty. Ex-Dean William Grogan, who now advises over 50 students, stated that the Internet allowed him to contact students as well as gives the students a chance to ask questions that they would never make a

special trip to see him just for. He believed that it has improved faculty/student interactions tremendously.

Along with the Internet, email has drastically effected the student/faculty interaction. Professors never before could have let students know about something that they forgot to say in class. Students could never ask professors questions at night and get a response first thing in the morning. Professor Hoffman believed that e-mail was two faced. On one hand, he believes that it makes student/faculty interaction much less impersonal. On the other hand, he believed that it made things easier, due to the fact that he has access to it at all times. Professor Polizzotto would certainly rather have the personal interactions. He said that he needed to see a person's body language to fully understand if they understood the situation.

5.7.2 Socially

At one point in WPI history, there was a pub on campus. This was called the Goat's Head Pub. When the drinking age was 18, students and faculty gathered there on Friday nights. It was a place where student/faculty interaction was away from the academic arena. It gave the students and the faculty a chance to share their thoughts with one another on a strictly social level. When the drinking age went up to 21, the pub had to close down. That was one of the contributing factors to the deterioration of the student/faculty interaction. With the development of technology and the push for research, the interaction has become more scarce.

Today, a WPI basketball game is virtually void of any fans, students, or faculty. In the past, there was not an empty seat in the house. When the basketball games were played at Alumni Gym, the old track was filled with faculty and students. With the exception of a homecoming football game, it is very rare to see any faculty. Students seem to have also stopped

attending athletic events, at least in large numbers. Professor Hoffman's opinion of the situation is that the faculty sees WPI as a place to work, not as the center of their social life.

Many faculties were closely related to the Greek life on campus. Today, most fraternities and sororities have a faculty advisor of some form. However, in the past many fraternities invited faculty to not just formal dinners but on a regular basis for social events. The faculty interactions with students were close enough that a particular administrator was welcome and encouraged to frequently visit fraternity houses.

5.8 Administration

Another theme area that was used for our objective information was the affect of how the administration ran the university, primarily the president and his term and policies on WPI throughout the university's history. Many presidents varied in their relationship with the faculty and their personality was reflected on the university. Some presidents focused on the undergraduate curriculum, some pushed for more research, and others were critical in the development of the plan. While all these men addressed different agendas with their present times, their results are seen in WPI today.

5.8.1 President Storke

President Storke came to WPI as a 3-star general and used this mentality to make WPI more-or-less a military run school. In his time at WPI, President Storke built many buildings and is most remembered as the WPI president who initiated the plan. It was President Storke who developed and formed the planning committees. He pushed for WPI to make a change and do

something to improve the university and because of his term, the plan is the main academic setup at WPI today.

5.8.2 President Hazzard

President Hazzard helped to carry out the plan when he first came to WPI. In his term, he pushed more for the plan and in the process, exploited the faculty. This helped to increase the enrollment at the university and enlarge the student body. While the student population increased, the faculty members did not significantly gain in numbers, and this hurt the resources of the school. Although, at the time, the numbers of students seemed overwhelming, President Hazzard's initiative to promote the plan produced positive results in the long run of today.

5.8.3 President Strauss

While most of the previous presidents before him concentrated on the rise of the plan and the undergraduate program, President Strauss focused his term in office at WPI to concentrate on research. At the time, WPI had a less than par research program. President Strauss, though not always popular with the faculty, pushed for more research money and through his efforts, was most recognized as the president who accelerated the research program of today.

5.9 Impact of Alumni on Technology

WPI alumni have gone on to be productive citizens of society. Many contribute in a significant way on all levels and have enjoyed a great deal of success. There are many alumni that have made significant contributions doing work with whatever is their field of interest. As far as world famous alumni that have revolutionized their industry there are quite a few. Some of

the most notable alumni include Dr. Robert Goddard '08, who is known as the father of modern rocketry, and developed the first liquid fueled rocket; Richard Whitcomb '43 who developed the area rule, which is a fundamental principle in the design of high-speed aircraft; Harold Black '21 who is the inventor of the negative feedback, a basic principle of electrical engineering; Elwood Haynes, 1881who was the builder of one of the United States' first automobiles; Windsor White, 1890 who founded the White Motor Company; Carl Clark, '45 who was involved in making the first air-bag safety system; and Robert Stemple, '55 who developed the catalytic converter. Ron Zarrella, '71 who is currently the President of North American Sales for General Motors; Paul Allaire '60 who is the chairman and CEO or Xerox; Eric Hahn '80 who is the executive vice president and chief technology officer at Netscape Communication are among the WPI alumni that have recently enjoyed great success in the business world. WPI alumni have also gone on to found companies such as Norton Company, Wyman-Gordon Company, and Jamesbury Corporation.

WPI has always been an excellent school because it has blended theory with practice. As technology has evolved WPI has adapted it curriculum accordingly keeping the students up to date with the world. Mix that with the outstanding project program and the end result is a graduate ready to be a productive member of society. Many more WPI alumni will go on to make contributions to technology and have a serious impact on society much like the men mentioned.

6.0 Conclusions

- The Plan and its project-based program prepare students so that they can contribute to society and have an impact on technology.
- The hands on work of the projects are what sets WPI apart from other engineering schools. The projects themselves have had an impact on society because a number of companies use the projects that they sponsor.
- As technology has evolved WPI has initiated the appropriate fields of study accordingly to keep up with the evolution.
- The focus on research throughout the county has not eluded WPI. Over the last 15 years the administration has put an emphasis on research by the faculty to better the reputation of the school.
- Faculty members are focusing on research because that is the most quantitative criteria in aspiring for tenure.
- The focus on research takes away from the efforts that the faculty can put forth towards the students as far as help sessions and office hours. Often inexperienced graduate students or teaching assistants run help sessions or conferences.
- Athletics should be used to increase the social life of WPI. If WPI could play better teams eventually they would be able to field more competitive teams. The better teams will attract more attendance and promote the social life and student interaction on campus.
- Athletic should also be used to increase the notoriety of WPI. Better teams attract more athletes. Athletics are very visible to the American public so if WPI could improve its athletic program it would increase its reputation and in turn attract more applicants.
- The more active a president is the more of an impact he has had on WPI.

- The social life has always been complained about. Students do not have anything to bring them together like the Goat's Head Pub did.
- A place for students to experience the 24-hour a day college atmosphere is needed. It is the hope that the new campus center will provide this.
- Fraternities are no longer the social hub of the institute. Their membership has fallen from 80% to 35% of the male population.
- The distribution requirements have restricted the curriculum since they have been set into place, negating part of the purpose of the Plan.
- The use of e-mail and the Internet has allowed faculty to contact multiple students very quickly.

7.0 Recommendations

Based on the information we collected during this project, we felt it was necessary to make recommendations to WPI to possibly improve the university in future years. Many of the subjects we interviewed stressed that WPI needed to open its door to more students. We feel (from knowledge of past events) that in order for WPI to increase its student body, WPI should look into ways of increasing the social life and athletic notoriety of the university. Dean Grogan even brought up the idea of moving the basketball team to a Division1-AA standing. We feel that with an improved athletic program WPI will attract more student athletes. With more student athletes WPI has a much better chance of fielding more competitive teams, such as a good basketball team, and therefore increasing the attendance which in turn helps the social life of the campus.

Other ways that could be looked into for improvement at WPI could be in the academic areas. WPI needs to continue to keep up with the technical aspects of the present day by expanding departments and developing more majors. The increase in educational resources with this continuous move would promote the reputation of WPI. The WPI Plan has proven itself successful. Possible improvements would include attempts to loosen up the distribution requirements. Re-assessing the number of requirements as far as math and science might be in order. For example mechanical engineers are required to take more basic math and science classes than engineering science or mechanical engineering classes. A change along those lines would require extensive research to consider the pros and cons of all the angles.

Lastly, we wished to address the issue of faculty teaching vs. research. We recommend that for the students and the university to receive the best of the faculty, the administration should continue in future years to push for the equality in both teaching and research of the

faculty. WPI should focus equally evaluating teaching as well as research. A future project could possibly entail the task for formulating a new and improved method to evaluate teaching as criteria for tenure. This would require faculty to keep a more balanced outlook on their job and would benefit the students, faculty, administration, and university.

Also, we felt that with our extensive experience and research on this project, this particular project was broad enough to allow future groups to continue what we have accomplished. These groups could turn its focus to other themes if they chose and still maintain the overall objective. We feel that follow up project groups could gain an even greater knowledge of the "living history" of WPI by concentrating on these new themes.

In order to broaden the affects of science and technology on WPI's society, follow up project groups would need to increase the amount of informational sources. We recommend that along with using videotaped interviews produced in this project, future groups should conduct even more interviews with other members of the WPI community. This new information should then be combined with the older interviews to strengthen the conclusions of the IQP and give a larger historical account of WPI.

8.0 References

Berg, B.L. (1998). Qualitative Research Methods for the Social Sciences. Needham Heights: Allyn and Bacon.

Cohen, K. C. (1975). The Impact of the WPI Plan on Students. Report prepared for National Science Foundation, Directorate for Science Education.

Holstein, J. A., & Gubrium J. F. (1995). Qualitative Research Methods: THE ACTIVE INTERVIEW. London: Sage Publications.

Rubin, H.J., & Rubin I.S. (1995). Qualitative Interviewing: The Art of Hearing Data. London: Sage Publications.

Smith, P. (1990). Killing the Spirit: Higher Education in America. New York: Viking Penguin.

Taylor, H. F. (1937). Seventy Years of the Worcester Polytechnic Institute. Worcester: David Press, Inc.

Undergraduate Catalog 2000-2001. Worcester Polytechnic Institute

The Tech Bible of Worcester Polytechnic Institute. Compliments of the Student Alumni Society, Windsor Locks, Connecticut.

Tymeson, Mildred McClary Two Towers: A Story of Worcester Tech 1865 – 1965. 1965.

Appendix A - IQP General Questions

1. How do you see academics changing over the years? Are values and requirements changing?

2. Have you noticed much of a change in the methods of teaching? How has scheduling changed? Have these changes been for the better or worse in your opinion?

3. Do you think the quality of teaching has changed?

4. In your own words, what is the Plan? Do you think it has been beneficial?

5. Do you think the plan has brought WPI closer to real life situations compared with other schools?

6. Do you see any difference in the way the administration ran the school, varying among presidents?

7. How has the number of undergraduate majors changed? Does WPI do a better job in preparing students for the engineering world?

8. Can you describe the social structure of the school over the years comparing then and now? Do you remember any campus wide event, concerts, or performers?

9. Has student activity changed both on and off campus? Can you describe Greek life as you saw it or experienced it?

10. Can you describe the athletic program when you were here?

11. During the 60's and 70's were the students of WPI performing any protests? Were they socially active? If so, does it surprise you that there were no activists opposing the campus center and the way the trees were torn down and the land overturned?

12. Can you describe an event at WPI that stands out in your mind?

13. How has the campus changed over your time here? Were there any renovations or new buildings?

14. How has the faculty student interaction changed? Do you think online enrollment, registration, or other Internet activity has taken away from student coming to professors on campus looking for advice?

15. Do you think the advising program is working to the extent it should be?

16. Do you think teaching is the first priority of professors or is it aspiring to reach tenure?

17. Is there more of a push towards research today, than there was in the past? Do you think this takes away from student faculty interactions?

18. Do you know of any WPI alumni that have had a significant effect on technology and society? If so, what are their names and what have they done?

19. Has WPI kept up with the times and technology or is it just following it?

20. Did you know Carl Gunnard Johnson? If so, describe your relationship with him.

21. As a freshman, WPI was one of the top 50 schools in the nation. This fall, Newsweek did not have WPI even close to that. Why do you think that is?

Appendix B - Transcript of Van Bluemel

Can you state your name and tell us a little bit about yourself?

I'm Bluemel. I've been in the physics dept. since I came from grad school in 1966. I guess I was what they used to call a plan jock when they were first contemplating the plan. I was the.....of it and have sometimes regretted some of the changes that they have made since then. I've generally tried to be involved in quite a bit of what goes on at this school.

How do you see academics changing over the years? Are values and requirements changing?

They, HAHA, the big change came with the institution of the Plan in 1970-1971. They were some subsequent changes made primarily related to the degree requirements in effect. When I first came here this was a startling rigid environment. All the civils traveled together throughout their classes. All the ME's together and so forth, and of course it was all males. Everyone took practically the same classes. As I recall Physics majors had essentially one elective in 4 years. With the plan all that changed dramatically because the degree requirements were then MQP, IQP, Sufficiency, and Competency Exam, which was a 48-hour exam in your major and at least 12 units of courses with nothing, specified as the nature of those courses. You could take 12 units of drama but as long as you passed the MQP and Comp. in mechanical engineering you were a mechanical engineer It was a labor intensive system and while there were lots of excuses for the change when it was changed again in the mid to late 80's. I guess. They got rid of the comp exam and brought in distribution requirements. I have always felt that the prime reason was that the faculty did not want to do all the work although there were lots of other rationalizations for it. Those are the 2 big changes in academics. The rest are just details. Once you have distribution requirements everyone just plays with them.

Have you noticed much of a change in the methods of teaching? How has scheduling changed? Have these changes been for the better or worse in your opinion?

There have been some big changes in the method of teaching. They haven't always been systematic. I think individuals by in large have decide there are other ways. I think there have been encouragement's from counselors of education development and the administration and so forth. There is a lot more cooperative learning now and a lot more group work, less lecturing at and more doing and class work although I think there's still too much of the straight lecture. I think the changes where they've occurred have been for the better by in large. I have often wished that it were more systematic that the entire faculty were making movements is some direction or some directions, it doesn't even have to be the same direction. I just with there were more trial and error kinds of things. Which incidentally there were a lot of in the first years of the plan because none of us knew what we were doing so people were trying things all the time and if it worked you kept a little bit of that and if it didn't work you tried something else it was much easier to try something different in your courses that it is now because it's a less formal procedure. It was very exciting in those days because we were all winging it. Let's try this this time, let's try this that time. And you tell the students this is an experiment or try this bear with us. We'll be fair with you if you give an effort with us and it was a very exciting time to be here.

Do you think the quality of teaching has changed over the years?

You asked about the quality instead of the methods?

Correct.

That's a tough question. I think the way you reflect the quality of teaching I guess is in the quality of learning and there have always been highly dedicated teachers here. I think the school has been fortunate in that regard. When I first came, a lot of those superb teachers were very traditional in their method very sure in that was in way the wanted to do things. I'm not convinced that the best kind of learning always occurred under those conditions. So in a sense you might argue, the teaching wasn't as good. But the teaching was very high quality and it embodied a lot of hard effort on the parts of the teachers. It was just that the methods haven't been explored as much. I think there is a lot more emphasis, rightly so, and I think where the results show in problem solving, open and closed problem solving consistent with projects. I think what the students are doing the most of is what they do best. I think there is evidence of that from their first employers and so forth. From the students, I have acquaintances in large companies that go into these programs where the companies do a lot of training and report how much they are ahead of practically everybody simply because there have been projects before and they know how to start our working together and they know how to get info and know how to go about organizing and I think that is an important part of learning, maybe the most important part. I think that has increased and improved a great deal. And again that's somewhat related to teaching methods rather that good teaching versus bad teaching, so I don't know, it's a difficult question to answer.

You talked a little bit earlier about the Plan. Can you tell us in your own words what the Plan is?

How many hours do you have? First of all the Plan was a remarkable development for any place and anytime. Particularly at that time for what had been a very traditional and very rigid school. To embark change of that sort the members of the planning committee over a period of really 2 years with lots and lots of correspondence with the faculty. Days when there were no classes and students, faculty trustees and administration would meet together which was incidentally in those days was in itself a remarkable experience because many students have never talked to faculty about anything other than a problem six at the end of the chapter and vise versa. Students and faculty tended to learn that the others were actually human beings. It was a remarkable development. The first step was to formulate a goal of the college. I can't recite it word for word but it essentially said that every student at WPI would be literate in the fundamentals of his or her discipline and would become aware of the effects of science and technology in the society at large and would be familiar with some segment of the humanities and with special emphasis on being a self learner. Those were the 4 things that stick in my mind. It was stated a lot better in the original document. That is no longer the goal of the college. The goal has been changed several times. There have been mission statements and a bunch of stuff. But that's the first time that the goal actually drove the college. Like any IQP should have a goal and with you do carrying that out should meet the goal. The only time that has happened here has been in the formulation of the plan. I argue frequently that our faculty can do a good IQP because they go around doing whatever they are doing with out a goal statement. They don't know what hey are trying to solve.

So that was a remarkable occurrence. The Plan itself, or what is viewed as the Plan, were the criteria by which you evaluate the goal and you could argue with those but I think given the criteria one had to agree that they did or did not do what they said. If you want to talk about literacy in their discipline, there was a MQP and a Competency Exam. That was deemed adequate to demonstrate that you were a competent civil engineer or mechanical engineer or physicist of whatever. Being aware of the impact of technology on society, well the IQP was supposed to do that. That was the criteria that we were going to use here. There might be other ways to do that but that was the criteria we chose. The humanities emphasis, being familiar with a segment was a dramatic change for students especially in engineering colleges where you had to take a course here, a course there. Humanities here you would choose an area it didn't have to be with a discipline but it had to be in an area of concentration and then you had your sufficiency. And of course the projects incidentally initially it was assumed that 25% of your work would be project based, not just the MQP and the IQP. That never happened but that was the assumption. The guarantee that you would become in fact a self-learner. That you would be able to take problems you didn't know anything to do and figure out how to solve them. So probably in too many words that were what the Plan was about. We got rid of the goal kept the criteria but called those goals and now the whole thing is MQP/IQP distribution requirements and get your degree. And the reason that has not worked as well as it might have is that was never driven by any overriding purpose, the goals were changed but the criteria were kept the same which as a certain lack of logic in my mind.

So do you think that it was beneficial?

Oh yes. No question in my mind. Most of the changes that have occurred since then have really gone back away from what was demonstrably working well. The other aspect of the original version of the plan was it was the student's responsibility to get his or her education. We didn't even have rules form kicking people out for poor academic performance at first. If you wanted to waste your parents tuition money and hang around and not do anything that was your problem and not ours. It wasn't the faculty's job to tell you what to study. It wasn't the faculty's job to tell you how much to study. The faculty's job was to do the best job advising you in helping you to learn and evaluating whether you had learned. And again I'm philosophically very much in favor of people making their own decisions and living their won lives even if they don't necessarily do a good job of it at first. There is no question in my mind that it was beneficial. It still is incidentally and I'm critical of some things that have happened and I hope for good reasons. I don't want to be some old guy who talks about the good old days because they weren't always all that good either. I mean we never did do as good a job as we might have. But what we have is still very much better than what most students and especially students of technical subjects get in colleges. So there's no question in my mind that there's been improvements.

Do you think that the WPI Plan has brought students closer to real life situations compared with other schools?

Oh yeah, yes. That's a short answer.

Do you see any difference in the way the administration has run the school esp. varying among the presidents?

Yeah, do you mean do different presidents do different things different ways. Oh yes absolutely. I don't want to get too personal in my opinions about individual presidents but oh yes there have been big changes.

Can you give any specific examples?

I think president, well first of all President Storke was the president when the plan was formulated. He was a retired lt. General in the army. He fought in Korea he was very much a military man, he really ran the place in somewhat of a military way. That was when I first came here. The school was essentially run by a so-called executive committee which was the dept. heads the deans and the president and VP and that was it. Faculty members were expected to go to faculty mtgs. Vote the things the Adm. told them to vote. With that as background I have always given President Storke tremendous credit because it was he who formed the planning committee. It was he who couldn't get what he felt was necessary from the faculty because they were trying to protect their own fiftums, and formed this committee of people who were young…who were going to come up with something different and give him the time and resources that came up with the plan and backed it. I give him tremendous credit and I think it went against all his professional instincts to give the facts. That responsibility and give them the resources to carry it out. So I have a lot of respect for him.

He was followed by President Hazzard who recognized that something important was happening here. My understanding is that when he first came here he wasn't even interested then he talked to some of these planning people and they discusses what they wanted to see happen here. And he thought it was worth while and came to help carry it out. By in large I think he did a good job. He exploited the faculty and the size of the student boy increased enormously while he was here without a budding increase in faculty. Which of course takes resources away because if you don't have time to institute the changes they don't happened. So it was not a totally positive move but at least he recognized what the plan was capable of and tried to get it going and get the kind of publicity this school needed. He was not always popular because he had a mannerism of needling you. Almost anytime you met with the president for a chat or a social situation he'd find a way to try to skewer you a little bit and the only want to try and treat that was to answer him back in a like form.

President Cranch was, I said I wasn't going to go through all these guys in detail and I'll try not to, he was a product, like everyone else was, of a conventional engineering school. And I think he was more interested in raising more conventional engineering school products. I don't think he stuck out boldly nor did he particularly support the innovative aspects of the plan. He's a very systematic person. Collegially he was very good.

I think President Strauss's tenure here was the most difficult. I believe he was uncomfortable with people, he was most comfortable with money and research. In his communication with faculty in his whatever 8 or 9 years here hundreds of times he berated the faculty for not getting more research money. I never heard him say once anything substantive about education. I held that against him and still do. He also divided the faculty to the point where moral here was really not good by the time he left. And you might want to leave that out of the final version of this tape, I don't know.

The campus, I think the school was practically saved by the reign of John Lott brown, who was interim president between Strauss and President Parish. Just because he had good will he was

interest in people and was willing to talk to hem and willing to listen to them. And it was so new on campus at that time that it was absolutely startling. Unfortunately, the final verdict isn't in on parish but I think his heart is in the right place. He's energetic, he's got good ideas. In some ways I think the emphasis has shifted to the pint where he is the person with the ideas and the faculty at lest as a group the faculty itself cant get its priorities straight, cant agree on a course of action and President Parish is trying very hard to convince the faculty to move in some unified and constructive directions and I think with some success the concern there might be too many directions that might dissipate our resources that way. I'm very hopeful about the pres. He's a good person. I think he's honest and collegial. You can discuss areas where you may not agree entirely and do it in a constructive fashion. I think that's important.

How is the number of undergraduate majors changed?

By in large I think it follows the job market and by in large it follows a 4 year gap because the freshman come in and choose a major on the basis of who's being hired. The job market has changed within those 4 years and all of a sudden you're a senior and they are not hiring chemical engineers that year. So there have been a lot so cycles that have been dictated strictly by whose hiring and oil crisis effects or lack of prices affects chemical engineers.

Appendix C - Transcript of Professor Graubard

So Professor Graubard, how long have you been at WPI?

Since the last century it seems, since 1969 – a long time. I've had a couple of times, two / three, that I've been on sabbatical and abroad, but without the exception of those breaks, I've been here since '69.

What were you first brought in at WPI to do? What department did you come in to?

I came in the, at that time, it was called the Department of ... Economics, Government, and Business. I came in around the same time as Professors O'Conner and Woods.

So you were brought in as part of the expanding social science?

No. I was brought in, I'll tell you what it was, there was a fellow an older man – a man who's been retired for ten years now – Professor Roddenbury. He was a doctoral student of mine when I was at BU. He had gone back to school, and he was a professor here at WPI. I had been out of the university business for a while. I had been in consulting. I was back and I was, I had been at Brown and I had been at Northeastern. And we kept in touch. He called me up one day and told me... I had never been to Worcester before... and I lived outside of Boston for years. He told me that exciting things were happening at the school, and in those days it was called Worcester Tech – The Tech. And he said a new educational plan was being voted in where we'll have no course requirements; it's all project-based; where you have to take courses but mainly to prepare you to do the projects, where this will be more creative. And he thought I'd be interested. So I came to look around, and did like it, and then came in here in '69, which was the year the Plan was presented... Hazard, the then president, was here on his first year also, and it was the year that we, the faculty, voted in the WPI Plan. But we didn't know that departments were going to change and things were going to expand in that direction. I came in as an economist. And I've mentioned that by birth, I'm an economist. All of my degrees are in economics, and most of my writings are. A lot of the stuff in management, like operations research and marketing, I've done in consulting, and now I teach the introductory course in Introduction to Business in an International Environment, because I've had a lot of experience in working internationally, especially in less-developed countries. So I came in here for the Plan.

While you were here, how did the general curriculum, how have you seen the curriculum develop in going from an engineering school to a broader university?

Well at that time, I can't tell you going from; I know what it went to. I don't really know what an engineering school is like; this is my first engineering school. I used to live west of Boston in the 128 area, so a lot of my neighbors were engineers, but we mostly talked about the Red Sox at the barbecues. So I didn't know. I know how it went from what I experienced at being at more or less traditional colleges and universities, and that was what was exciting to me. We had a curriculum with no failing grades, and in those days, we had no typical letter grades. You got a Distinction, a Pass, or No Record – it was AD, AC (which was acceptable) and No Record. And instead, when our students, or eventual Plan students – were applying to graduate schools and so

on, there were descriptions of their progress and of the courses they took, and especially of their projects, and graduate schools had to look at that, they had to do some work on their own. I thought that was terrific. We emphasized cooperation rather than competition, though we had much of that also, and we had a place where students were working here to learn, or to acquire skills, to apply those skills in many creative ways, and not to attain grades (we tried to de-emphasize the grades). Also, the curriculum changed from a required lock-step curriculum to one which was in essence individually tailored to each student, so that he or she (there were very few she's at that time) could complete what were the important graduation requirements, and that was the MQP, the IQP (and I was on the committee that coined that term and that developed the IQP, it was called the Zuibel committee at that time, he was the chair), the Sufficiency, and there was a fourth requirement, which was the Competency, which alas and a lack has left the curriculum. That, we thought, I thought, was a great requirement – graduation requirement. Towards the end of a student's senior year, he or she would be given a problem, or in our case in management a case, that he or she would have three days to work on, to explore, to interpret, to try to solve. It wasn't necessary to pass or even to pass highly by bringing out a solution, it was the approach and the attempt and the way to solve it, and he or she was also free to consult anyone or anything that he or she could, as long as proper references were given. At the end of the three days, that student had to come, in our department at least, was faced with an hour defense of the solution, and of the whole… in front of three faculty members. So they grew up quickly, and it was a dreaded part of their curriculum, because was do or die, although you could take it over, but not in the same semester. You had to wait a term to take it over. But with alumni and talking to students who I hadn't seen for four five years, they were telling me in their jobs that that was one of the best parts, that along with their project-based education. There were no required courses, but they could not do many of the MQP or the IQPs or certainly pass the competency without taking many of the courses. I was encouraged from the recruiters in those days that they were looking at WPI differently, that in the old days, this was a place they could come for a good nuts-and-bolts employees, who would sit at their desk, and become … well they didn't mention the words, the glorified draftsmen. They knew the rules, they worked hard, and if they wanted creative people they went to MIT, or Cal Tech. They started to look differently at our students, and you know from what's been happening in many cases, with our students' careers, some of which have become quite illustrious, they thank the kind of education they got here. So this was an exciting time. Faculty was small. We had about 160 faculty. We all knew each other; we all talked with each other. We had a lot of cross-disciplinary work, over the projects. We had many majors that were cross-disciplinary. I sat on competency exams in Civil Engineering, for urban and regional development. I still do that on a couple of PhD's in construction management. We had in the IQPs, a number of people from different disciplines. We worked on giving certain kinds of lectures in other courses beyond our discipline. And the emphasis here was on creative, innovative, and what we thought was important for the 20th and 21st centuries, undergraduate education, teaching and learning. That's where the emphasis were. I think we thought at the time… the Plan was conceived in the middle to late 60's, and started in the end of the 60's, beginning of the 70's. One… how to perceive necessity at the time. College enrollments were falling. They were falling seriously in what then were considered second-tier engineering schools, and other areas… the high school, 18-year old population was slowing down, was diminishing at the time. And it was thought that for us to compete, we should compete where our competencies lie, in undergraduate education. We had made a decision at that time that we weren't going to go head to head with MIT and Cal Tech. We knew that if we

published our weight in funded research, we weren't going, we didn't have the kind of resources and the size to rival those schools, so we concentrated on undergraduate education, and it worked, and it paid off. If you looked at the books like the Princeton Review and the Young College, they pointed out the kind of individualized education that our undergraduates were getting. One of the advisors to us… we had a number of very emanate resources… in faculty and in academics and in business… helping us with the plan. On of them was David Resmit, the sociologist at Harvard, who wrote "The Lonely Crowd" by the way, came here and say, you know, at Harvard, just a relatively small number of seniors do their honor thesis for graduation. Here, it looks like every student is an honors student, does an honors… the MQP and the Competency. And that's what we look at it today as. By the time a student is a junior or a senior, we would like to consider them junior colleagues. And the work was very exciting.

Now you mentioned in…

Oh, one other thing was we did, and by the way, schools like MIT followed us afterwards, we beefed up the importance of the humanities, with the Sufficiency a requirement, and the argument was not only the two towers, the Boynton towers – the WPI towers, but also after C. P. Snow's two towers, where he talked about one tower being science and technology, and the other being literature, language and the arts. And we thought it was important for one, an educated man, whether a scientist or a non-scientist, to have a foot in both towers. So we tried to do that, and we saw a few years later that MIT was beefing up their humanities signing requirements too.

So would you say that WPI has kind of been a pioneer in this type of education, of technology and science?

I really believe we have, and mostly in the way the education was delivered, more than in its type, through the projects, as a project-based curriculum, that being the capstone. Yes, I would say it was a pioneer. I think we still regret that we should have marketed it better. We did get our share of… No… we got a small share of newsworthy columns and articles around the country, but not enough

So would you say that's why WPI isn't as recognized as some of the larger universities? Would you say it's an issue of size, marketing?

No, I think… that's another thing, not as some of the large universities, because we're not a large university. We have a little over 200 faculty, and what about 2400, I don't know, 2600 undergraduates. So we're not large. And the way you get, in a lot of cases, the way you get ranked are popularity contests by alumni. You get ranked by alumni who are in other academic institutions or other places that get surveyed, and we never did produce that many. So I think though, in a particular area, certainly undergraduate engineering education, we're recognized. We're recognized by those groups who are familiar and exposed to that. I think our admissions department does [wonderful] work in getting the word out nationally and internationally, especially with high school guidance counselors and so on. No, I wouldn't say that. The reason we're not recognized as one of the larger universities is because we're not one. And I don't know how we're going to become one or should we or if we should. I think that field is pretty much taken up. It's not necessarily a most desirable one anyway.

Have you seen many changes in the social community at WPI? You mentioned before that the professors used to integrate curriculum a lot and all knew each other? Have you seen many changes in the academic society here at WPI?

Yes, many many changes. There was always a group, for many reasons, that were not enthusiastic about the changes in curriculum, and the thrust that WPI was taking, which was certainly different from the classic approach to undergraduate education in most places, and especially the engineering schools, and especially here. There are also other things. What… you know, what might be, it's just like… in virtually any organization, what is good for the organization as a whole might not be good or optimal for any one of its parts, so that the Plan was good for WPI. I would say a lot of the departments, department heads, might have felt somewhat threatened. Their autonomy was becoming diminished. We had a previous version of the WPI Plan that was not implemented, where we were going to do away with departments, because we wanted programs rather than departments. We thought that was too rigid and too strict. Well you can imagine, we got a lot of opposition from that, especially from department heads, who felt threatened. What I see has happened, over time, is that as we expanded somewhat and as new faculty came in and as new people came in senior positions, both in administration certainly, but as department heads too, they weren't here and they came from more traditional classic places, were not exposed to and perhaps didn't make enough of an effort to understand and evaluate the Plan as we had seen it. And so… we had to operate as academics many places operate, to enhance the reputations of the departments, by pulling in their faculty, especially their untenured faculty, to stick to their lasts, that interdisciplinary work would not get you recognition. Stay in your labs, stick to your lasts, make sure that you had the right number of ounces of publications every year so we could weigh them, and they discouraged in many departments a lot of their faculty from doing IQPs for example, because it took away time from their research or their major disciplines. And as a result of that, I feel faculty got fragmented again, as it would have in any other university, according to discipline. We're still small, so we still see each other and we still attend events together and things like that, but that closeness is less than it was. Although we have an interdisciplinary study group now, the work does not seem to me to be as intense or as encompassing among faculty and students as it was.

Let's touch now upon the interaction between the professors and the students – that society. Some have commented that there used to be more interaction between professors and students.

I'm in agreement with that. There did use to be, there used to be a lot more. We had ...I think there was more interaction…we had a senior seminar, where we had a number of students from the different departments it was a four credit seminar. And a number of faculty from a number of departments. We all sat as colleagues in the seminar. And discussed kinds of readings like Zen and the art of motorcycle maintenance, and how it applied to our lives and so on. A good number of faculty and a good number of students there. We had Fridays, of course this was when virtually everybody on campus was of drinking age, this was before the 21-year limit (18). The pub was called the Goat's Head Pub then was open only on Fridays and faculty and students got together and it wasn't just restricted to seniors who were 21 at the time. We had more student involvement in the development of the curriculum. They attended faculty meetings. They still do, but very rarely… I don't see them to often now at faculty meetings… sometimes

when they have an announcement to make or something. But they attended them. Newspeak was quite outspoken, they had very strong editors, and strong editorials many time rubbed the administration the wrong way but there was nothing they could do, nothing in bad taste, just critical. And they felt partners in the operation of the school. I don't know how that goes now. Of course we had a much smaller administration. Administration in terms of numbers of people, administration has grown much more than in proportion to the other areas of the university. I'm getting to think that if they put one more person in Boynton Hall, the entire building will sink, but that's become much more professionalized too, running a university like corps of business. Although the pick for high administrators like presidents and vice presidents, people who've made it in research and in education, and in scholarship, and then they expect that they're going to get on-the-job training being administrators, but I guess that's how it works. I'm in the Management department, so I'm a little biased in that. I think you need to be trained to be an administrator; you've got to be trained to be an academic.

I want to touch now on the quality of the WPI student. Originally, when WPI first started out, it was an esteemed technical school where students spent all of their time working on their scholarship, and they were discouraged from riding on the trolleys and what-not. (That's before my time, isn't that so). Have you seen the change in the quality of the WPI student?

Not in terms of the capabilities of the student. Certainly, and compared to BU, at Northeastern, at Brown, at UNH, at URI, I've taught at a lot of places, at Babson… I have never seen, one, more serious hard-working students than here, more mature students than here, in terms of focus, and it is true, it's true now with some of my advisees, I've got to tell them, "hey, you've got to put some play in here too. Join a club; do a thing, do a sport, or something." But certainly, we never had here things like the Masque, things like the literary magazine where a lot of stuff is coming up, things like the plays and where students write the plays and the poems. So students have become more diverse in their interests. And, I don't know if that's due to our curriculum, or to the fact that we have opened the place up to gender, for example – very important influence here. Whatever the numbers were here, were the introduction of female students, and females on the faculty and administration. I was here in 1975, and the woman who later became my wife, was the first female administrator every hired by WPI. She was Janet… Dean Richardson's predecessor, she was the assistant of students. She went on and now she teaches management at Providence College, but that's another story. First administrator, 1975, woman. They had secretaries and staff, and the first student, the first woman to graduate here, was in 1970, I think, 1971. That's been a very important influence on the place… opening it up and bringing WPI into the 21st century, into the 20th then… and diversification – globalization. We have many more international student, different backgrounds than we had. For a while, basically we had, the WPI profile, if you could make a student profile, was male, white, Catholic, middle-classed, middle-income student from about three states. That's changed… and for the better… and we see it for the better… and there are all sorts of ideas coming out… terrific things coming out of the IQPs, MQPs. Faculty, by the way the faculty also, not just the students, the faculty is diverse much more than we had at one time… all for the better. The ideas are better… that kind of thing… and if you read some of the things. The only trouble is it's tough to hear those things in congress, just in social situations, in fact, because there are less of them, and most of them are formal, rather than informal as we used to have them.

The next thing I would like to touch upon is technology at WPI. Since this is an IQP, we're integrating society and technology into this too. What we're interested in knowing is how technology has played a part of teaching at WPI, and have you seen more technology integrated into... like with the Blackboard system, integrated into the...

Well yeah, I do use Blackboard. I teach an ADLN, but that's in the graduate, in the MBA program. And we've standardized that Blackboard. The way I see technology, from a disciplinary view, is in our department, we have defined our mission, and that's because of WPI, as a department in which Management of Technology is one of our prime objectives. We target ourselves on a graduate level... we target our services to basically to technology people who want to acquire skills in management – those who are undergraduate engineers or scientists, those who are working in technologically-based organizations and are in management positions. Needless we see it there, and we've redefined that in our department, and relatively recently – over the last ten years, because of the fit. Now how technology had of course... when we take an inventory of our courses, and what content are in our courses, in each course one of the things we look at is the kinds of technology we're including in the... that is teaching, in the pedagogical technology, in the kinds of things we're doing to deal with technology in technological interactions in management. With the rest of the school, I don't know. It was always a technological school, so I assume that we probably all use e-mail. But we all used to use the telephone, and you don't need to be a technologist to use that, or Blackboard, or PowerPoint. Every high school kid knows how to do PowerPoint.

What are your feelings on the advising program here at WPI? Do you think that students get the amount of advising that they...

No, I don't think so. I think that it's critical that they talk with faculty... not just... Ann Garvin does her job in Academic Advising... it's critical that you keep every faculty member as an advisor to a number of students. But a lot of times, the activity is done out of the back pocket. And that's one of the problems with the incentive and rewards system we have at school. I don't think that you get much recognition for advising. When you write up your annual reports and get evaluated for raises and promotions and things like that, that takes a little play. Number one is the number of pounds of publications that you have. Well it ranks its way up there. But in terms of innovations in courses, in terms of academic advising, I think it's not enough. I see a lot of students, and some advised by me, that end up in their senior year not having the right fill, only being able to meet the audit requirements for graduation by doing some stretches, and other things... and/or are sorry about the things they majored in. So I think that could be... it should be required that... I don't know if new faculty coming in have an orientation class where they go through how to advise or what they are supposed to do, but it also has to be built into the reward and compensation system to show that that's important, and that's a job for administration. I think they're busy doing other things now.

You touched there on the push towards research, and that's one of the themes that we're researching. Would you say that's increased, and...

Oh sure... it's the push towards funded research... mainly funded research... that's the real push... because the other may get you a little recognition, but funds are important and of course

administration is interested in that. We've got a short flow this year. We came in under budget because… I think we came in 28 students under budget. Over four years that's a million dollars… and funded research is a push. MIT brags that half… its faculty is half-supported… half the support comes from outside funding. But I think also it's important to see who your market is… who your competition is… what you excel at… and concentrate on that. It still seems to me that the income we derive here is basically undergraduate tuition, and if that's our lifeblood, that's what we should be concentrating on. And we should certainly have a graduate school, even enhanced courses, but basically I think we excel at and have excelled at being an undergraduate college… and there are ways to profit from that.

What do you think about WPI's interaction with business? MQPs that interact directly with business have come under some criticism with faculty, in that we should be teaching them here, rather than just putting them out…

Well it depends. In my area, there's an advantage to having an MQP with an industrial organization, or an outside agency, because this is what we're trying to get them to learn. But there's always the danger of conflict of interest. There's also the danger that what a particular firm or organization wants out of the students is not necessarily what would be best as a learning educational experience in an MQP… but that's where the faculty advisor comes in. I think we have some safeguards against that. A student can't get paid, nor can a professor get paid, for work with an MQP, with an outside organization. The school can, and that's fine. So that is one safeguard against conflict of interest, but you've got to be careful… you have to guard against the MQP work – the project work – turning the students into interns, which is not what we want. We want them to do work… that their engineers and other professionals and engineers would be doing in their organization, and so the advisor has to be on his or her guard, to make sure. So and whoever the other powers that be should be overseeing that to some extent… … I would be… if it were an overseeing… if it were a guarding against… I would be upset over that… I wouldn't just want this to be a means of cheap consulting for some of the organizations around.

Here's another question for you. What do you think about the tenure system, and do professor sometimes become distracting by teaching, advising, and what-not by their aspirations to achieve tenure? Do you think the tenure system – how it functions – achieves the correct goals?

Well, it depends on what you need to get tenure. We have an all-university tenure system, of which the majority of members are not from the department of the tenure. And up to now, as far as I know, and I've served on it a couple of times over thirty years, they go by the handbook, and the handbook says you look at service, teaching (including projects), and scholarship… and that's a three-legged stool. And I've seen the committee take that very seriously. Although in some departments, the push is basically for not just scholarship, but for publications, for something to come out and weigh a lot. It's interesting, and so that's looked at of course, but if you have people from other disciplines, there's very little they can tell about the quality, and that doesn't come into it anyway, other than once in a while. Has it pushed tenures away? It depends on the department, but I have been on committees where candidates came up with a pretty large research record and a very poor teaching record in terms of evaluations, in terms of projects done and other things, and have been refused tenure… and in other cases where people have had

modest research records but were outstanding teachers or did outstanding service or both, and gained tenure. But I think those are situations are getting rarer and rarer.

Our final question has to do with the future of WPI. There's the Campaign for WPI and the new student center that's being built to try to...

After years and years of urging and pleading and begging, and courage beyond and above the call of duty by people like Dean Richardson, yeah it's going on...

And the new academic building is going to be built also. How do you see that... do you think that might change WPI?

I think that the Campus Center is more important than the new academic building, but that's my own feeling. I think the Student Center. I think the new academic building will change it, could change it adversely, because it's sort of off the central part of the campus. We're supposed to move there, our department, and maybe we'll have more space or newer space, but all the sudden we're like... off-campus. And it's nice to see... I don't know how much traffic we'll see of our students, and so-on. The student center is different. It's in a central location. It ought to be terrific place to get students active again, to have the clubs and the organization... the paper ought to be there... I hope there's a cafeteria... I don't know what's going in there... I think that's terrific and it's something that we've been missing all these years.

Appendix D - Transcript of Dean Grogan

Will you please state your name and tell us a little about yourself.

My name is Dean Grogan I came to WPI, first, in 1942 and I was a freshmen, a civilian and about two weeks into my freshmen year I enlisted in the navy because the war was on at that point and the navy had a program that if you enlisted in it you could finish the year you were in so I was a navy reservist during my freshmen year the navy decided to have the people who were in the program have an national program called a b 12 and if you were in engineering or medicine or some of those things you could take these tests and if you passed it you would be able to go to college as a sailor you could go into active duty on the first of July end of your freshmen year and then you could attend college and you could get your degree for liberal arts people they could go for two years and then they would come out and become deck officers but we proceeded to get a degree in engineering so during the year the president of the college was an admiral, admiral Polarius and it resulted finally that WPI would have one of these b12 units it was also one at holy cross, Harvard, MIT, Dartmouth it was a rather select group of colleges that had them so we got in that. I went through college on a very accelerated program. The longest vacation I had took about ten days and that was at the end of my freshmen year. After that we went three terms a year, first of November, first of March, first of July, first of November etc. So I graduated a whole year ahead of schedule. Then I went to Columbia university and from there went on to the fleet and then the war ended and we were scheduled to be in the invasion in Japan, and the winter of 1945-46 and when the atomic bomb went off on august 6, the war ended, so on the 14th and so then we worked at the naval electronics laboratory in San Diego on some ships out there. So that was my background and when I came back I intended to work for at and t and I just happened to stop by Worcester on my way to Boston for my interview and I was given a job offer here which I never, never thought of coming here I thought about it. It was a chance to get my masters degree and teaching sounded like fun. So I got a deferment on the offer form at and t came here and been here ever since I was away for almost three years in the Korean war on the destroyer the one you see up there. So I started teaching and went on through and I was teaching EE. I became a full professor and I was the first chairman of the curriculum committee because up that point everybody took precisely the same program. There were no electives except a couple of humanities courses; you chose your dept. and bang that was it. So we wanted to loosen up the curriculum and that's what we did that was about 1965-66 that's when we started moving things and then President Storke at that time asked that we take a look and see where the College is going. The faculty really wanted change. We were starting to lose ground. In a vary rigid kind of program. We were no different than the University of Massachusetts or the University Lowell. They were charging a fraction of what we were charging tuition and there really wasn't any reason why we should continue to exist. We weren't doing anything different. Except we did things better but we weren't that different. Then they formed a planning committee. It was really to look ahead. We had no idea in getting involved the magnitude of change we got in. So I was elected to the planning committee. There were 6 of us on the planning committee. We worked for 2 years and developed a series of reports and plans. One was a model and another one was the Plan. We worked very intensely for a couple of years and presented them to the faculty. In May 1970, the faculty voted to accept this program. It was voted up or down. It was a very brave thing for the faculty to do, because it was going to change

life hear. What we did was want to make it a project-orientated program, where qualifications for graduation will be based on projects. That's why you are doing what you're doing. We developed the Humanities. Humanities was rather pathetic up until then. We had a couple good teachers in it. The courses were not organized. You took this you took that. I think you only took 3 humanities courses out of a total of 8. Now I don't know what we offer. It must be hundreds of humanities courses. It's a very limited kind of thing. The plan established a humanities sufficiency, and then we brought in the projects. We said that in education we wanted to provide a balance that was strictly technical. We wanted to provide a concentration, which we eventually called a sufficiency in the humanities. Then we said, "Well you got to show proficiency in your major field," what we now call the MQP. We weren't sure how we were going to pull it off. But we said we wanted to have a relationship between science and technology. On one hand, social concern and human values on the other. We wanted to demonstrate it through a project. That is the IQP. So you did those 3 projects. They were mandatory for everybody, plus we wanted to have the students and advisors essentially. develop they're own curriculum. So we went 180 degrees from having an absolutely 100 percent mandated curriculum for everybody with practically no electives to having one where there were no course requirements, but you put together your own program with your advisor and to ensure the academic integrity of that, there was a week long Competency examination in your major field called the competency exam. And during this whole thing after the faculty voted the plan or while they were voting the plan, I was asked to become the Dean of Undergraduate Studies, which was the academic dean for all undergraduate activities and really to implement the Plan and make it happen, which took a 7 about a year implementation period. We had to create the projects. We had a handful. I used a few projects in EE in one course I had. Somebody in ME did one too. But that was about it. We had about every year maybe 60 projects. I used too wake up at about 4 am. I was the Dean in charge of seeing these things. So we're going to have about a 1400 project registrations. We figured where are we going to get these from? We have a window between being trivial and nonsense projects and being so sophisticated that it would just be an exercise and frustration for the students. So they had to get the right level and inte3nsity of the projects. Where were we going to get them from? We wanted to do them with industry. We wanted to have a lot of industrial and off campus affiliations. We didn't have anything. We had to pull this off in a year. Yet of all the problems we had, that proved to be the least difficult because we soon had barrels and riches of projects. We had file cabinets full of them. Alumni created them, others said these are the things we'd like to do with you. So we had lots of projects and that didn't prove to be a problem. That was the winner of the whole program, has been our project system. We all thought being professors we knew how to give exams. Well, we don't know how to give exams. We had no idea how to give exams

Yeah, in a comprehensive way, yeah we can say, tell you f=ma and then tomorrow we'll say if we have f, what else makes the equation. Very specifically, you can exam people to see what they know. But after 4 years, can you give an exam and see yes, you are ready to be a professional engineer or are ready to go to graduate school whatever and that was a real challenge. That proved be a big thing. We ran it for 15 years…we ran the competency exam and about a 3rd failed it. It was a constant like pi. Just about a 3rd of all the students failed it. You could take it again, and again, and again. Every time you took it, again a 3rd failed. So you do converge, eventually you get most everyone to pass. But out in the world today are people wondering around that passed all kinds of courses, passed their projects, but were never able to pass their competency exam. And it was a ringer for both the faculty and the students. They had

a big written part. For engineers, it was to design something to specifications. The chemical engineers used to have to design a sulfur plant or something to specification for example. And it was a very rough exam. And departments started to diverge. Computer science couldn't be long enough. It went on for 10 days and the committee of academic policy had rate them in and say look this is a 5-day exam, not a 10-day exam. And then there was an oral part where you had to go up in front of a board of faculty from your department, where they could ask you any question about your field. And it was a very rough exam, but we finally phased it out for 2 reasons. One the accrediting organization, ABET, wanted to show that you had a certain amount of this and this, thermo or electrical fields or whatever the topics were. They wanted to see it and you couldn't show it with a competency exam. All you could show was that you had enough knowledge and enough knowledge of what to do with that specific knowledge in order to solve professional level problems. You could use books and references, but you had to solve them and that was a big problem. But the other was it was driving the system to hard. If students thought they were going to get a question on a problem on this big exam, they would really retain it, take the courses, and study like they were suppose to. And if they didn't think they were going to get a question on the exam, for example a civil getting a question involving electricity was highly improbable. So it got to the point they wouldn't even take EM or physics. They didn't know a volt from an amp or anything. That wasn't good education and the same thing with the others. It became very narrow. It's exactly what we didn't have want to happen. It just drove the system. People were failing it and we didn't know what to do with them. They'd take it again…and it was a terrible name, the competency exam. We should have called it the qualifying exam, because I used to get calls from fathers saying what do you mean I pay 18000 dollars to have my son declared incompetent. It was just a big…we had all kinds of problems. But at any rate, we fazed that out after about 15 years. We could've learned more from it than we did I think. That was one thing we, we didn't do well as we could have. To say why do students fail the exam? One reason, for example, they say they failed the exam they say they didn't understand fundamentals. Well, then we looked at our program…we didn't teach fundamentals. Maybe in the sophomore year or something, in the basic courses people relate what they're doing to real fundamentals. Later on, its all techniques and solving problems using things but people don't very often understand or remember what the fundamentals were applied to the problem. We'd ask, for example, electrical engineering what is inductance. Explain the concept of inductance. They had no idea what inductance was. It's a big L to put in equations, but it didn't go anywhere. Then we realized that, we said we wanted to have people understand fundamentals, but we never reinforced fundamentals. We may have mentioned them, but then we went straight off and never came back from reinforcing them. We should have addressed that. I think we missed the boat on that. The problem was solved in a very unsatisfying way. We stopped giving the exam so you didn't know people could do these things. So instead we put in distribution requirements, which at first were very broad. That's what I was always afraid. They got more and more encumbered. So now you look at the distribution requirements in the catalog and they're about 3 or 4 of them. They look just the way they are supposed to look. Then under them are about a dozen notes, that say this must include this, this, this, and this but not this, this, and this and on and on and all these things. So in a way we've crept back more and more to a required curriculum. Some of it is not that bad, some of it has taken away from the kind of flexibility and freedom that the students were suppose to have under the original concept. Some establishing, some core in science and math is reasonable. But some departments have really gone out of their mind. The chemical engineering department as far as that aspect of the Plan is concerned, there are so many required

courses in chemical engineering, there aren't that many electives. But you look at some other departments like electrical engineering, for example, there are all kinds of ways you can fashion your program and still maintain a very good and solid legitimate core. So that is the kinds of things that happened. When we went in to the Plan we had to change everything. We had 15, 14, 15-week semesters. We had, as I say a very fixed curriculum. People had to know how to advise. We had to bring in the projects. There was a big threat to some of the faculty to bring in projects. They came from the class and they had their notes and they lectured. And if you questioned what they were doing, like in a European university, that that was not tolerated. They were the aire professor. With projects, as you guys know, you sit around with project advisors. You sit around and work it out. At the end of the project, like at the end of a graduate thesis, if you've done your job, you know more about that particular topic than the professor because you've lived with it, you've worked with it. For some faculty it was very uncomfortable that the students would know what they did and also many people had been isolated. Remember, we were a pretty fixed institution and many people were rather isolated. They taught the same thing pretty much all the time. Now the people, who were active in consulting and research, they were fine. They had a lot of ideas on what to do. They were exposed to the professional world. They had to deal with people in industry and so on. So they thought this was great. They loved it. But the people, who did not have that contact, were very threatened by it. That's why I say the faculty was brave to vote it in and it wasn't overwhelming. It was 92 to 46, 2-1. If you were an optimist, you'd say that the faculty voted in by the overwhelming majority, but if you're a pessimist, you'd say a 3rd of the faculty didn't want the damn thing. They didn't want anything to do with tit. And some people resigned. Some people left the college after it was over. Other people dragged they're feet, and hoped it would go away. And other people pitched in and said if we're going to do it let's do it right. They were great supporters after that. I had a very difficult job because I have always had the people that didn't want it. They were always foot-dragging and finding fault with everything…you can't do it, you can't do it. Honestly sometimes I would wonder if we were going to make it. There were a lot of problems, financial, we had to change loads, all sorts of things. I did not let on for one second that I had any doubts, as far as I was concerned this was going to go and your going to go with it one or the other.

Did you have any doubts about the Plan?

Yes, various elements of it. As I said first where are we going to get all of these projects? How are we going to advise them? We didn't know how to advise projects, hundreds and hundreds of projects. How are we going to form them? Now we have a tremendous lot of experience, but this was brand new territory in those days? How do you do it? How do you frame a project? What are your expectations? What is a good project? What's a lousy project and the whole support system? How do you write? How do the students? How do you go about it? Now its routine people write proposals we have coming up in a week or two-project presentation day. We have a whole system now its really organized. In those days we had nothing we were just plowing ahead into unexplored territory. We had no idea how to do the IQP. We knew that we wanted to relate science and technology to society. So I put together a committee called the Zwiebo committee. A guy named Zwiebo was the chairman of Chemical Engineering. We had very good people for that. We figured out what constituted an IQP. What areas were appropriate to go into? History and technology being kind of one. The reaction between science and technology. We ran a school for two summers for the faculty. We ran it out of the scout

camp out in Plymouth Valley for four weeks. We brought in experts in environment and economics and government policy, and ran seminars solid to educate the faculty in environment and economics. It was all new to them. They were going to advise these projects and it was very terrifying for faculty who were very comfortable in their fields of science and engineering or humanities or whatever to then go out and advise outside their field. But that's what all you guys will do it. You will be taking courses here. You will go out and with a year on your job you will be doing stuff that you never heard of here. That's what professional life is all about. It's being adaptable. So the faculty adapted to it. Again it was very, very hard for the faculty to do this and it caused a fortune. Part of our job and George Hazard, who was president of the college, who was a great fundraiser and we used to go out and give presentation and we got a ton of money. I guess about six million dollars to implement the plan and that helped a lot. Believe me because we hired faculty in the summer to write up the Competency Exam. There were all kinds of arguments on how to do that. You had the IQP, the MQP was fairly easy to do. We just had to assure the level and the cooperation of the industry was correct. We only had a handful of people in the humanities department, 6 or 7. They taught rather routine courses. Some of them were very good people. Claud Shikely worked very, very hard. We had to expand that develop it. We got big grants from the Melon foundations and others to create a humanities department that could handle this Sufficiency. I'm sorry now that we didn't call it the humanities qualifying project so that it would have been parallel to the others. Because sufficiencies, well the way that word came about the humanities program was to enable students to have sufficient background in a chosen area so they could carry it on as a life long avocation. Now they call it a Sufficiency, abbreviated a Suff, which doesn't really mean anything. It was really the humanities qualifying project. But it was only a 3rd of what the other projects' was worth. Then we changed the biggest thing we did...we changed the calendar. We went from a 2-semester calendar to a 7-week program. We almost went to an 8-week term. Looking back on it, I wish we had. What we had then was in January what was very popular, was an intercession, 1-week courses about 3 or 4 - day courses. We had about 400 of them, little ones. They were everything from free-body diagrams Professor Hagglund used to teach, and they would teach something in engineering economy. People taught some mini-courses. So they taught everything from bread making to one that was very popular called crime and punishment. They went with the police. They went out and saw what they did in some of the more challenging areas of the city. It was like Law and Order actually. Then the second week they went to the court and saw the judicial process. The 3rd week they went to jail and saw how the jail worked. That was pretty thrilling. We had all kinds of things. What wiped that out was that the competency exam. When the competency exam, the faculty became so engrossed in that, that couldn't teach all these mini courses, so it came down to the humanities who were not in the competency exam, taught a lot of them and eventually we got to the point where we couldn't carry the whole thing. That's the point were I wished that we went to the competency exam. Then, we phased out the competency exam. What we did was just move the term together, but we could have put in a divided, taken those 3-weeks in a term. But we didn't, so we're living with the 7-week terms. The first time that we did it was wild, absolutely wild. The faculty had always been teaching on semester and the students were used to it. It was well into September before some people found the bookstore. Well now by the end of September, you're about, over halfway through the term. It starts instantly and goes and people weren't used to that. It started slowly then ended up in a great big rush. Well now, it's constantly a rush. So it was a different experience and the end of the first term was over and nobody knew what happened. It was just crazy.

How did that go? Was it a success at this time?

Oh no, the first time it was crazy. The first time we did anything it was awful. There were some faculty who looked at their work and said I got to teach this in 7 weeks, these are the things I want to enforce, and this is what we're going to do and part of the theory was that the students would carry more of the load. Some did, some didn't, but other faculty took the same thing and ran like one of those old fashion movies. You know they run like mad and jump from thing to thing all the time. They ran the course like that and ended up exhausted. They didn't know what they taught and neither did the students. It was just a mad scene. So they learned how to accommodate them. From the start, the incoming students loved the 7-week term and I think still in general liked it better then the other. The other one seemed to drag out indeterminately. If you got a great professor it was wonderful, but if you didn't, it was a long difficult experience. Why did we go to the 7-week term? The main reason we went to the 7-week term was partly because students were they were taking 5 to 6 concurrent courses and they said, "We're just running from course to course." They studied the course the exam was on the next day. Then, they dropped that and they go study something else. Just going constantly around between 5 or 6 courses. But if you only take 3 courses and really get into them, maybe meet them everyday or almost everyday, and do that it would be much better. But as they started to say projects were much better. Because the projects I started to run with Bob Hall and some others just never got critical mass. You can know with your project if everybody in your group wanted to have team projects just like you're doing, that's exactly what we'd hope to have, because we wanted to have people learn how to work with other people and be part of the socialization of getting ready for the professional life without a single contributor which you had to work with other people. We wanted to develop that. So we wanted team projects and the logistics of it made it possible to run them by having a 3rd the number that if everybody had a separate one. It was necessary to have them. What you guys must find hard, as everybody does, to get together for a significant period of time. And you're only taking 2 other courses. Imagine if you were taking 5 other courses with labs and stuff. You would never get together. Maybe you'd meet from 9 to 10 at night or something. But you could never get together during the day, but that was to be part of the program. We wanted to have the project to have critical mass, because it's one of 5 things. All the other courses have quizzes, exams, homework, something else going on. The project you could do tomorrow or towards the end when it's too late to do anything anyway, so it collapses. It would be trivialized. So we wanted to avoid this trivialization and make it a minimum of 1/3 of your total activities so if you were doing a project, you only have 2 other classes and even then it's hard, but at least it's doable. That worked out very, very well. It was a tough sell for a lot of faculty, particularly the math department. They hated it maybe still do. They sure did in the beginning. They said you had to have settling time. You present an idea and you go let it settle. In a 7-week term, nothing settles. You're boiling all the time. I don't think the settling time is all that important. I've been teaching EE, you can go the next day and what people thought about, they thought about. They're not sitting, meditating on that particular idea for the next 3 days. They're doing a hundred thousand other things. So it was kind of an interesting concept in a way. Well that's how we got into it and so I was Dean for 20 years through the whole, but I taught EE for 20 years. I hated to leave teaching. I turned down the job the first time they offered it. Well, I'm doing so much committee work I'm really doing this stuff anyway. I always kept advisees all through the whole 20 years. I did a few projects, but I couldn't teach classes. I couldn't maintain

the schedule or do all the other things required. So I was Dean for 20 years and got the whole plan running and then went through all the changes. So I was in the middle of the crossfire. We still had the people who didn't want it who were trying to get rid of it and get back to the good old days, which I didn't think were very good. They were old, but not very good. And then there were the purists, who wanted the pure ideas we voted in 1970. And we only had two grades: acceptable and acceptable with distinction, no record. We had no suspension. No anything. You could stay here forever, and some people did, accumulating and just hanging around. That wasn't fair their parents were pouring money in and they weren't going anywhere so we had to put in acceptable standards. We don't have a QPA. A lot of things we dumped the QPA. It's an official thing we dumped class rank. We did a lot of things to try again to improve the project program. Because when we had class ranks, if I helped you in homework or did something, and you went off better than I did, I was relatively worse off for doing that. We wanted to eliminate that and we wanted to cooperate. So if you guys help each other, one of you may have a higher A, B, C, standing then the other you may calculate a QPA and it may come out higher than the other, but your class rank isn't going up or down depending upon what you do because we wanted to develop a spirit of cooperation on campus and I think we did. I think people will come here. Especially transfers have noticed that WPI is a very cooperative campus in terms of academics. People are willing to help other people or work together with them I was at the Naval Academy once kind of extreme. But they have a computer there near Bancroft Hall, which is a big residence building, and you go by they have a quiz in every course everyday and that's entered in the computer. It's like the Dow Jones average you can go and watch your class rank go up or down like the stock market depending on what happened everyday. So that is a whole different world. We don't want to do that. So I think we don't officially post or give to the recruiters a QPA. You can calculate one or you can ask the registrar to calculate one if you want to go to med. school or civil service job if you really need it they'll calculate it. But we don't post a great big list of it. We don't post class rank because companies used to come and say we only want to interview people in the upper 15% of the class and if you weren't that, they wouldn't even interview you. It was terrible. How do people get there? Some people were improving all the time, some people came and did well freshman year from whatever background they had, and then got lazy and were going down the trail. So we got away from that. Oh, they were mad. The recruiters said they were never going to come here. We got to know class rank, we got to know QPA because they wanted to stamp on somebody's forehead a number. They really didn't have to interview them. Yeah, he's a 2.85, he's a 3.1, obviously a 3.1 is better. And they didn't even want to talk to them. So we just wouldn't even give it to them. We said we would give you abstracts of what they've done. Well, you're IQP, MQP, and sufficiency and there was an abstract of the comp. We did that and then it was General Electric who was the one who broke through. The fellow who was the northeast coordinator told all his recruiters, when you go to WPI, you recruit as though it is the student's second job, not the first. The first, you see what you did in this course and what you did in that course. In the second job, what is your experience, what can you accomplish? What did you do? So then you talk about your projects and in the MQP, they very often invite people on a secondary and a real expert in the field will ask them do they understand what they're doing in their MQP...and the placements have been excellent as a result. Now, they all love it. Again, we did a lot of things that were extraordinarily pioneering.

So do you think the Plan was done well as far as adapting students to the real engineering world?

Oh, absolutely.

So it's been a success?

Oh, definitely. Not for everybody. We have people who come and take a program just as though they would have taken it before. They do whatever the minimum is in the humanities and IQP and do a rather narrow MQP. I think it's better in general, but they haven't really been affected. Then you look at the students who did a very exciting sufficiency. Which I think a lot of people don't get the most out of it they can. Then they go to someplace like Bangkok for their IQP, come back here and go over to Limerick for their MQP, and had a tremendous experience. That would have been totally impossible under the old system. It's totally impossible in most places today. And the key are two things: one is the 7-week term. Half a year would be to expensive and the faculty couldn't go away that long. They couldn't and sometimes they had families, all kinds of problems and it would've been to far away. But 7-week terms is manageable. You can do it. As we've seen now, more than half of the campus does it and we've been able to have these centers all over the countryside and now we're developing more of them for the MQP, like the Space Flight Center in Silicon Valley, where people are getting experience they've never could have had on the other program…never have ever had.

This goes along with learning and applying the skills. Do you think this exemplifies this a lot more than it did before the Plan?

Oh, absolutely. There were no projects, as I said. A couple of us experimented with projects, but we only had a few. There was one course, probably about 30 people in it. But I tried working with industries, but it was only part of a course. And the same thing with the ME. There may have been some other honors projects that people had, but it was not a general thing. As I said, there were more than 60 students involved in projects. There were some projects in some departments, in-group projects, but it's nothing like we have now and they're only part of a course and a course is one of the five activities. So it got down to a fairly modest activity. Now it's totally different now. Totally.

In your opinion, would you rather see that less course requirements and some sort of competency exam come back?

I…the idea is great, but having gone through it, it is a tough tiger to ride. I'll tell you because the focus on the competency exam drowns everything out. I think we're getting much better MQP's now and much better results on the MQP's because we don't have the competency exam. It was our original focus to make projects qualifying. That's why for our honors graduation, you have to have the projects count. You have to have some A's. The A's…an A on the IQP, MQP, and sufficiency. You can graduate with distinction if you have just A's in the project. If you have A's in your course, you can graduate with high distinction. But it's strongly project based and I'm pleased that we've been able to keep the emphasis on the projects.

Do you think the projects that have been offered have kept up with the technology?

Oh, I think the MQP absolutely has gone way ahead of where they were originally. We didn't know what students could do. The same thing with the IQP. We have some lousy IQP's, but they're a few now. We're evaluating it, bit we've got some absolutely superb IQP's and some really masters level MQP's. I think there's no question that we've gone way up from before.

So you think the MQP's have helped society, almost as a business would?

I think, well, it depends on the topic. There is some where people have gone out and done some very first class things. I was involved for about four years, this was the first year I wasn't, but it was working with the Providence-Worcester railroads with the signal safety system. Using TPS on locomotives, so the locomotives would automatically interrogate the switches down the line, two miles away to determine if they were in the right position because they had some bad accidents...switches weren't closed right or vandals got at them. So that was a case of an MQP that had a very distinct advantage to society in terms of safety. And there have been a number of others that have had a very good effect improving safety or economic availability of a product.

What about as far as the curriculum courses and majors? Do you think that's evolving with the needs of society and in terms of technology?

It varies a lot with department. The whole exposure of biotechnology is a case where we have had the flexibility and enrollment to introduce a whole new area. We had biology, but it was a small science in the early days of the plan. Cell biology and all its derivatives, biotechnology, biomedical, and everything probably will be one of the largest operations in the college. It's no question. It's a giant growing field. So we've moved with the times in terms of introducing computers. Computer Science was introduced about the time the plan came. Back then there was some courses that math taught on computers but it was up until about '70 or so was established as a separate department. And now it is probably the biggest, certainly one of the biggest departments with EE and computer science and biology is coming right up fast.

Do you think that professors' number one goal at this school is to educate their students or to, should I say do more research to acquire tenure?

I think most of them like to teach students, but they want even more to survive. This is true of every university. One of the goals is to teach, the other is to advance knowledge. It's not always to compatible. Sometimes a faculty members abilities and interests are research and they'll teach what they absolutely have to, especially at the undergraduate level. There are other faculty who really put their heart and soul into teaching, want to do a first class job on the undergraduate program, and their research may not be as prominent and sometimes they suffer because of that because teaching is more subjective. It's harder to evaluate. Where as research, you just look at the papers and citations that's there. But I think that WPI has done a remarkable job in trying to keep the balance between the two. I think it's an unstable. It's like putting a pin and saying it's going to stand on its point. I think maintaining stability between teaching and research is tough. It takes a lot of leadership, department heads, the central administration to keep that balance because they tilt it and put all the chips on the people's research, that's what the faculty's going to do. They want to survive. They want pay raises. If they don't, their wives do. So there is a lot of official promotion of research and there are people who want to have credible teaching and I

think we've gone long ways in improving teaching. But it's a tough job for the faculty. They have a divided loyalty between teaching and research. If they do just teaching, then their young faculty will not be promoted unless they have a research record. Now that is much stronger at WPI now then it was when the plan came in. So essentially the plan was created in a very pro-teaching environment, where research was secondary. I think we've gone around, where research is becoming primary and teaching is becoming secondary. Although WPI, I must say, puts a lot more emphasis on teaching, teaching quality and the projects. Good project advising is ver time consuming. So it is a very demanding, but very satisfying place to work. The faculty are under a lot of pressure and they've got attempt to both sides some reasonable manner.

Has the promotion for research coming from external or is it coming from the administration?

It comes from a variety. It comes from the administration primarily because that is where prestige and pure recognition is available. But it also comes from the faculty members themselves, who want to be known, who want their names in books, you know references. They want to go to prestigious professional conventions and give papers. It's part of their profession to be on top of their field. It isn't just an administrative push, although that's all there because they want the school's prestige. At the same time there is a more subtle obligation to have the type of quality teaching or you don't have the students. You can't charge the kind of tuition we are charging and not pay attention to students, because can't help out, you can just move. Recruiting reflexes, I think we have maintained a good reputation, in fact an excellent reputation in caring for the students and the alumni all say that. Absolutely. Few people have had bad experiences with a professor here and there. There is no way in avoiding it. But on the whole, I think the alumni all say, for example, something like 90 % would recommend to someone that they go to WPI. So they think very highly of it. Very positive attitude. So that is encouraging. But it's strange that a place with strong research such as Harvard or MIT, the people who do that research are seldom, if ever, seen by the students. And yet students go there because that goes on. Because that kind of relationship is better sometimes.

In your opinion, is that what separates us from MIT...research?

Oh, yeah. Yeah, size, just general size of research programs. The great research universities are a different kind of place then a place like WPI. The people that are the stars of that university are almost never see undergraduates. They may give the same such and such lecture every year or something, but their names are there. I think what makes the college attractive to undergraduates is the fact that other very good undergraduates hoping some of this wisdom of these stars will, which not a lot get, do get a lot better education in the sense of the students they associate with are very good students and that helps. It's kind of an indirect effect, not a primary effect because the actual teaching at some of these places is not very good compared to what we're doing, but the students are associating with other highly motivated students, so a lot of their education comes from the interaction with other students. This is a second level effect. They're good when they come, and good when they go. They have improved. So that's it. A kind of aura that exists from these places. So it is a self-fulfilling prophecy. A place that's suppose to be very good if very good students go there they will get a good experience, not from the professors, but from the other students.

How about e-mail? Do you think e-mail has had a positive or negative effect on faculty-student relations?

Oh, I think it has had a very positive effect. I find so. I have more communication. I have a load of advisees, maybe about 50, so I don't have a lot of other things that take my time. But I find with e-mail, people ask me questions should I do this, should I do that, and I can give them an answer and right back or if they want to see me, cause I'm in and out all the time I'm traveling all over. Plus they can set up appointments. It's been wonderful. Before, people wouldn't ask you questions like that. They'd come around and, it'd be a big deal to come to the Project Center and find you and ask you a question. But now, if they wonder about something, send it over the e-mail, and I'll give them an answer. I think it has been great from that standpoint and it has increased person-to-person contact because you feel you know them better because of the e-mail, at least I do, and then you can say well look this is a complicated issue why don't you drop by say 11:00 and we'll talk about it. So I find it very, very helpful.

Have you seen a lot of things on campus change with the different presidents?

Oh yeah. The president sets a tone of the campus. Some presidents are very involved. President Hazard was very interested in educational motivation. Put a very high price on that. He worked hard and got all kinds of funding, forming the plan was a big one. He really understood his potential on the student , what he could do. He could explain it to the people of campus and that was very good. Then we had, going back years ago, Professor Stork, who was not an academic person, but a 3-star general. He was a mover, He wanted to get things done. He built a lot of buildings and things like that. He knew the college had to or it wasn't going to make it. He gave the, what you night say the order, to go ahead and let's do something, because the faculty were ready to do something, the high administration was, a lot of the department heads liked things the way they were. It was a tough job, but he did it. He got the thing moving. Then we had various people before that, some weren't very good, some were fired. Stork was excellent. Then we had Professor Cranch who was a very pro-student, very good educator. We had President Strauss, who had a very high priority on research and maybe is the one who accelerated the research program. He was very big on research. Then after him we had President Parrish who I think has been a reasonable balance. He is very interested in students. He pushed the Student Center, which had been languishing for years. So he's done that and he's also been himself in professional organizations and within the faculty, he has been very supportive of increasing research presence. Oh yeah, the presidents call the shots in terms of priority. It's what their priority is. Power is the budget and the president controls the 63-70 million-dollar budget. If you control the budget, you control the priorities. You'll have to encourage people to have the budget stay one length. Well, I found that when I was Dean. I had to have a big budget.

What about, on a different note, the athletic program. Over the years do you see the participation or attendance drop or vary?

Oh god yes. I have a theory, in fact I've told the president and two other people my theory, I don't know how welcome it is, but I'm concerned about our future. We have not expanded our applicant base significantly in the last 10 years, and I'm convinced if we want to go into new programs like the bio program we've got to have a small, but steady increase in our population.

If we want to increase selectivity and we want to maintain enrollment, we've got to increase out applicant pool, and I don't think we've done that. We're running about 3000. Holy Cross is almost 5000, RPI between 5 and 6000 and we're still down there. I think that's one place where we missed the boat. Failing to get name recognition. People don't know who we are. The alumni complain about that constantly. I think that if there has been anything that has been a failure, it has been a failure to increase name recognition. The other thing that I feel we should do, and I've proposed this a couple times, and I think that it's a real problem and that is I believe we should study the possibility of going Division I-AA basketball, just like Holy Cross. We have more men then they do in our population. They have really 50-50 women and men. They also have a very strong legacy program where they give out attention to alumni children. Our program has got enough variation as a university now, we got everything, you know humanities, social science, management, all kinds of degree programs, so everybody isn't either coming here taking engineering or nothing. In fact, it's almost the minority of programs are engineering. It just kills me to see some of that, well some of these little Catholic colleges in upper New York, Sienna, Niagra, St. Bonaventure, you know you got the whole litany of saints and everybody knows who they are. People hear of Niagra. They here of...you should see these campuses. They're little campuses. An academic building and a gym or something, but people know who they are. If you look at CNN, you'll see that tape going around on the bottom with all the basketball results. You see Holy Cross, obviously and you know, you see all these little colleges, and people know who they are. It would be great if we saw WPI go by. If we put the money into that, I think we would be much better known. Football is great, but I really question to what extent football is helpful to us. We play Fitchburg State, in fact, we play in football colleges that we have a hard time accepting transfer credit from, and yet that is a widely publicized sport. It's the one that gets in the newspaper. The identification we have there is not particularly helpful. Look at who Holy Cross is playing. They're playing Army, they're playing Colgate, they're playing Lehigh, and I think it is something we ought to have a study about. Maybe after we look at it see what's involved. But I'm worried about that because people outside do not know us, and there is no way we can get out. We can publish papers in the national magazines. Sure they're written by employers that helps you on that end of the scale, but it doesn't help increase our applicant base. I think we've got to do something. Sports is one way of doing it and basketball is to me the most obvious one. We have upgraded crew, which I think is great. But you don't get the kind of widespread publicity that you get from football and basketball. You've got baseball, you've have wrestling, but you don't get that kind of presence. Football we're never going to. It's just too complicated and expensive. We still maintain a corporal relationship. People are going to kill me for saying this if you love football, but you look at the attendance of football games, look at our schedule, it's not that good. We do play some good teams in basketball. Very good teams and good schools, well known. But it would seem to me that's one way that we ought to look at. We got to do something drastic here. But if we're going to be the super undergraduate program, with projects all over and constantly coming up in every way, why can't we be good in some area of sports where we're going to get some external recognition. I feel very strongly about that. We ought to at least look at it at. Harrington is such a great facility, but when have you ever seen it filled or even anything for a basketball game. And there's another aspect that where alumni love the academic program, they love the projects, they'll have many kind things to say about the social program. If they're in a fraternity, they had a good time in the fraternity probably. Some people have developed friendship groups and other people have developed kind of lonely, empty social existence. I think that goes home to haunt us. Now, we're going to have this great Student

Center, and one of the things I pushed for, and was very happy when they selected it, was to put it next to the gym. My concept was to integrate it with gym. It's essentially done. There are complex reasons for not, because a brand new building next to gym we'd have to retrofit the whole gym, bring it up to all kinds of codes, handi-cap access. It would have been terribly expensive. But by having it right next to it, they're going to put an awning from here to that point. You avoid that. That there is a problem. Also in the original one was to put in a big Olympic swimming pool in the Student Center, like they do in California. Make that the focus of it. Not just for big athletic swimming events, but as a social focus, where people would come and hang out by the pool and take a different cost, but that didn't happen. we have a ton of meeting rooms but the pool is not on the horizon. We have a dreadful, sub-standard facility now. We can't even have inter-collegiate meets in it and no stands in it. Well, coming back to basketball, if we had a basketball, and we had it on Friday nights or weekends, where the campus is a social desert, and had a main basketball team and if we eventually got to where we had some winning seasons, we wouldn't be in the march Madness or anything close to it. Just so we had it, that would be such capitalist for bringing to the center of the campus both social and athletic things. The big problem with a lot of student centers is people go and hang out but there is no activities. The fewer people go, the fewer people go. But if a lot of people are around, a lot of people will go to it and why not combine it with a strong basketball program right, in practically the same building, so people will go to the games and go over and have pizza whatever and it will become a magnet for people and when they left will have pride in WPI. It's good to have pride in some of the things we're doing in Venice, but it's also good to see it on CNN and say yeah we beat or played some college everybody knows about and we get absorbed by association. I think it's time for us to do that, cause we are, not because we said we're a university, but the Carnegie Foundation, it's called the Carnegie Commission, but it has very standards to determine what's a university and who's a college and all that. We classify as a national university and if we are I think we ought to round out our program by having an athletic presence appropriately. We will never ever think that we're going to become an athletic power. It's just fact. But Holy Cross does very well. They have an excellent athletic program. They maintain strong academic standards and behavioral standards and everything for the players and yes they're getting all the benefits of that recognition. We're not. It's hard to think we are balanced if we have all these great projects, all these other things, but we have a social black hole and a lack of recognition by the general public. We didn't so, that's why. Now, that I am no longer active dean, I don't have to be political.

How do you propose that we obtain a Division 1-A standing?

Well you can see that it is a slow process. We have to build up. Maybe we got to be the best division three team in the world. I don't think division 1, AA, the same level as Holy Cross. They seem to be able to sustain it. They're not living on TV revenues and their not living on having the gym full all the time. Were down. What do we have this year? 4 and 18? That says something about the school if that goes on and on. If were good we should be good and the things were good at we do. If we can't do it well, we ought to crawl in the closet or not do it at all. I think we have paid a price over the years by saying that we are not an athletic school. Maybe at the beginning we didn't but I think that we are now. We are going to be a university. They say, "oh MIT doesn't have any", but MIT has 100,000,000,000 dollars worth of research going and a big international name. We don't have that. I think we need to build up to the point

where we have a real winning team and then consider. We don't have to go from nothing to division AA but having a goal to get better and better and then at some point see if we can apply more and be accepted at the same level as Holy Cross. I kind of bothers me that Holy Cross has fewer men then we have, with an excellent academic reputation, everybody going into med. school. Too many of them going into law school. They're doing it and they have very substantial alumni. I think its time we got a look at that. If we are going to really be a technological university just as we said the IQP is going to show that we are going to be interested in things beyond strictly technology perhaps we got to look into something. I think for moral on campus, you guys are closer then I am. If we had a bid activity going on that everybody went to, boy it would pull the campus together. We don't have a central pull on the campus. People say yeah I went to WPI, "Oh yeah then I have to explain what the letters mean." So it's a problem. So when you ask me about athletics you touch a button.

One person said that the school should get rid of football all together and divide the budget amongst the other sports, such as wrestling, baseball, hockey, crew, soccer?

No, I wouldn't say that. I think we need it. I don't know what the budget is in football, but I know football is apparently expensive. It's a big team, a lot of equipment, over night trips, not many games a year, and I think it's hard to recruit. We had some good guys in football, but I think for our size and the fact that we're squeezed out of so many football leagues. We used to have a much better football schedule. When I was a undergraduate, we played Harvard, and we beat Harvard when I was a sophomore. You look at the football teams over in the gym, hell, we played Brown , Rhode Island, Mass. We had a pretty powerful football schedule. Now we're playing Worcester State and Fitchburg State. The only really consistently 3 teams collegiate is Norwich, RPI, and Coast Guard. Once in a while we may play Union or someone else but not regularly. We got squeezed out of the polar league with Colby, Bowden, and Bates. We used to play them. We don't plat them anymore. We used to play occasionally Williams and Wesleyan and they're all in the Potted Ike League or something. So they got their own circle, and because we're engineering, which we really aren't, we're a technological university, we are impure or something in their eyes and they want liberal arts people. I think there's a place to reconsider our image as being this place with a really good academic program, but pay no attention to social life, to other aspects of life. I think the Student Center will be a help, but will only be a help if it is used. We can have wonderful buildings, but we need it. We have Mass Academy here, those superstar high school kids. All the states have them. Maine has one up in Langston way up. They had a meeting of principals and headmasters, and we do not list in category A. We are in category B. It is primarily because of a lack of student center and a lack of an adequate social life. Academically we're A. No question. But recommending kids, they want to have a kind of balance that they don't see here, in terms of academic, social, and a general total life. If you read Two Towers, you'll see it emphasizes the need. That's been a failure in the plan. Not the academic. The academic, we've exceeded expectations. It talks about the needs to have a complementary social life, where the kinds of things you are learning working together on projects, will be carried into working together in a broader social atmosphere. That has not happened and it's still going to happen. In fact it's gone down because when the plan went into effect, roughly 80% of the men, and there were only men at that point, were in fraternities. Fraternities were the hub of social life, so it wasn't missed. Well, now fraternities are only 35% and it has been a vacuum. There are events now and then, but there isn't that consistent humming

especially weekend social life. If you walk across the campus on Saturday night it is dead. We used to play Holy Cross in basketball. There used to be phenomenal crowds hanging off the rafters in the old gym. People get hurt falling off the rafters and you'd kick them off and they'd be back on them again because there was no other room. Saturday night was viverent here. I think it's part of our program that without this center, without any winter predominantly. You know wrestling's good. That's a special interest. Not everybody is pulled to the same kind of general pull that basketball has. It's a rather specialized group and had a very good record. It's not like having 3000 people in Harrington watching a big deal basketball game. It just isn't. The only time we fill it is for high school games really.

We should bring the bar back.

When we had the goat's head, well I implemented the Plan, I think much of it at the goat's head. The drinking age went down to 18. We never had a problem there. On Tuesday afternoons it was especially packed. You couldn't get in. Everybody was there, even the president of the college was down there. I was down there. Professors were there, students, graduate students, who didn't have much of a life…everybody came down. They had a band play in the corner. It was just a great thing. Beers would be floating around and nobody ever got out of hand. It was a very well run and everybody wanted the privilege of keeping it, so they kept it in a real nice atmosphere. For years that went on. If committees or faculty members would give me a hard time on something, I'd go down there, take them to the bar, buy them a beer, and before the night was over, we'd solve the problem. So I said I implemented the Plan there, it really was true. It was wonderful. It was great for school spirit. It was completely complimentary for the fraternity system. It was just great because it could meet everybody on campus. Then, when the drinking age went back up we shut it down, and then the litigation became a problem. It was not closed because of any incident or getting out of hand or anything. It just closed because the one's who were 21 were afraid people under 21 would get in. The other college Holy Cross has a 21 year old bar. I don't know if there is one in the student center. People who are 21, it is much better to have a nice well operated pub on campus for the people who are of legal age, then having that social life go to the Boynton and points beyond.

Appendix E - Transcript of Professor Allan Hoffman

How do you see academics changing over the years and are values and requirements changing?

Well, I think values and requirements have changed. I was an undergraduate from '59-'63. At that point, the programs of all students were highly structured. I believe I had two electives my senior year and that was about it. So everything was prescribed. I think certain advantages of that were, at those times, we had a lot of required laboratories, a lot of hands on laboratories. We went to school a lot more. When I was a freshman, I had 28 hours a week of classes and labs. So we were in class with hands on type things, a lot more than current day students. Then the plan came in. The plan was voted in the spring of 1970. I came back as a faculty member in the fall of 1970. So I wasn't here when the plan was evaded but here immediately there after it was voted. So we went through a period in the 70's when there was no structure, effectively no required courses and that was pretty much strictly enforced. There were four-degree requirements. You've probably come across this with others. You had the sufficiency, the IQP, the MQP, and the competency exams. The competency exam was generally taken as a senior, was kind of a mini design project. In this department, it was a two-day exam followed by a 1-hour oral exam on the 3rd day. So that was really the quality control in the program, the competency exam. That had certain advantages. Number one, it was pretty real life. Some said too traumatic. It had advantages from the structure of the program, in that examining committees were based upon three faculties. So there were, after every term, there was a competency exam period. You got to work with and collaborate with people from all aspects of the department. Something you don't do now. When the faculty voted out the competency exam, distribution requirements came in. They've changed some over the years but that creates structure. You have to basically take, maybe not certain specific courses, but basically your choices are limited in certain areas. And that has gradually become more structured as time has gone on. Originally, it was pretty bare bones, now each year, I think it becomes more structured. The other thing that has happened, concentrations and minors and things like that. So it's changed quite a bit. You went from a very high structured program to essentially an unstructured program, student structured. Now it's creeping back more and more towards structure.

Have you noticed much of a change in the methods of teaching and how scheduling has changed and have these changes been for the better or worse in your opinion?

Well, I think from the classroom standpoint, teaching is swinging back a lot toward what it was like when I went to school. It is kind of gone from reasonably regimented to learn on your own type philosophy, which is still the plan philosophy, but was really in effect for a decade or more in the initial years of the plan. Now, I think the classroom philosophy is not a lot different from the '60's. I think there is a lot of flexibility in the program in terms of the projects and the sufficiency. I think the problem that has occurred is the students don't do as well in course A, say statics, so we want to remedy that by having more hours per week for the statics class. The statics class I had last term, we met 35 times. In the semester system, you had 14 weeks, 3 classes a week, and you met 42 times. So we are not all that far apart. I think there has been a removal of responsibility of students outside the classroom which was one of the under opinions

of the plan. I think we are back to, we are going to do it in class, and we are going to assess it in class. You can see courses that originally, under the plan, started out as a 7 week course, is now 2-7 week courses. They are not teaching twice the material. They are just spending twice the time, so methods have changed. I think the classroom methods have become very conservative.

Do you think it is for the better or worse?

It's for the better. When you grow up, in the real world, the responsibility for doing things is on you, not on someone telling you and not on someone structuring it so they keep tabs on you. A system that stresses the responsibility of students and sets a course and says here is how we are going to do it, here is how we are going to move on, and if you fall by the waste side, there is another term, another time. That perhaps is the best learning environment. But unfortunately, we have moved back to a much more structured system. But you have to do what is prevalent. You can't swim upstream.

Can you describe the social structure of the school over the years, such as campus wide events, concerts, performers, student activities, Greek life as you saw it or experienced it, intramural participation, athletic events, attendance of the school, ratios of men and women, racism, and religion involving students and faculty?

WPI didn't become co-ed until '69 or '70. So it was an all-male smaller school. I think from the standpoint, Greek life was more important because about 80% of undergraduates were participants in Greek life. It was the predominant social vehicle. The other thing is because the school was smaller, you got to understand we had Saturday classes and compulsory ROTC right up to about '68. That disappeared between the time I left and the time I came back. Everyone knew everyone else. The school was bigger, you knew the entire faculty pretty well, and classes were small. Typical class sizes were 15-20 once you got beyond freshman physics and chemistry. Math classes were small. Literally freshman year, we were assigned alphabetically. Section L, my friends were people like Kennedy, Lako, and McGraff because they were close to H. So in that sense, it was a closer knit community but that might be just because it was small. Activities-wise, there were always a lot of activities. Activities had expanded as the school had gotten bigger but, WPI going way back, had ample out-of-class activities. So that really hasn't changed except the mix is bigger because there is more undergraduate and graduate students.

Any interesting people visit or concerts or anything?

There were formal weekends. The women, the dates, took over the fraternities. The guys moved to the dorms with the freshman usually. Concerts weren't too prevalent then. They were not too prevalent anywhere yet. Rock concerts and stuff sprung up in the '70's. Again, I was an undergraduate in the '60's. I think the one thing that has really changed is Worcester itself. Worcester was a mill town when I went to school here. There was no Centrum and all the things that bring with it. Mechanics hall was used for pro-wrestling and roller skating prior to the time they rebuilt it. Worcester had a lot of color, which was lost. Senior hangouts, there used to be a senior walk, a right of passage in, it used to be an all male school, was to walk from Boynton and have a beer at every bar down Main Street and back. It took a whole day. It had some real colorful places, like the Val Halo, was one of the real colorful places. It's long gone. It's on the

side of the police station. It was a mill, an old New England City. Now it is a very dynamic place. There is a lot to do. There wasn't a lot of interaction with other colleges other than Becker. All the social life was in the fraternities, virtually, all except formal weekends. Now, it is a much more diverse campus. I perceive Greek life is less important, simply because there is simply less people involved. It's not the predominant social mode among upper classmen.

What about the athletic program? Anything form the success of individual sports teams to attendance, anything related to athletics, and what was it like then as compared with now?

I think success is a matter of who is there at a particular time. We had some very good teams. The track team, when I was a senior I was a co-captain of the track team. We were undefeated and we had some very, very good competition. So, I think from sports teams at that time, sports was not aligned division one, division two, and division three. It was aligned as large colleges and small colleges. It was really a two-tear. We competed in the small college division, which was really half of division two and division three. In some sense, we played football against, I would say, a better football schedule tan we play today. I think there was a lot more enthusiasm in certain sports. It was very common for faculty to be involved in either officiating in track and field, being coaches, or simply an attendant. They played basketball in the old gym for all they years I was here. They built the addition to Alumni, which now stands down in between Alumni and Harrington, while I was an undergraduate. But, Harrington didn't occur until after I had left as an undergraduate. The gym would literally fill for basketball games. The faculty and administrators would all have chairs around the old track. The place would be jammed. It was standing room only for most basketball games. It would be jammed with people who were related to the campus in all aspects. I don't think you see as strong a faculty participation in athletics or clubs today. The faculty lives more distantly. It is just a place where you come to work. It's not a place that is the center of your social life. The big rivalry in basketball was Clark and WPI. And Clark had a gym, very similar to our old Alumni gym. It'd just be packed. You couldn't jam one more person in there usually. It was interesting.

It's almost the opposite of today?

I haven't been to a basketball game in probably a dozen years. But you go to Harrington and you could have your choice of any row for yourself. It was just kind of the opposite for that. The focal point was football games, basketball games, baseball, and track and field.

Do you see any differences in the way the administration ran the school? Especially varying among presidents?

It was traumatic, dramatic.

Traumatic or dramatic?
That was maybe a Freudian slip. Dramatic in all cases, and traumatic in many. When I was an undergraduate, Arthur Brommel was president. He was a low-key guy. He was a faculty member; he became president, and eventually was Dean of UConn after he left here. A low-key guy. He would, he basically knew an awful lot of the students. He was succeeded by General Storke, Harry Storke, who always used to speak of the WPI family. That was his thing. And

that's the way the school was run. It was run as a family of administration, faculty, and students. He stressed that. He was really the initiator of the plan. Harry Stork, he formed the first planning committees that were led to the plan. And the, as we moved on and got more into graduate study and national prominence, I think the focus shifted. The focus is definitely much different. When I wen to school here-I also got my master's degree here, so I went to graduate school here after traveling around to certain other graduates schools. But we had a reasonable graduate program but it wasn't a researching program. We actually had more TA's in this department, when I was a TA, than we got today by quite a bit. But that's because there were a lot of required labs that had to be covered. In ME 2020, which is Materials Processing plus Grunge lab, was what it was when I was an undergraduate. We had six hours of grunge lab of probably a higher quality grunge lab- because of six hours a week for 14 weeks we learned how to weld and do all kinds of stuff. We came away with better mechanical skills than a student does today. As the push to research and national prominence has transpired, which is really a sign of the times, that has created a much different focus. I think it's created a job in which the faculty job is definitely much different that what we started with. Although we still- even when I came we were required to do research-I don't think the push towards it was as strong. When I came here, the push was to get the Plan on and ready. The Plan didn't really come into operation until two years after I was here.

Could you actually describe what the Plan is? Like, sum it up.

The Plan was based upon teaching students to learn on their own. Which I still think is a major part of this program. So it was structured to create and environment which would really facilitate life on learning. As much as you do in professional life you will never have the training to do exactly what you would be doing as a professional. You will never. So it is necessary for you to learn as you go along or even shift fields. I don't have any educational qualifications for what I am doing today. None. Zero. And so because of that the focus was to prepare students to be into that mode. We did it through performance based criteria which I think still places very well amongst national leaders. I think that with the IQP, a lot of people are copying us with the MQP. I think the sufficiency is a semi-novel idea. I think we kind of got tired. We were the national leaders in the '70's in this kind of education. We were kind of laid back. Instead of pushing in that mode, we have moved back. I think some have become biased in educational innovation. It was really student centered learning. You need to know learning.

How has the number of graduate majors changed, and is the school keeping up with the times?

Well, the number of undergraduate majors has changed quite a bit. It's gone up and then down. Well, it depends on the department. You have to realize there were only eight departments. There was no biomedical engineering, there was no fire safety, no management, there was no biology, and some others. The number of majors, I can only speak for the ME's, when I first came here there were about 150 majors in each class or between 100 and 150 which is exactly the same as today. Graduating number was 140 in the last class. At one time in the early '90's, we almost had 1000 undergraduates in this department. That was before the building was here. So its been very cyclic. There was no computer science, computer science was one of the biggest departments, didn't exist. So education changed with the times.

Do you feel it is doing a decent job of keeping up with the times?

I think it is decent in terms of traditional course work. We probably do as well as anyone else. I don't think we are at the leading edge. We really sat back in the undergraduate sense. We've sat back and rested on the laurels to be the first to get into this education. We are not at the forefront anymore. There is not a lot of innovation in undergraduate education going on out there. At least I don't think so. I speak from the perspective of having started out here when that's all there was. It was innovation. When nobody had figured out how to run a project based program. It was very exciting. It's gotten pretty routine as to how the undergraduate program is run.

Describe an event at WPI that stands out in your mind.

Wow…hmmm…that's hard. It's probably a lot. Al Sako, what he did, the general expansion of the campus, the buildings opening, the presidents coming and going. I actually never finished that question, did I? I got up to about Harry Stork. Maybe just to return a little bit, I think succeeding presidents have had their own twist on that, sometimes for the better and sometimes for the worse. The difficulty of the top administrators is that they come and go. Sot they leave their mark. Most of them have left good marks. I would say that people in the '70's left good marks. They did things that we still cover on.

You started to talk about buildings and I was curious as to how the campus has changed over your time here, such as renovations to the buildings and the land. Do you think the trade for West Street was beneficial in the long run?

I think the trade for West Street was, whatever they traded, beneficial. I think the school has always had a history of doing well by its physical plans. When I was an undergraduate, the Higgins House was a residence. Their gardener was very careful that no WPI students set foot on their properties. I think they have done really an excellent job on physical plans. That's one place they have really excelled. In general, the growth has been well directed. They've missed on a few things that could have been better but more or less, they have done a very good job. They've gone to renovation rather than building new buildings, which I think, preserves the character. You can even walk around to each building and every one of the buildings has been renovated.

Anything on any specific building and could you maybe touch on the new campus center?

Well, I think at the time each of the buildings was renovated they were successful at doing that. I do think that in some cases, you have to wonder about places like Perreault Hall, a place like that, because that really lived up to its original expectation. I never had to teach a course in there but I had to speak in there. You just wonder if it serves as good of a purpose as if it had been thought through better. I think the campus center is a necessity. I really do. In some sense, while we aspire for national prominence, we still operate like a small college in a lot of ways. If you come here in the summer, the library closes at night, you can't get a cup of coffee on campus, and there is no place open after 2 o'clock in the afternoon. You're in competition with places, like where I went to graduate school. The place ran 24 hours a day, 365 days a year. I'm hopeful the campus center, not only is it necessary as a focal point, but it also will promote a

more 24 hour per day type college environment which I think you really need. So I think it's great.

Did you know Carl Gunnard Johnson?

Yes, I did. He was my metallurgy instructor.

He was?

Yes, he was.

Could you describe him or your relationship with him?

Well, actually when I was in graduate school here, my roommate, Chris Almay had a very close relationship with him. He became a friend of their family. Carl was a guy who had, I don't think he had beyond 8th grade education. Maybe he had a high school education. He was an esteemed professor; a very well recognized technical person. He was a fatherly figure, a tall fellow. He had poising stature. He must have been in his 60's when I was an undergraduate. Kind of that age, a tall white-haired guy. He was very student orientated. He used to have, when I was a junior, Saturday morning metallurgy lab. He'd be there. He was just a very friendly guy, full of energy. An esteemed technical guy who just learned it all on his own.

Interesting. This is kind of the last historical question. In the '60's and '70's, were WPI students performing any protests? Were they socially active? Anything along those lines?

I was in graduate school in Colorado in the late '60's so I don't really know, which would have been the height. In the early '70's when I was here, engineering scientific types tend to be more conservative. I think you saw individuals protesting with groups outside of campus. You saw some activities on campus during the Vietnam war but not at the level you saw on the other campuses. I think they were socially aware, I think all young people were socially aware at that time. But there was more the size, at that time it was still 99% male. I think there were some factors that tended to limit protests. But there were some. My understanding was there were some in the '60's but not like there were on other large campuses.

Does it surprise you that there were no real protests of the campus center about them getting rid of the trees over there?

Well, that's interesting because when, that land has been proposed for other uses, on was for a parking lot, that must go back 15 years. They proposed putting a parking lot back there. The students protested, the faculty protested, and the administration decided to pull it. I was a little surprised at, there wasn't much talk about preserving the open space. Maybe it was because the campus center has evolved over a number of years. It kind of developed it own following that said this is better than trees. I think it's necessary to have a campus center if you are going to be a first class college or university. I really think you do.

How has faculty and student interaction changed? Do you think online enrollment, registration and other Internet activity has taken away the relationship from student and teacher?

I think it's changed in a lot of ways from both sides. I think it is more impersonal. I think that's really the technology that has contributed to that. I get most of my Internet action outside of class through my computer. It has its advantages. I do my email at home at night or do it on the weekends. So access is much easier. I think it diminishes the direct faculty student relationship. The other thing I think is the sign of the times is that teaching is not the only thing that faculty members have to do. It's a component of what they have to do. It's a time squeeze. You are supposed to be doing more things than what you have time for. I think that's also true of the students. Given the choices of what you can spend your time on, is faculty interaction outside of the classroom higher on your list? I would say that that's not real high. On the other hand, what you do get in the program is a very, very close student faculty interaction in the project realm. You find when you go talk to people from other campuses or in the professional world you find you have been spoiled. At that level, that's what I enjoy. But there isn't a lot of outside activity. I mentioned the basketball games and stuff. People knew your name. As an undergraduate as you walk across campus, it wasn't just professors that you had that knew your name, people knew your name. It was just a different place, a different time.

Would you rather go back to the way it was without Internet and technological advances that we have now? Or would you rather have it the way it is now, where like you said, you can do email at home?

I think the opportunities are here. I'm not sure WPI does its best both from an administrator, faculty standpoint and from a student standpoint to promote additional student faculty interaction. I don't think you get a lot of interaction, project registration forms, you used to have to get your academic advisor's signature on the project registration form. Somebody lining up outside your door, saying, can I have your signature, you have a 15 second interaction, that's not really promoting faculty student interaction. That's not useful. I would prefer it now. I think there are some additional things that can be promoted like real social life.

One last question. When I was a freshman, at WPI, it was ranked one of the top 50 schools in the nation. This fall's Newsweek did not have WPI even close to one of the top 50 schools in the nation. I was wondering if you could give us some insight as to why or if you think this is unfair?

I think actually, it was ranked 51st overall. So I don't think that's a big thing. I was a little disappointed. US News and World Report went back to ranking engineering schools. We weren't as high as I thought we would be. We were a little ways back. I think that was a little disappointing. Unfortunately I think the administration is too caught up in those kinds of numbers. I think if you are good, you will be judged to be good. Whether you are 50th or 60th, it makes no difference. I think in a sense, the administration is doing things to increase our national visibility and ranking without thinking about, are these the things you want to be doing from an educational standpoint, from what a college or university should be doing. I really think the focus on this, particularly at the higher levels of administration, has some detrimental aspects. They ought to be asking what can we do to make WPI a better place. I'd be more concerned if we were ranked 300. But we are going to ranked at a good level for our size. We

aren't going to compete with the Stanford's and MIT's, and places like that. We simply aren't that kind of institution; we are not that big. If you look at the criteria we use, we're not going to be way, way up there. I worry that the focus on the number rank is really driving us into retrogression.

Appendix F - Transcript of 1975 Peddler Interview with Professor Keil

How long have you been at WPI and what impressions motivated you to come here?

Let's see…I've been here more than seven years. The reason I came here was I believe that the school is very interested in undergraduate education and there seemed to be a little more interest in examining what the school was doing to improve its undergraduate program. An undergraduate is usually way down on the list of vital organs and it seemed that there was a lot of people who are interested in seeing that the undergraduate education progressed,

Do you think because of the fewer number of graduates found here compared to other schools effects the emphasis placed on the program of studies?

Oh yes, definitely. Some people would say that WPI missed the boat back in the 50's when a lot of schools went into research as a part of intergraduate education. This school had the chance to do that but it didn't. There were people who wanted to, but for some reason the school never went for research in a big way. I think that we are lucky that we never did. I think the focus of education in this country is changing. It's going back to undergraduate education.

From the technical and highly sophisticated to the basics and general theory and practical application?

Yes.

Does WPI compare in any way with Cal Tech? Is the Cal Tech education philosophy similar to WPI's?

In some ways it does. They're both engineering and science schools. The students at Cal Tech and the students here are fairly similar, although Cal Tech tends to be more competitive in admissions. Maybe their students are a bit brighter. If you visit the two campuses, you'll see a lot of similarities. All engineering students look alike and socially the two campuses are similar. The main difference you would notice is that the real major emphasis at Cal Tech is graduate education and engineering research.

Has the school and faculty changed much here at WPI since you came?

Yes, enormously.

What were the big changes you noticed in the past two or three years that would be more noticeable by a faculty member than a student?

The major change has been the plan, but along with that there are a lot of other changes. When I first came here, it was the first year graphics had been dropped as a required freshman course. Before that freshman and sophomores followed a rigid program. If you were lucky, you might have had one elective in your junior year and maybe another in your senior year. Now everything is totally different…the students have changed. I came here in 1967. That was the beginning of

the student unrest on a lot of campuses which finally peaked in '69 or '70. There's no longer unrest, but the students are not quiescent in the same way they were. There's been a nice change in the attitudes of the students.

Do you think the lesser degree of dissent here as compared to Berkeley or Kent State was because of engineers, we might have a much more logical or more clear- cut view of things?

I wouldn't have said it's because engineering students are logical, that may be part of it, but another part of it is the kind of backgrounds that engineering and science students come from. They tend to be more conservative as activists than liberal arts students. The stereotype of the engineering student is a first generation educated son of a foreman. The stereotype is not very accurate but it does reflect somewhat the attitudes of engineering students. Engineering students, by and large, are very strongly career motivated and interested in getting a degree followed by getting a job. Things which interfere with that are not to be ignored. That's not characteristic of WPI alone, even the engineering school at Berkeley never took part in the marches. There were protest marches here.

Have any of your attitudes changed since you've become a faculty member? Have you tried to carry over a lot of problems you might have had as a student to try to help students now that you're in a position to do that?

Certainly my attitudes have changed since I've been here. There is no question that I learn something every year. You keep changing, you get more experience, and you begin to understand a little bit of what's going on. I don't think the memory of what it was like to be a student was a very helpful thing for a teacher. I think often that teachers that are the least sympathetic to students tend to be the younger teachers because they're more certain of what they're doing. I have an advisee who is doing a student teaching project and he knows that this is happening to him. He explains something and if a student asks a question, all he can do is to respond by saying the same thing louder. If they have another question, he says it louder yet. I think experience counts in that you begin to understand a little. You've heard all the questions at some point and you know how to respond to them. Sometimes a student will ask a question and not really know what he's asking. Once you've been through it you begin to know what the question is really. I think very few people are able to remember when they get up in front of a class what it was like to be a student. It's a hard transition for most people.

Do you think the student-teacher relationship is good here? When I first came to WPI, classes were 12 to 20 students in a class with an instructor. The names came easier and many times the professor would call you by your first name. Then as I progressed toward my junior year classes gradually became larger. You became a last name, occasionally pronounced correctly, and sometimes you'd catch a professor in his office other times you'd have to make an appointment to see him.

I think the student-faculty relationship here is very good compared to other schools. In the last few years the classes have gotten larger and because of the hectiveness of the transition to the plan its become harder to catch a faculty member in his office outside of class hours. I think to some extent that's been compensated for by informal contacts between students and faculty. I

think they are much more prevalent and effective then they were when I first came here. Fortunately, 90 percent or more of the faculty are dedicated to undergraduate education. Its amazing to see the number of faculty members who spend just an incredible number of hours dealing with undergraduate students. I think that has made the general relationship with students and faculty quite good. It could always be better.

Do you think the plan has brought WPI closer to a real-life situation as compared to other engineering schools? Does WPI do a better job in preparing the student for the engineering world and practical application?

I think it's doing a better job for the students. I don't think things have changed that much for the majority of the students. Inevitably a college is not very close to the real world. It's an isolated and insulated community. One of the things that has happened in the last few years is that the pace of change on the campus and the uncertainty that both students and faculty have gone through in that period of time has better prepared people for real life situations. Real life situations are ambiguous. You don't always know what the problem is.

Do you think that the plan should be optional for students?

No, I don't think so. I'm a tremendous optimist. I think there's much more potential in the students who are here than WPI has ever realized in the past...and more potential than it's realizing at the moment. It's still possible for the student to escape the challenges and the ambiguity of the plan, with it's ambiguity and the constant challenge that goes with it, is educational. It also seems to have proven itself superior to the traditional system.

Do you think the advising program is working to the extent that it should be?

I don't think there's any question that the plan advising system has been a minor disaster maybe even a major disaster in some cases. I'm not sure I know exactly the reason why it has gone so badly. Part of it is certainly due to the rapid pace of change. There are changes in the calendar, changes in the courses, this, that, and a hundred other things. It is quite a problem to have everyone adjust to all these changes in such a short period of time. There have been a lot of horror stories about the advising system. I have the feeling that we know that we are going to get over them. I think there is a core of very dedicated faculty here-dedicated to being advisors and doing the best kind of job they can. I think to some extent in the last few years they've been undercut. Undercut by administrative failures and failures of the computer. I think students sometimes have no notion of how difficult it is to advise students especially if you can't get any information about them. That has often been the case in the last few years. Occasionally, you can't even find out if the student is still here or not. Students keep getting dropped from the computer. That makes everything doubly difficult. I think some kind of training program for advisors would be useful and I think we haven't made the kind of efforts that we should have. Incidentally, there is a micro counseling-training program going on that at least some of the faculty are attending. There is a large segment of the faculty that is interested in becoming better at advising. There are a large number who are already good. Some of the departments have so many students that it is very difficult to know each one individually. Perhaps during the freshman year we should select faculty members to be advisors rather than to try and spread it

uniformly across the faculty, then allow students to transfer to someone in their major area after that.

Do you think it would really be a harmful situation if a student got an advisor in the wrong department?

I think that it is fine for a student to have an advisor who is not in the students major field, but many of the faculty feel uncomfortable. I have a senior management student as an advisee and at times I feel uncomfortable with that, but the particular student is aggressive enough to be able to ask for any information he needs not from me, but from someone else. I think it has worked out well in this case. If he were a little less aggressive, I might very well had advised him to switch to another advisor. I can help him in other ways, but if he was not aggressive enough to seek the information from the management people, then he would have a problem. I have a Computer Science advisee, a junior, a similar thing. He's aggressive enough to get information at other places. I can see that there would be some students outside physics or outside the sciences say, where I would be uncomfortable advising, but in general I think that it should not make a difference.

The seven week terms have been with us for almost two years, do you find yourself cramming the last week with last minute things you want to fit in?

No, I like the seven week terms very much. In fact the longer they gone on the better I like them. There is a problem with adjusting to the length of the term. You can't do in seven weeks what you did in fourteen. It isn't just a question of the new terms being 85% of an equivalent fourteen week term. There are things that are very, very hard to do in seven weeks. In fact the longer they gone on the better I like them. There is a problem with adjusting to the length of the term. You can't do in seven weeks what you did in fourteen. It isn't just a question of the new terms being 85% of an equivalent fourteen week term. There are things that are very, very hard to do in seven weeks. You have to change your whole attitude toward the course.

I know a great deal of the time you'll get into a class and the professor will demand some outrageous amount of outside study time per day for successful completion of the course. This works out to be quite a few hours with a normal three course load. Do you think that this demand has cut down the amount of outside activities a student gets involved in?

No, not noticeably. I think it did and was obvious the first seven week term that it did, but I don't think it has since then. One of the most perceptible changes at WPI since I've been here has been an increase in the diversity of both the faculty and the students. It was a relatively homogeneous place when I came. I suppose it was already showing signs of becoming more diverse, but the diversity and ability of the student now is remarkable. You can have two people in the same class with a tremendous difference in ability. This means that when a professor assigns however many hours of outside work, one fellow can get by with only an hour a week while some other student can't grasp the material no matter how much time he puts into the course. That diversity is very hard to deal with.

Do you think that the negotiated admissions has added to the diversity and variety of the students here?

No, I don't think that's been a major factor in it because in fact, most of students who applied here were accepted anyway. It was a pretense of competition. The actual number of students who were refused admission was quite small as compared to the total number of application. Negotiated admissions is a much more honest approach to admissions because college boards and highs school grades really have no correlation with future success. Negotiated admissions recognizes that. They'll say, "Let us give you some advice. If you've got a disastrously low math SAT, you might think a little about coming here." Motivation, however, can overcome low scores like that. I think that has been proven over and over again. I think that negotiated admissions is a very honest approach to measuring what the future success of a student here might be. At any rate, I don't think that negotiated admissions has been a major factor in the change in the make-up of the student body. After all, this is only its third year, so it hasn't had much chance to make changes. I think a much larger factor is the plan itself. The very nature of the plan has tended to broaden the spectrum of people here – academically as well as socially. The thing tends to attract more verbally orientated people than the more rigid traditional system did. The other effects that are hard to neglect are the national pressures on engineering and the job situation. When the job situation went down, the engineering schools had to reach further into the pool of applicants to try to keep enrollments up. I think those two things are more important than negotiated admissions in the terms of changing the campus.

You've attended some of our home football games?

Yes.

You've noticed that you are part of a very small group, maybe 200 or 300 supporters sometimes? Can you see a reason why they don't get the turnouts at these and other athletic events?

Well, that again reflects the diversity of the students. You know its not only football games but basketball games and even the fraternities as well. There was time when fraternities used to be the source of social life on campus. This is no longer true. An awful lot of fraternities have to run their parties to make money now. I'm not concerned about the lack of tightness in the community, I think that's a healthy attitude. That kind of group activity is a demonstration of adolescence. The fact that it doesn't happen as much anymore is proof that the college is no longer an extension of adolescence anymore. Students here are quite good at picking out and choosing those things which are valuable to them. There are some students who like football games and they go and support them. There are some others who like Spectrum and so forth and so on. I think it would be a step backwards if the school ever developed that kind of unified school spirit again. I don't think that pressure for conformity and conformity itself, that many schools have had in the past, is a very healthy thing.

I joined a fraternity and I think the major reason for joining was because when I was a freshman, there wasn't a great deal of upper-classmen housing available. Most of the houses did very well my year. It may not have been the thing to do, but yet there was no reason not to join a

house either. It now appears that fraternities are on the downswing, although many articles have pointed that they are coming back. Do you have any ideas about the popularity of fraternities?

I think they are coming back, although I think they will come back in a different form. I think fraternities serve as a useful purpose on the campus. I think there was a time when people joined fraternities just to join a house. I think that is less true, and it's causing a bit o pressure on the fraternities. The housing problem is not so severe. I have some strong prejudice against some of the aspects of the fraternities. I don't think their pretense of selection is a very good thing. It is a pretense and has been a pretense – you take who you can get. Fiji may be an exception, but there are some strong fraternities, both strong financially and socially.

You're talking about giving out bids and the idea that if a person doesn't receive a bid, then he may not get into a house?

Right. That's not really the way it works here. It isn't very selective at this point, at least that's my impression. Some of the fraternities will take anybody they can get. I think a lot of fraternities are diverse, there is no longer a jock house. I think that is very healthy. There are some aspects of the fraternity environment that are good and an important part of people's education, but again, this pressure of diversity had changed the fraternities. They aren't going to be tight little groups of people who think the same way. I don't see very strong differences between the fraternities when I visit them.

I think this is more evident than it was when I pledged a house unless you went on the tours, and saw all the houses. You could actually stereotype those houses into groups; you'd have your jock houses, freak houses, and there would be one or two that would stick in your mind and you'd visit them again. Now, they don't have tours, and I don't think a student could put the time in during the short semesters.

There are still some individual houses; Fiji's different for example. I see a difference from any of the others I've been to. There is a little social difference, but it's smaller than you think it was at one time. I know you throw a cocktail party for the faculty every spring, but other than that, when does the faculty, either together or individually, get the chance to visit a house? I think it would be better to put some kind of money into a regular effort to have faculty there.

How does the social life look from a faculty-member's view point? What goes on around us between Friday afternoon and Monday morning?

It's changed a lot. I think it's a lot better than when I first came here. More diverse. I think Spectrum and Cinematech didn't exist when I came here. In fact, when it first started you were lucky if you got five or six students to those things. Those things have expanded. There is greater variety of activities. It's getting so there are times when you have to choose between two things on a given night, which is a big change. I don't think the social life here is perfect by any means. It's certainly less interesting and less exciting than some campuses I've been on, but I think that is characteristic of engineering-science schools in general. Students tend to be more serious than in most colleges. Students still feel their first obligation is to hit the books. If they happen to have any spare time they might participate. The social life is hurt considerably because many of the

students come from this geographical area and go home for weekends. An amazing number of students go home Friday afternoon. Somebody once told me that seventy percent of the male students never had a date.

I don't know...maybe a formal date...but maybe it's only sixty percent. Certainly with Becker so close they've had some kind of a, ah, a tangle of some kind. It's hard to standardize here. One year Becker might be the only place to go and the next year Anna Maria will have the other turn. I think back about our house, and there has been a definite trend toward Becker this year. Anna Maria was the place we'd always call for parties and many of the guys were pinned to girls from Anna Maria. I think the co-eds we have are getting better each year.

I think it may be the other way around. I think the male students are getting a little better.

I think the pub is helping a lot. I hardly ever went to the Pub previous to this year, but now it is a bit more than the hole in the wall because of the fantastic remodeling done this summer. I very often go down on a Friday or on the weekends because it has changed so much. And each week you see a few people that you had never seen before. It's been a very easy way to meet faculty.

I think it's been a very effective instrument for improving faculty-student interactions, and also for the student-student interactions as well. It's a reasonably decorous place, it's comfortable, and it's easy to talk there. I think it's increased the level of conversation on campus.

Do you think the building of a student center, a student union building, would also cause an increase?

I don't think so. Again, college communities as such are just appearing. Most of the students here have outside ties – they have other interests. College campuses should have some place that the students and faculty could use like the pub. Even the students with greater interests off campus use the Pub occasionally. Perhaps more lounge areas would be beneficial, but not a student center.

Each department has some kind of faculty lounge for the student-faculty use. Do these help?

Our lounge is heavily used which pleases me tremendously.

Now why do you think this happens? I'm in M.E. and I go to the lounge occasionally to study for an exam or something. It's too quite for a lounge. It's a very large room and the décor leaves a great deal to be desired, but it is there.

It's down in the basement. You have to make an extra effort to get to it. I think the major reason the Physics Lounge is used is because of its location. It's where the action is. The coffee machine is there. It's on the floor where the classes are. People drop in ten minutes before and after classes. There's a computer terminal there for general use – they always attract attention. It's also next to the department office. People waiting to find somebody often wander in there.

It's not because of the closeness of the students and the faculty in the physics department, then?

No, but I think there is a closeness developing because the lounge is where it is. It's helped develop the feeling of a community in the department, that I don't see in most of the other departments. This might also be because of the department size. M.E., for example, is very large as a department. I'm sure you don't know all the M.E. majors. In physics, most of the people know the people in their own class.

Are there that many Physics majors?

There are over one hundred for all four classes, which is very large as far as physics departments go. There appears to be some trend in growth, in numbers.

Is it because there are so few industrial jobs available for the BS Physics Major that the department is so small? Is it a job-orientated decision people make?

Yes, to some extent it is, although the rather wretched way in which physics is taught in high school doesn't help. Chemistry's another one. This is typical here, but at Cal-Tech it's just the reverse. Two-thirds of the students are involved with the sciences. Part of it is this professional orientation of students who go to engineering and science schools. They are interested in the job that goes with the education. This is the reason I always tell some one to go into something that interests them. Using the last five years as a model, you'll see that if you pick a vocation simply on the job availability, by the time you graduate the job market is completely turned around.

Have you done anything in the department to promote physics, or to make it easier for the freshman to get started? I can remember when it was a terrible thing to go through. The tests were given to everybody at once. Everyone trudged into Higgins 109 carrying their sliderules and hoped they would do as well as the guy walking beside them. After it was all over, everyone left with their heads even lower than when they went in, not wanting to hear how so-and-so did number four, because realizing after he told you that you had done it wrong. Have there been any kind of changes to make these first two or three physics courses less grueling?

I think the introductory physics courses have changed. There are more ways to do it now. IPI is one. There are two introductory courses instead of one. The people who are teaching the courses are different. These changes have made taking the courses quite different. I think the image of physics is getting better, but it's tough to make a large class very personal. By and large physics is more fun.

Is there anything that you might want to mention?

I think you've pretty well covered it. You asked me once earlier what type I'd like to see in the Plan. I think of one thing worth mentioning, and that is the Plan with a capitol "P" is a bad thing. The most important thing about the plan is that it is experimental. There is nothing about it that is sacred, nothing that can't be changed. I think the people that first constructed the plan were very clever. In fact, I often think they didn't realize how clever they were. Some really beautiful bits of design went into that thing and it's stood the test of time a lot better than one might have guessed, but on the other hand, it isn't unchangeable. I few ever get locked into the Plan with a

capitol "P" then I think we're going to be in a great deal of trouble. It's going to have to keep changing to meet the circumstances.

Then you're more in favor of an operation-type of system than the steadfast and never changing academic program of old?

Absolutely! We should always be trying new and different things. I think that at any college if you make a change, at least for a short time, things appear better, but after a while, the initial jump goes back down and you find changes being made again. That constant flow of change and experimentation is a very important thing. After all, this is an engineering and science school, and no one's ever experimented in the curriculum of the very fields that base a great deal of their work on experiment. So now we have a college that is trying.

Have you ever wished that you might have done something else?

I'd like to retire and become a carpenter.

What would be the first thing you'd do if you had control over the whole place?

Liquidate? I don't know – resign! I don't really know.

You wouldn't drop varsity football?

Ah, I might cut the budget in half…

Appendix G - Transcript of Professor Len Polizzotto

Could you state your name and tell us a little bit about yourself?

I'm Len Polizzotto. I'm a WPI graduate, class of 1970, in the old days. I got my BS and masters here. I got my masters in 1972. I had been in the industry for 27 years. In parallel to leaving here with my masters, I got my Ph.D., though a full time student, while I was working. I got my Ph.D. at Tufts University. It was a one of a kind program that combines electrical engineering, social psychology, and ophthalmology. A lot of my expertise is single process in an individual pathway. I spent most of my career, 25/27 years of them at Polaroid Corporation where I had all kinds of positions. Everything from managing the development of new products to running researches to digital imaging. One of the goals I had, was I always wanted to come back here and teach. Always wanted to do that. Something I always wanted to do. Finally, I hit 50, call it a mid-life crisis or whatever, I said, I quit. I checked with my family and they said it was ok. And I did, I quit. I said I'm done. I was fortunate enough to land a teaching job here. So it's a something I always wanted to do. I was very active here as a student. I was captain of the wrestling team, I was president of the class, bunch of things like that. I kind of did a lot of things on campus. One of the most interesting things I did extracurricularly, was I was head of a committee during the planning of the plan. In fact, when I was a senior, we had planning days for the WPI plan. And they had all kinds of different committees. A committee on student life, a committee on academic programs, whatever. And these committees consisted of faculty, students, and administrators. And different people became chairs and I happen to get selected as chair of one of the committees. And again, it included administrators, faculty, and students. There was a student life committee. If you notice that some of the residence halls have more suite type settings and that sort of thing, as opposed to Daniel's and Morgan which were just rooms in a big concrete hallway. I do think we had some influence on that. So anyway, I felt pretty good helping establish that whole planning concept.

Speaking of the Plan, could you describe that in your own words and give us your opinion whether you think it has been beneficial to WPI students over the years?

The Plan in my words is basically, an extension of the original concept of how the school was founded. The school was founded to be learning and applications of that learning. Basically, you learn some theory but then you apply it. Then we kind of drifted away from that over the 90 or so years from 1865-1965, 100 years. The Plan really re-institutes that concept, which, having come from industry, to me, is just an awesome concept. It is really terrific. You get theorists out of school and then they take 5 years before they're really productive in an industrial setting. You really can get productive from the get go because you have actually applied theory in some real life situation. What the Plan does is really makes us apply the theory to real life situations. That's my general, the way we do that, with the MQPs, IQPs, all that sort of things. They're just implementations. I think the plan is a really good teaching way. The problem right now is that a lot of people outside the WPI system don't understand it as well as they should. But I think once they do, then more people will be adopting it.

So you think it's been beneficial to students?

I really do. I think it's been terrific. I think it's absolutely beneficial. I'll tell you the one thing I don't like is the 7-week terms. I think that's a little bit of a problem.

Why is that?

In a normal semester, you have 40 class sessions. With the 7-week terms, you have 28. The concept behind the Plan was that delta; those 12 classes you were missing would get made up by the students doing extra work. Because you only take 3 classes a term, as opposed to 5 in a semester. You take that extra time that you really have and devote it to doing extra learning on your own. So learn how to learn on your own. In my limited experience being back here for 3 terms now, no students do that. Well that's a digital statement. I'm sure some students do that, for the most part its really what they've learned in class that they really do long term. So I think we are missing a little bit with the 7-week terms. I think we could go back to a 14-week term and not hurt the Plan, if there is a downside to things.

Do you think that would hurt scheduling at all?

No, no, no, I think it would all come out in the wash.

How do you see academia changing over the years? Do you see values and requirements changing since you have been here as a student and now as a teacher?

When I was a student, it was great. Freshman year, sophomore year, junior year, you took what you were told to take. You had no choices. It was great. This is what you take as a freshman; this is what you take as a sophomore, as a junior. Finally, 2nd semester you had some electives. That's the way it was. Now you really mold your schedule anyway you want it. And I think that's really good. I really do, as long as you get the basic fundamentals. You need a good foundation to build a house. You need a good foundation so it doesn't fall down. But then deciding on top of that, you get some freedom and flexibility. That's what our system does and I think it's a very, very good idea.

Have you noticed much of a change in the methods of teaching? Has scheduling changed? Is this better or worse in your opinion?

Again, the 7-week terms are really the big change. And it is really forced, at least as an instructor. I find I'm always running out of time. Maybe I'm just an incompetent instructor. But its really tough to handle the 7 weeks and get all the stuff in there that you want to do without driving the students crazy that you are going to fast. So I find it to be hard, yes I find the methods of teaching has changed. Because how fast do you go, how much in depth do you do a class to get the things in that you want to get in.

Do you think students learn better over the 14 weeks rather than the 7? Or do you think it's their own fault for not putting in as much effort as they should be?

My opinion is that I think its really too bad that students aren't putting in that extra little time. Because I think if you did land out over 14 weeks and you think how much extra time they are

putting in over 40 classes, 14 weeks, just take that home and put it into the 7 weeks and it will all work out. But that's not what's happening. I think we have great students and I really do love them. That's why I'm back here, but I do think they could put in more time.

Do you think the quality of teaching has changed? As far as teaching being a first priority of professors?

When I was an undergrad, in the dark ages, before c.d. players, teaching was the priority here. It was the first priority, second priority, the third priority and that's teaching undergrads. Now because of things like, U.S. News and World Report, these ranking and all that bologna, schools get measure on lots of other things. One of it is the faculty and how they publish and that sort of thing. So there has been a tremendous shift and pressure put on the faculty to publish and be leaders in their field and that sort of thing, which is good for the students in the long run. Because the smarter the faculty, the better they can teach or the more up to date they are. The problem, it's a tremendous conflict as far as time. I find teaching, to do it right, to meet with students, and to give them extra help or whatever you want to do, takes a lot of time. To also be a world class researcher take s a lot of time. Not enough time to do both. It's very difficult.

Speaking of faculty and students, do you think interactions between the two have changed since research has been a priority and registrations are online and stuff like that?

I think its becoming more and more impersonal because the more time you spend up in your lab doing your thing, doing your research, the less time you have for students to pop in to talk and to get help or whatever. So I think we are seeing a trend there, less direct personal time between faculty and students. The online registration and all that, in one hand, it's efficient. I happen to like personal interaction, because looking at someone's body language and expressions really tells a lot whether they are getting something or don't understand and if they are troubled, what you don't get from the electronic thing. So I personally like the interaction you get up close and personal.

Has there been a big decline since the 70's as far as that goes?

Yes. When I was here, I hung out with folks, faculty, with administrators. They were like your friends. Folks that really helped mold and shape my life. They were just great to me. Folks like Bernie Brown, he was just tremendous, he just started when I was a freshman. We always said we were freshman together except he was administration at the time. I mean we used to go over his house for dinner and do lots of things. It was just wonderful. Bill Trask was wonderful and Dean Grogan, who was my double e instructor. I mean going over his house for dinner. It was just tremendous interaction with faculty and administrators. And I don't see as much today which is too bad.

How do you see the number of undergraduates changing? Do you think WPI is keeping up with technology?

I think we are doing really well there. Take my department, electrical engineering. It's now electrical and computer engineering and it's really shaping the curriculum trends, which is really

a good thing. When I was here, computer science was a neat thing you learned, not a department. Now it's a major thrust area, which is important. The whole bio area, when I was here, we just had EE, and then some electrical engineering, and some mechanical engineering would maybe do some bio applied things. Now we have a whole department that's changed from bio engineering to biology, we have bio chemistry, we have bio protection, we have environmental studies, and civil. So yeah, I think we are doing a great job with that.

Can you describe the social structure of the school compared to when you were here and how it s now? As far as campus-wide events, attendance and athletic events, as far as stuff like that and Greek life?

Let's start with Greek life. That's the easiest one. Basically, if you weren't in a fraternity you had no place to live. Greek life was critical to the campus, it was necessary because that was the housing. At the time, eighty percent of students lived in fraternities. We had no female students until my senior year. If you didn't have a fraternity, you had no place to live, or you had to find some off campus housing, which was hard to come by. About eighty percent of upperclassmen lived in fraternities and that was really the heart of the social activity also. Your Friday, Saturday night parties, that sort of thing. We also had campus wide concerts over in Harrington. We had everyone. Lots of wild groups at the time and these were major. We packed the place. They were wild, wild concerts, which was kind of fun. And I don't see that happening anymore. You don't have the major events that we used to. In my short time here, I didn't see that. These were major things. Everybody was gearing up. We were like, wow, these guys are coming. So the social structure has changed in that way. I think there has been a significant de-emphasis on fraternities and sororities. Yeah, they still exist but I think their role they play has been significantly reduced. You don't have to join a fraternity to have a social life and a place to live. But back then, you did. I think athletic events have always been sparsely attended, when I was a student and here now which is really too bad. Giving my opinion on that, we have a hard time getting good students and good athletics. Yeah we have a few good students and good athletes. But we don't field really top teams in our sports all the time. If you look at whom we compete against in that area, it's clear. So you have to do something different to make that happen. And I think if you had more winning teams, it would generate more enthusiasm. You'd get better attendance, and better school spirit and that sort of thing. I think that's something we need to change. We need to change who we compete against. This may seem a little snobby and I don't mean it to be that way but if you compete against a Dartmouth, a Brown, and similar teams, as opposed to schools like Worcester State and Framingham State. I think it changes the atmosphere of the whole college. My son goes to University of Rochester and they compete against John Hopkins, Brandeis, pretty slick schools and that just changes the whole atmosphere. I think we need to do that. Here we are trying to build our reputation and our stature and if you do that, you have to do it on all fronts. And again, nothing against those other schools because I think they are terrific schools and they have real importance in their place. But if we want to be someone else and improve our whole reputation, I think you have to do that on all fronts. I'll give you one of the controversial things I did several years ago but I didn't win any points for. I love football. I absolutely love football. I am a college fanatic. I go to a big time game every year. I've been to Notre Dame. I've been to Wake Forest. I've been to all these big time schools, Penn State. But at WPI, we have a tough time. I was the varsity wrestling coach. I saw what the budget was and so on. I don't know if these are the exact numbers, but about seventy-

five percent of the budget goes to the football team and everybody else gets what's left over. And my theory was if we took all that money that went to football and cancelled football, dropped football, gave that money to al other sports we could field competitive teams, give out some athletic scholarships. So that at homecoming, I'd rather watch a winning soccer team than a losing football game. All you need is a couple scholarships in each sport. These are all cheap sports to support. You need a ball and you are done, as opposed to football where they need all these pads and all this equipment and everything else. But give a few scholarships in each of these sports, baseball, swimming, all that and we could develop and get really super competitive teams that would really get some excitement going. You know it helps everybody. But that didn't go over to well, but that was a though. If you have a situation, you have to deal with the reality of it. How do you make the best of a situation? That was the thinking behind it. Nothing against the football team.

Do you think the athletic program is on a backburner at with WPI administration? Is it considered a priority at all?

I don't think it's a backburner, but I don't think it's in the forefront. I think it's kind of neutral, just kind of motors along. Again, I was talking to Dean Grogan about this stuff just a few days ago and we are going to try to really do something to really change the way athletics is thought about. Right now, it's just motoring along.

During the 60's and 70's were the students performing any protests as far as Vietnam and things like that. if so, does it surprise you that there were no activists opposing the campus center and all the trees getting torn up?

In '69/'70 time frame, when I was a senior, that was the height of the Vietnam War. So there was tremendous turmoil in the whole United States, actually throughout the world. But these were really trying times. There were the Ken State killings. I don't know if you guys know that, but there was actually somebody my wife went to school with that was killed at Ken State. There were four students killed by the National Guard because they were expressing their views, the right to free speech and that sort of thing. That really triggered a wave of protests. The protests were justified I think because the country was getting a little bit out of control. And the liberal arts campuses tend to be a little more liberal with the student body so the protests were significantly more intense there. Engineering schools tend to be more conservative. Protests were not as vocal and intense but we had a pretty significant amount of protest, to the point where classes were cancelled for sometime. We changed the grading during my senior year. Everything was turned to pass and fail as opposed to getting your grades. So it had a major impact on the campus. And some of us like to think that all the protests did help end the war and save a few more lives.

Can you describe an event at WPI that stands out in your mind?

This is going to seem out of left field, but we had this guy Fred Sneider. He was a heavy weight, an older student. He was kind of a mental later 20's. He was the strongest person I had ever seen. I'm sure there are stronger people, but the strongest I've ever seen and the best event that I have ever seen. You talk about school spirit and attendance and all that stuff. That year the

wrestling team generated so much excitement we would pack the gym. People were hanging off the rafters, out the door, like nothing you've ever seen. Every time we had a wrestling match, you came just to see Fred. Nobody gave a hoot about me or anyone else. They just came to see Fred. But the event that just stands out, it jus so happens that we had the finals for the New England tournament here at WPI. Of course, that was the old days when the tournament was really tough, not like today. We had the division one schools. There was no division 1, 2, or 3 in wrestling. We had everyone, UMass, BU, Dartmouth, Brown, and Springfield. So pretty tough wrestling schools. Basically all New England, no distinction. And Fred was up against this guy from MIT who was national champ in one of the college divisional nationals and Fred just whooped him. And it was the most incredible scene. And the place went nuts. It was just the most excitement I have ever seen on this campus. Big Fred.

Do you think that the advising program is doing a good job getting people jobs? What about the CDC?

That's 2 questions there. One is the whole advising system and the other is are we getting students jobs? As far as the advising system, I have actually been impressed with how that is going. I think Ann Garvin over in the center for academic advising is doing an excellent job. I think she really is. When I got here we had to do a training session. We got briefed on what to do. We got all types of information to make sure we are doing the right things. I think they do a good job on teaching us new kids what things to do and how to advise. It is taken very seriously by the departments. So it's real important that we do good advising and everybody is striving to do so. I think its high on our agenda. Obviously some faculty better than others like anything else but it is taken seriously and is high on everyone's list. As far as CDC, I honestly don't know how it is today. It's one of those things I haven't gotten around to understand. I was here back in the old days with Bill Trask. We had outstanding job placement. Bill knew everybody. He knew every company and every place. There wasn't anyone that never got a job. Everybody could get a job. You tell Bill, "I really want to work for AT&T," and ok, he set up an appointment and you got a job at AT&T. He would put a word in and you got in. He was incredible. It was really good in the past.

We talked about this earlier, the polls that come out in Newsweek and U.S. News and World Report, do you think there is more of a push towards more research than bettering WPI's reputation?

Two parts to that. One is the administration is pushing real hard to make us a class one research institute. We talked about this earlier. That is a real conflict at least for me as a faculty member. I do like to do research and I do want to do some world class research but I also want to teach the undergrads because I think that's why we are all here. I think that's why we are very significant core competencies as a university to really teach undergraduates. To do both as a faculty is a real difficulty thing. So what has to give is, for instance, right now I teach a course every term. So they would have to back off on my teaching load so I could spend more time on research, which mean they would have to spend more money and hire more faculty. So I think that's the kind of thing that has to go on for us to do that. I think the reason for the push to be higher on the research notoriety scale is for the U.S. News and World Report surveys. Because that's how people get their reputation for academic excellence. It's not how well we teach the undergrads,

it's if the faculties are world class in their fields. And they assume that helps the academics. Yes that's what we are trying to do and why we are trying to do that as far as the U.S. News and World Report rankings. So we have to learn to live with it. It's like playing a basketball game. If the ref calls cheap fouls you got to adjust your game, otherwise you foul out. So we have to adjust to what the surveys say. I was using that to help pick schools for my daughters. What I cared about was the academic stuff, the stuff that really mattered. Some schools that were high up didn't have very good academics but they had other social life, so they came up. So it depends what you want.

Do you think that the push for research has taken away from the initial purpose of the school as far as a learning and application institution or is it helping it?

Right now, I think it is taking away from the ability to keeping it fresh with students. The more contact, the more learning, hopefully. The more you are required to do research, the less time you can spend with students. So I think that is a conflict. It is taking away from undergraduate education as we are currently structured.

President's terms seem to be getting shorter. Do you think the reason is for endowments or is it better to move on?

The parallel that is going on in universities is very similar to industry. When I was a student here, presidents came and stayed. Because all they really cared about were undergraduate education and teaching that sort of thing, and what you had to do to improve that. And now raising money is important but not the be all end all focus. Same things with corporations back then. You had all these Wall Street analysts who never worked at a company and don't have a clue what it is about, making comments about companies causing stock prices to go up and down. You didn't have that thirty years ago. So companies were able to do their own thing, making products, taking care of employees, those sort of thing. The whole trend that happened over the past thirty years is that university is forced to raise money, raise money, raise money. More so than they were in the past. Just like corporations are forced now to make sure their earnings are at a certain levels for stock prices, that sort of thing. So the whole trend has changed all over the society. As a result, it is hard for people to say all because you burn out real fast. CEOs are turning over much more rapidly now as oppose to in the past where a CEO would stay there 20 years. Doesn't happen. Five years, you're gone, same thing with college presidents. So I think that is the reason. Money is the root to all evil.

Do you know any WPI alumni that have had a significant effect on technology and society that you personally know?

Some of my classmates have done extremely well in their jobs. If you look at some of the folks that were EE graduates from here, they invented things like the whole concept of feedback and basic EE information technology. The heed to what is now the whole information revolution.

Appendix H - Transcript of Bill Trask

I've never heard of that.

Oh, I'm sure that you could ask any student on this campus. What's the basketball marathon and they wouldn't know. In fact I think you can ask a lot of students what the pub was and a lot of them don't know what it was. In 1968, two students, Jim Ozlosk, and Joel Shewall, Shotcky. Well, Joel came to Harry Thompson, who was bookstore manager, Dick Olson who was a math teacher and myself and asks us if us five would help them start a pub on campus. It would be open to seniors who were 21 years and older and who had birth certificates on file and faculty and staff who wanted to go. Well of course, we from the general to see if it could work. So Joel and Jimmy went to the president and said we have 3 or 7 faculty and staff members who wanted to help us. Can we have a pub on campus? It'll be open once or twice a week and it would be downstairs in the lower part of riley, he said. I'm not going to fight you on this but I wont give but if you can get a license then as far as I'm concerned you can have it. Which at times was quite remarkable so anyhow, they went and got a license. We had what we would call a one-day license. And we would have it open on Friday. Then in 1974, the drinking age changed to 18 in Massachusetts. So no longer was this pub open to seniors who were 21 and over. It was open to almost 90% of the student body. So we spend the whole summer downstairs in Riley where the pizza place is now, Gompie's Pub I think they called it, Gompie's. And we had the back room and the other big room and we had a 3-tap system. Only beer and wine, no hard liquor. And it was open every day of the week, 4 o'clock to midnight. It was not that you had to have alcohol to have a good time. It was a place we wanted to have students get to know one another and hopefully have faculty and staff come and join us. There was some of us who spent a great deal of time there. There were some faculty members who were never in the pub during its entire existence of its life on campus. There were some problems. There were some students who had never had a beer in their life who unfortunately didn't know how to handle it down in the Pub. But that's life. Anywhere kids are going to drink. So one of my contentions was, hey if they are going to drink I'd rather have them drink where they can walk home then to... because when I was at Middlebury the drinking age as 21 and we had kids who went over to New York state which was 18 and every single year during my time at Middlebury at least one student was killed in a car accident coming back for New York state.
So I thought the Pub was a good thing. I thought it brought some togetherness on the campus. Certainly if you go back and ask kids, well alumni now, who were here from 68 to 84 and I think one of their first memories, non academic memories, would be the Pub.

When did they get rid of the pub, 84?

I n 1984, 1985 when the drinking age went to 20 then to 21 and we couldn't justify having a huge part of the campus for such a small segment because now we are back to just seniors, faculty, and staff, and grad students.

Do you remember and specific campus wide events, concerts, or performers?

Oh sure, yeah, Janice Joplin, James Taylor, j. Giles band, Peter Paul and Mary. Then again this was during that segment of time when concerts were the rage on college campuses. From 68 to

74, I mean our people that we had, I don think that they were the manes that they became but they were on their way up. So college campuses is where they got started. I remember one concert, James Taylor. We had two of them Sunday afternoon and Sunday night. Sunday afternoon, nothing happened, Sunday night all hell broke loose. And I attributed it to the fact that in the daytime its easy to spot people who are causing havoc where as in the nighttime sometimes its pretty hard to tell who is raising all the hell. Unfortunately drugs were a huge problem back then too. But that was the sign of the times and it wasn't just WPI it was everywhere it wasn't just Worcester tech it was everywhere.

How about the athletic program, can you talk a little about that?

Yeah did you know we had a strike once when they tried to do away with football?

No.

Anyone ever mention that to you?

No.

Sure. At Riley Commons. They were going to do away with football, I'm glad they didn't. its tough though. I mean football takes a lot of time, as does basketball, as does any other sport but I think football because of the notoriety of the name of the game. You have to hand it to them. These kids have played football and maintained their academic records. I don not know of too many I honestly cant think of any students who got away with not doing their academics in addition with playing football. You hear about all these horror stories of other schools where they carried on playing football and taking Phys. Ed. courses and basketweaving courses etc., etc., etc. Well here they couldn't do that. They were here as engineers an scientists and they had to do the work. I mean don't get me wrong they had some students who have failed out but I don't know of any students who was carried for 4 years doing Phys. Ed. courses and basketweaving courses and till playing football or hockey or basketball or any other sport you want, rugby which we didn't have then, lacrosse which we didn't have then. These take time. So people had to learn how to budget their time. I think that's one thing an engineering student, or most of them, learn to do very early is to budget their time.

Why do you think the attendance at athletic events is so much different now that it was.

I don't know its hard to say. I remember when we first came here all the administration and a lot of the teachers, we had the old gym upstairs, the circle up there, the whole circle was filled with the president, presidents wife dean of faculty, dean of students and their wives. We all went, we did that. The same thing with the frats, not so much the sororities because they didn't have the housing, but the frats, we used to have dinner and they used to invite faculty or staff etc. Sunday to their house for dinner. They don't do that anymore, I mean those kinds of thing have changed, not that it was necessary, but when you have that sociability in the no academic environment I thought it was worthwhile it thought it was good. But as to why, I'd been to football games this fall the night games we had and I think I saw one or two other of my colleges who were teaching and or administration. But in the old days you used to see them all. You'd see them at

homecoming but homecoming is different. They want to be there because a lot of alumni are going to say hey where the hell is so in so, their not here. They have their own lives I'm not saying they don't and they have their own interest I'm not saying hey shouldn't. But WPI supposedly gave them a job, gave them a place to bring up their families and you think that they would support some of the non-academic things that go on this campus. I'm sure there are some faculty members here that have never been to a football game, never been to a basketball game, never been to a MASQU play, never been to a glee club concert. And I think that they miss so much by not seeing what these kids can do other than academics. That's my own personal opinion. Because I used to spend too much time probably at these things because I hardly missed any of them. I tried not to miss any of them. Sometimes, lived out in West Boylston, I'd go back and forth three ties a day. Particularly when the Pub was in existence.

If you could pick one event that stands out in your mind what would it be?

Well there's more than one, there's two or three. Personally I think one of the nicest things that ever happened to me and my family was when I had been here for 25 years they put on a roast for me. This was unheard of at WPI. This was the first time they had ever done a roast. I was notorious for wearing any color tie with any color shirt with any color jacket with any color pants that I wanted to. So that meant a lot to me. When I retired they did that too but this was after my 25th year. So when I came from Boston that day there was a banner across Earle Bridge that said Bill Trask Day. Now I have to be honest I had heard that something was going on in the Pub. There was this alumnus there, class of 1971. Now this was 1983. Now I said "Usher what the hell are you doing here?" and he said "Well, I'm not the only one who's here." And that meant a lot to me. It was nice to think that and it wasn't just the kids it was some faculty and staff who would go and put in the time and effort to put into this thing. I have to laugh, at the dinner that night, 90% of the guys, students, that came to the dinner afterwards all wore plaid jackets, striped ties, striped shirts just to get back at me. I suppose the, I'm trying to think, the most momentous thing that happened on the campus probably was back in 63 when Kennedy was assassinated on Friday afternoon. I had been at a placement conference over in Pittsfield MA. Occurred in a the afternoon, but we had a teacher who the next day even though classes had been cancelled, ROTC was cancelled, he gave his class and he passes the work around. Remember we didn't have Internet. But he got the word around he said we are having class. I will expect you to be there. We are having a test. His biggest philosophy was even though the president of the United States had been assassinated life has to go on. Sometimes it's better that sitting around moping about something like this to focus your attention on something else. He had this class. Everybody wasn't happy about this but later they said maybe Bill was right. So I thin that in essence that was probably the most dramatic thing that happened while I was here.

Can you talk about the campus itself, renovations to it, new buildings added?

58, Boynton hall, alumni gym, Washburn, Higgings, Salisbury and that was it. Then Riley came, oh not Riley, I'm sorry Riley was here. Daniels came probably Harrington and the library. Olin and Goddard all came in the 60's and 70's. the townhouses across, Elbridge and Fuller and then the Stoddards and now the student center. Unfortunately we needed the student center long before we needed the other 2 buildings because the student center is really the focus of the campus. The students have really no on place to go for centralization except after Daniel's they

had the snackbar and the mailroom and lounge because normally we didn't have that kind of function. I'm glad we are getting the student center. Sorry it took so long to get one and I hope the kids take advantage of it because there are some people on this campus who don't even know each other. They sit in class and they never see then again. People come back for reunions and everyone is like, hey, nice to see you and all that stuff. I think engineering students are very different than liberal arts students. And it may be the nature of the academics but who knows but its interesting to come back and realize after 25 years the kids don't remember who sat next to them for 4 years and didn't know their name. So buildings have been a lot of additions on campus.

Do you think the interaction between the students and faculty has changed? And do you think that such activity as Internet activity has taken away from the interaction?

Sure, you can't help it. As we said earlier in the old days, you see would see all these people on campus, at functions, you would see at sports events. You just don't see that anymore. Everyone has their own little nitch and I think in a way it's gotten too bad. The faculty miss a lot of what students can do and I think students miss a lot of the interaction they could get if they would only relate. Harry Thompson, how well do you know of Harry as an ATO.

Pretty well.

Every frat, every sorority should have someone like that but they don't. And so you know harry different than other people know him because you are exposed to them. If more faculty and students could interact in this relationship it would be really great. But they don't. They've got their life, their family and their interests against students over here. I'll go back to Dean Grogan, I call him the grandfather of the plan, because he's the one who really got us going along. But he was a member of phi kappa theta. And every single member of phi kappa theta knew Dean Grogan and Dean Grogan knew them. The same with ATO and Harry Thompson, Phi Gamma and Walter Hathaway. And I think it means a lot to these alumni when they come back to make sure these guys in their respective houses know them. And I'm sure a lot of ATO guys are happy to know you know Harry T. and would be very upset if they didn't know if you guys just lost it completely.

Do you think the advising program is working to the extent it should be?

It's hard to say. I used to be advisor. You usually had to be a faculty member to be an advisor but because there weren't enough faculty so they asked us to be advisors. I'm a history major, not here for science. I can't balance my checkbook but kids loved me as a advisor. Because I would never question them as long as they meant the degree requirements. I had kids stay with me until they graduated. At least I was around. They could find me. I was in the office every single day I would stay after hours. My only hassle was with a freshman, get your damn Phys. Ed. requirements our of the way. You know you have the requirements. When it came to academic courses, it was no problem. My office catered to the seniors to look for jobs. So whenever a fresh or soph. or junior would come and say I got problem. Should I take this course or that course? Hey Tom! Come over here, would you help him out? Which course do you take first which one is the one to have? And one of the things I probably shouldn't have done but did do was I would

hear horror stories about teacher so I would encourage my advisees to get away from taking this class. Or wait until it is taught by somebody else. I think advising, the kids who do their MQP, IQP or their faculty advisor are very, very fortunate. Remember in the old days, you used to have a competency exam and you advisor, if this is a smart kid, you would get the toughest teacher to be your advisor, because your advisor would not be on the comp. If you were smart and you knew the system, you would get Joe Smith, who was screwing kids when it came to comps, everyone would want Joe smith as an advisor. We had some people who would take the comps seven times. We had one kid who took it seven times before he passed it. There was this one girl who was a Chem. Eng. with my son. She failed it. Sometimes you would take it in December, then in March but if you didn't take it there was no way you would graduate by June with your class. This poor girl failed it the first time then in March failed it again her mother was devastated more than her daughter. So in June her mother spent the whole day lighting candles at church. She passed the third time. We have a couple of kids who went down the tubes because they failed the comp. This other kid, he was another Chem. Eng., same class as my son; he took the comp in December, his first time. They all came up to the office, I passed! I passed! Except for poor Jimmy. They were having a party that night. So my son said hey dad, I know you are going out with us anyway, but watch Jimmy. He really was awfully bent. It was weird because at first he was happy and he would be down the drain. He wanted to be happy because his buddies past but he was really unhappy he flunked. The comp caused a lot of dramatic things, three days of it. You don't know what they are going to ask you. You are on your own. Not like projects where you worked together.

Do you think teaching is the first priority of teachers or is it striving to reach tenure?

All teachers want tenure. I think they all know they need to be good teachers. Research has a lot to do with tenure. But I don't think if you don't publish something you want to get tenure. Not here. I think a lot of the teachers have gained tenure, but through their academic teaching as much as for what research they may or may not have done. I'm sure they have all written books but how May times can you write a triangle is three sided? I'd like to think that they got it because of their involvement with the students and teaching both undergraduates and graduates.

Do you know of any WPI alumni who had a significant effect on science and technology?

Sure, vice president, in fact, president now for the North American sales for general motors. Ron Zerol who graduated in 1971. His first job was Clairol. Went to Clairol until 1977. He left Clairol and ended up in Australia. Then he went to Bausch and Lomb as president as now as North American sales for all of North America. They were or are both of these people were trustees. Dave ended up as a three star general probably the youngest three star generals that we know of and Roswell was just as good as they are. We have to keep advancing. If we don't we are going to be in trouble.

As a freshmen WPI was ranked by Newsweek as one of the top 50 schools in the nation.

You mean US News and World Reports?

Yes.

And this time we weren't mentioned at all?

Yes.

They have done some readjusting of their, they've added universities, they've changed the format of how they did it and the qualities that they used to have. I thought we were down in the bottom second quarter. Now I have the latest one, we weren't in there at all. I'm sure that if we had been I would have seen it. I think that they have revamped the way they classify us as a university we are not a university. A university is a conglomerate of colleges. We are just one college. So I think that may be one of the reasons and the other may be that we didn't answer the polls. People don't bother to respond to some of these things. If they think things are going to look bad they don't respond to it.

So you think its them not us?

I think its them not us.

Did you know Carl Gunnard Johnson?

Yes I did. Carl was and ME. Interesting story about CGJ. He never graduated from high school. He started over here in founders and became a full professor. That's hard to do without even a high school diploma. Today they couldn't do it. Back then they could do it. Very open and very kind. We used to have the faculty go to lunch and CGJ came whenever he could. He wanted to help his boys he wanted to help his kids. He was a good man.

Appendix I - Transcript of Professor Vassallo

What brought you to WPI, what year did you come in, and what were you brought in for?

Well I came here in 1982, I had just finished an MBA. I worked for a pharmaceutical company and I had taken an MBA because I thought it was necessary for my job. The people here at WPI were looking for people to teach in the management department who had already had experience in business rather than right out of the Ph.D. program. They offered me a job; I accepted. They sent me off for a year to Sloan. And I joined the faculty here in 1982, while going into Sloan every day during that year.

How would you describe the academic society here at WPI in terms of the professors and their society when you came here – the ratio of men to women?

Oh, oh… the ratio of men to women was much higher there in 82 than it is now. I believe I was the only woman in the department at the time. But when I taught here part time in 1967, when I was a faculty member at Clark teaching biology, I came here to teach a course in molecular biology out of the Chemistry Department. WPI didn't have a biology department. In that case, there was one other female professor who was a tenure-track in chemistry, and then I was the only other one in 1967. So, it's been a big change in those number of years.

What type of change have you noticed in the interactions between professors and students? Some professors have commented that there used to be more interaction and with the school changing…

Well I was never here when there was the Friday night get-togethers at Gompei's. The drinking age at that time was 18. And therefore just about all of the students here would have passed their 18th birthday and it was possible for them to indeed socialize with the professors. And my understanding is that there was a great deal of this camaraderie particularly on Friday night over at Gompei's. Of course, shortly after I came here, the drinking age was raised to 21, and you still had the camaraderie, but if one is going to have it over a beer, that isn't going to happen.

Do you have any thoughts on the interactions between departments here? AT one point, when the plan was brought in, there was the idea of completely eliminating the departments. (Exactly.) What kind of interaction do you see between professors in different departments? How close-knit do you see the society of professors here being at WPI, compared to other schools you've been at, and compared to general?

Actually, the camaraderie here takes several forms. There are a number of professors who collaborate scientifically. So for example, Civil and Fire Protection have some very close relationships. We have a professor in our department who is very closely aligned with Civil, and there's a great scientific collaboration. There also is very much of a personal collaboration. For example, we've been in this building for almost 20 years, and I have very close relationships with mechanical engineers in this building. Also, the faculty club does make for a lot of camaraderie across the lunch hour, at which time, I usually have lunch with a humanities

professor, or a biomedical professor, possibly someone from civil. So I find that a very nice cross-fertilization with people who have very high levels of interest in each other's discipline, and each other, period.

Let's touch some on administration. Through the period that you've been here, have you noticed a large change in administration – how the school's been run by various presidents and administrative bodies?

Well I think every administrator, particularly in the upper level, brings their own signature to a place. I think that the previous administration – the CEO, the president – was very, very astute in the financial sense. There was an emphasis on the financial aspects of the institution. And he set the school on a vector of improving the endowment. I think that the present administration, while that is extremely important, I think there also is a warmth in the present administration, that indeed transcends the financial issue.

Being part of the Department of Management, one of the goals of the department that we're aware of is the management of technology. Would you say that technology is integrated into the WPI curriculum, and has really become part of WPI's core preparation for people going out into business?

The management of technology has always been a thrust of the Management Department, but of course it's the level of sophistication of that differs. If one looks at older literature, one sees "Management of Technology" on our brochures. I think that there was always a question "What does that mean?" Does it mean that you manage organizations in a technological manner? Do you manage technological organizations? What did it mean? I think that a clarification has come about by saying that it means all of those things, so that you may use technology to manage, for example, a law firm that is using technological methods. On the other hand, you might indeed train someone to manage a technological organization whose very heart and sole is technology. So it seems to me that it encompasses much more than just straight "Do we use computers? Do we use PowerPoint? Do we use additions – things that aid us – in turning out people who are technologically sophisticated?

Dealing with the general society here at WPI... WPI has always been a very technical society. The university has evolved more into a more of a university now with broadening, but many would say it's still technical in that everyone here is still kind of an engineer. How do you see the "engineer" coming through in the general society here at WPI?

I think that it has moved – transmuted – from a totally engineering environment, but it was always "Engineering and Science." And still, Engineering and SCIENCE. For me, I see it as the backbone of this institution. I think yes, we have added humanities majors, which we did not really have before. We have management majors, but even our management is the management of technology. So the spine, the backbone, is scientific. And even in a number of, for example, our courses in management, they are done on a scientific basis. I teach organizational behavior as a hypothesis-testing course. So I call it organizational science, because I find that it has a scientific thrust to it – a scientific vector. So, I think that's one of our strengths. I think that to

bring in all of the others under an umbrella is a wonderful thing, but I think that having the backbone – the scientific backbone – is a great strength for a technological institution.

How have you seen the social structure change at WPI in terms of students? Have you noticed any change... now I know that you've only been here full-time since the early 80's, but have you noticed any change with society, students, participation in extracurricular activities, or even faculty being involved in student lives more?

Well of course when I came here first in 1967 there were no women on campus, so therefore in terms of a social structure, the WPI male student had to look elsewhere for female companionship. Of course now, there is an integrated form of the females and males here. We have done studies about how the females and the males feel about the social life. It's interesting that both the females and the males don't feel that they have a lack of social life. They are VERY interested in the campus center. That from both genders seemed to be the most important thing. But whereas it might have been predicted that females would feel that there was some bias against them. That did not come out in our survey. We did an IQP on it. And males felt more cheated because there weren't enough females to go around. So the social structure, I see evolving as a very warm and friendly and more social relationships between men and women. Also, I think that one of our treasures is the drama group. I've done a lot of work with them. Whenever they need a little old lady or individual that can be a queen – an old queen – then indeed I get a role in some of the MASQUE productions. And what I find there is that the individuals are Renaissance people. The engineers are sitting there studying lines from Henry the Fifth. The interaction at that level is just a wonderful thing to watch, because it's not only scientific; it's looking at something beyond the sciences – the humanities, the social sciences – and having interactions on those levels, not just radical pi.

Do you think there's sometimes a conflict between professors doing research and a push for a weight in publications, and the best interest of the students – the advising and personal attention to students?

The potential always exists that indeed something – whether it is research or some other interest – might be considered to divert a professor from the attention of the student. On the other hand, I look at the best teachers and the best professors, and the students say, "I was always able to get to see them; always talk to them." These are the really great teachers that indeed, even though they're doing their research... and we do have some professors that have received both teacher of the year and researcher of the year. And those of course are consummate in my viewpoint. But the students say, "I can get to see that person. I can get to talk to them." Does the potential exist? Yes. Is there a potential for a squeeze? Yes. Of course.

Do you think that the Plan has succeeded, and how well do you think the Plan has been carried out since its implementation?

Let's pull those two things apart. I have met a number of people who know the school by reputation, and I can remember sitting at Riverside Park while the kids were on the Ferris wheels and so forth, and an individual who was a journalist from Boston. And he said, "WPI? Your students because of your project system hit the ground running. They already know how to work

with people. They already know how to plan and attack a problem." So as we go across the country and meet people who know our school, then they convey, by reputation, they indicate that the project system – the Plan – is one of our real strong points. Now, how well has it been carried out? I think it's been carried out extremely well. I think that there is always a concern that there will always be (and this is not right or wrong, it just is) individuals who want absolutely no change whatsoever. There were people who were very disturbed when the competency had to be phased out, because we could not, in my understanding, we could not demonstrate to accrediting bodies that every student, for example, had had a particular course, had covered that particular material. The competency could not be all-enveloping for that. On the other hand, as a professor, when you sat at a very well-done competency, the interaction with students, the minds, the levels to which it could go, was so much more than a piece of paper, particularly a multiple choice or a short essay. To be able to really interact, really interact with a student's mind, that was a beautiful thing. It had to go because, as I said, you couldn't verify that every student had a similar experience, had taken the same courses, etc. So if you couldn't give a Good Housekeeping seal of approval to a student, then indeed you need the records, and I'm sure that there are people that are still sad that the competency is gone. We now have distribution requirements. People came in here before, there were no distribution requirements and certainly were no prerequisites of any kind. That is, you had to take some courses; if you were smart you indeed took the courses that you were going to be examined on; but there weren't those requirements. And I'm sure that people see that as diluting it. On the other hand, it seems to me that any form of education has to be capable of change, capable of growth. See I'm a biologist by training, and to a biologist, change is not a fact of life; it IS life. So if an object isn't changing, it isn't alive. And whether the changes are great or small, I look upon change as a very, very normal thing, and indeed it tells you that the system's alive.

Continuing with change, how do you think that the new academic building, how do you think that the new academic building, and particularly the new campus center, will change the campus? Do you see any change, I'd say more with the new campus center...

Oh the campus center... When I first came here, I can remember having one of these faculty luncheons with the president, and there were a number of us saying to the President what we needed. Now many, many, many years ago, when I went to college, I was on the swimming team. For me, the swimming pool was an absolute necessity – a really good swimming pool. Now I understand that those would be future dreams, but the campus center, I think, is going to be an incredible stimulus to socialization on this campus. Oh I think that to have people passing in and out, and meeting, and having meetings there, and athletics... Oh I see the campus center as the single most important socializing element that I've seen since I've been here.

WPI's ranking... Now people who know of WPI know it's a great school – know it has a great reputation. Now two years ago, WPI was ranking in the top fifty; now it's not in the top fifty. How do you see WPI's overall image? Do you think it's on the right track? Do you think it needs to be more visible – more marketed?

When I first came here, WPI's ranking was in the Small College, and of course it was always number one in regional schools in New England – regional schools. When it became part of the national ranking, sometimes the top fifty, sometime fifty fifty-one, you're playing in a different

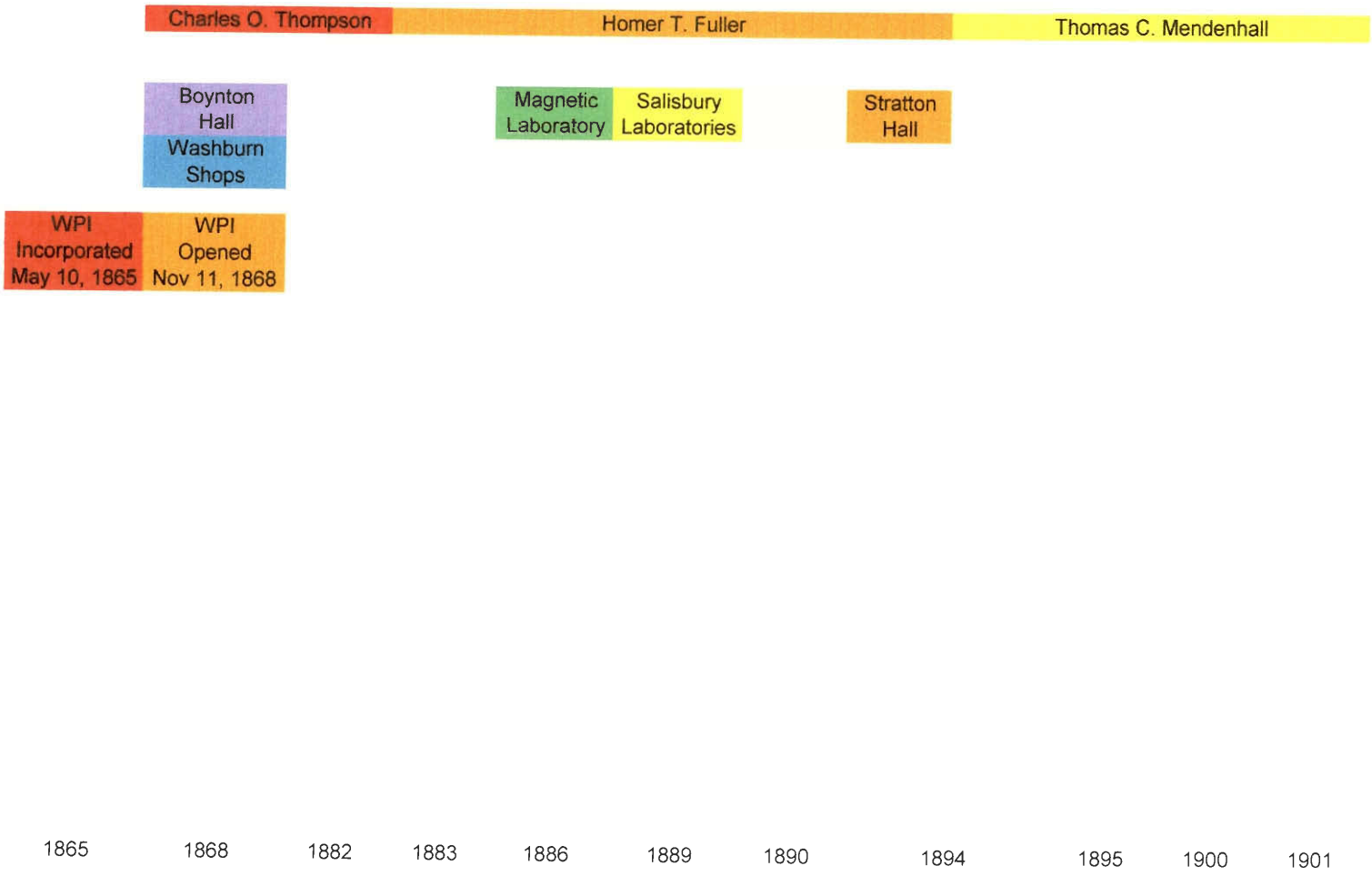
ballgame. The perception then is, being in the top fifty or being close to the top fifty is in and of itself quite an accomplishment, and we forget that. And indeed because we're not in the top one, the top echelon – first place – we forget that being in the top fifty of colleges or universities is quite an accomplishment. But I also think that WPI is much better – a much better place – than it is perceived. People who know it, KNOW IT. And for them, they know the caliber of the teachers, the students, and the place. Yes, do we need more marketing? Yes, but I don't have the answer as to what form that would take. Should it take a billboard? Should it take radio ads? Should it take TV? Sometimes these things are slow ramp functions rather than step systems. But one of the ways one gets to be better known is one's alumni spread out and carry the message elsewhere. For years, 80% of WPI alumni lived in the Worcester County area or Massachusetts. With electronic firms or technology firms, now they're going to Silicon Valley and they're going to Arizona, etc., and the message gets carried. So there needs to be a lot of missionary work. I think there needs to be a lot of missionary work about what the message is here.

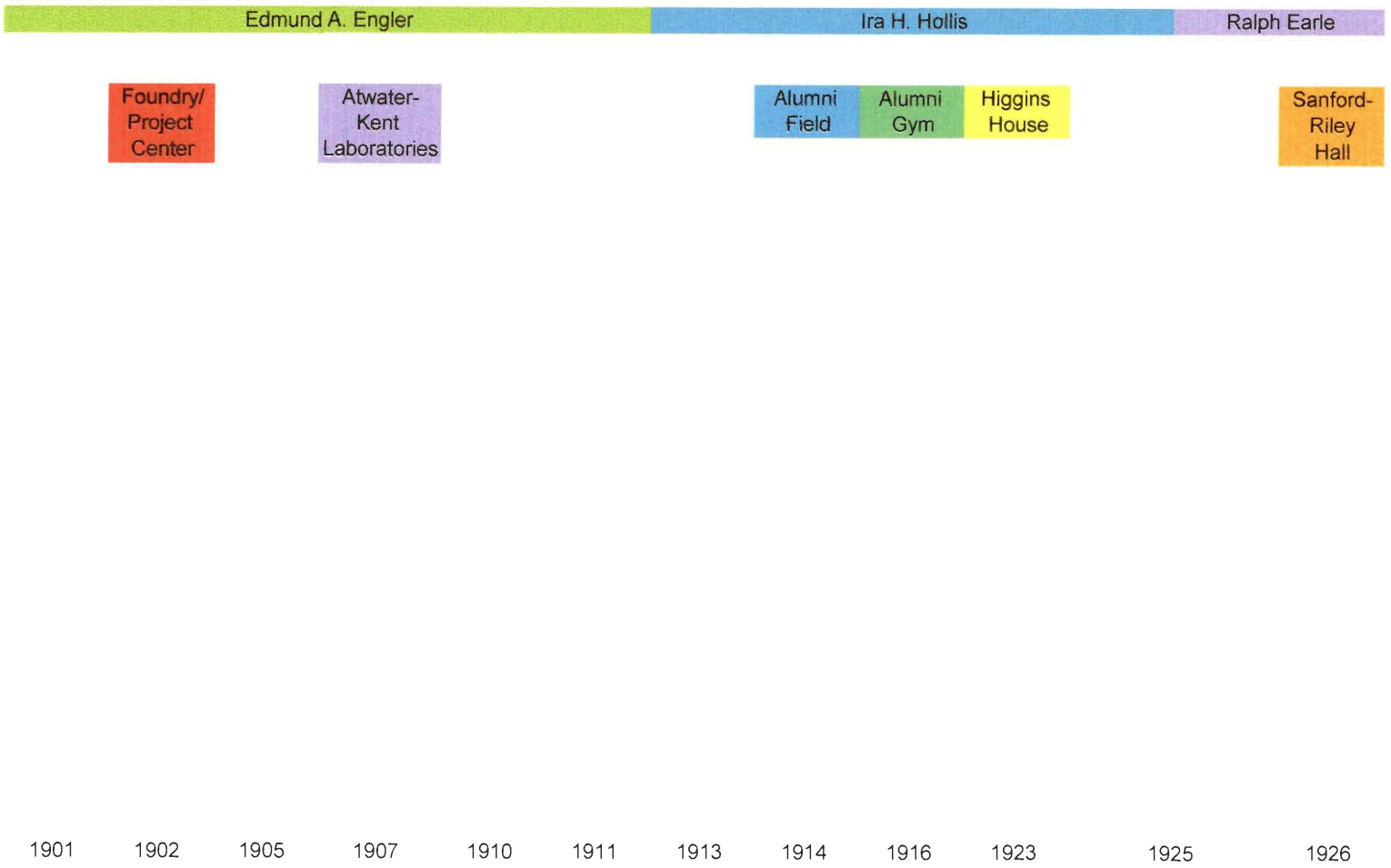
Do you have anything else to add?

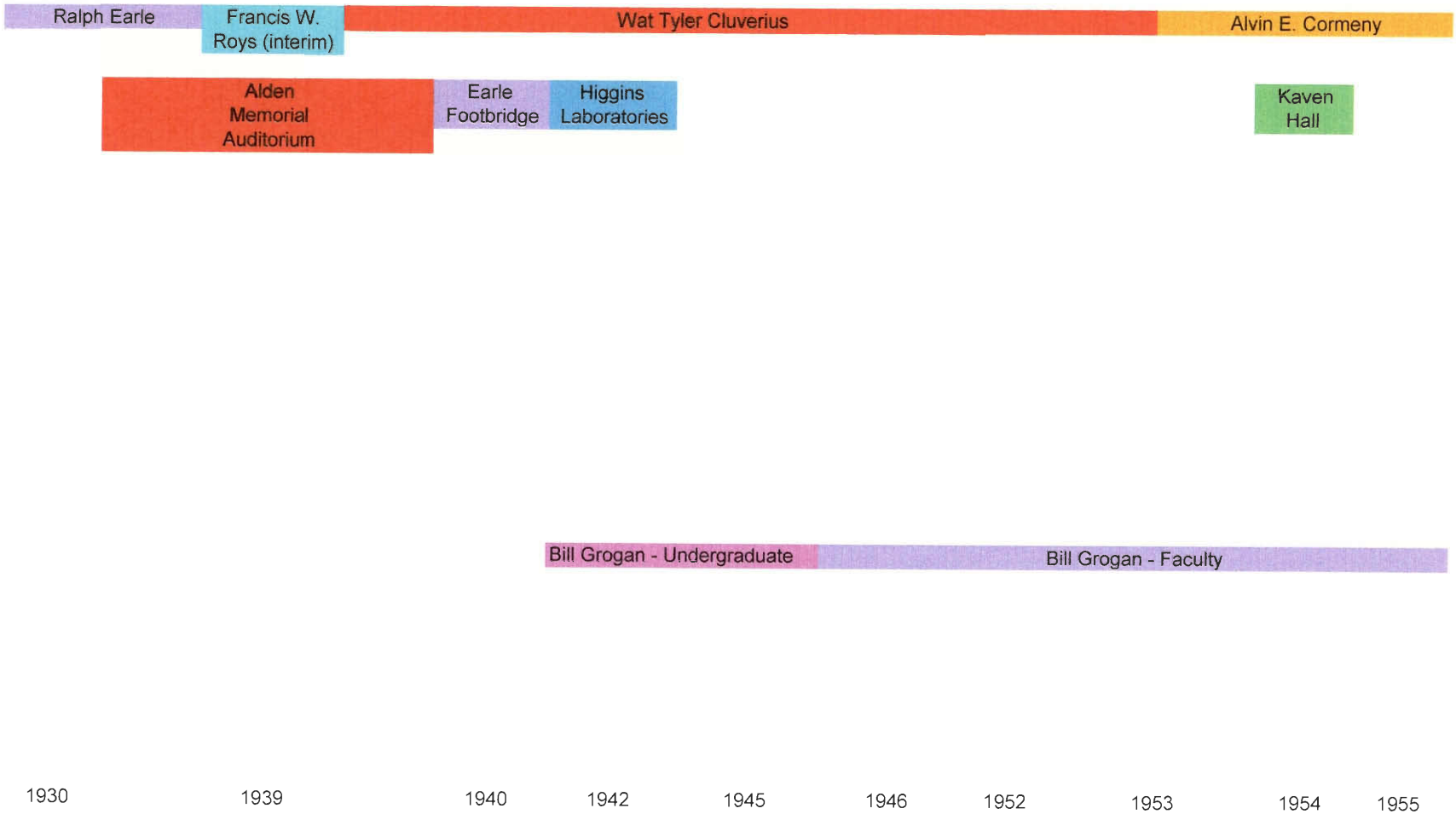
When I came here, I had the opportunity to go to another institution in the area etc., and I chose this place to come. It matched my scientific background, and yet in an area in which we think of the management of technology, and yet WPI… WPI is a home to me now.

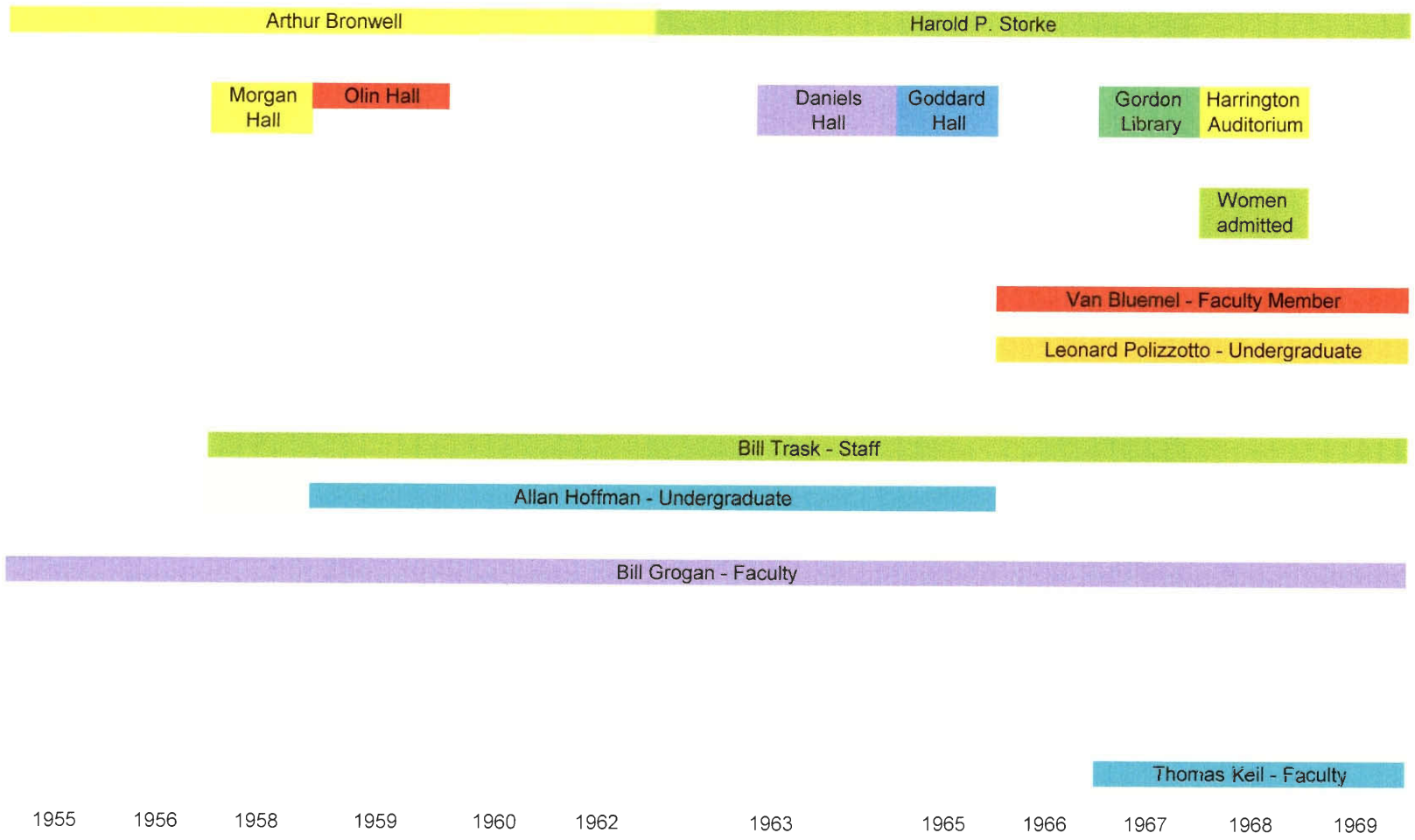
Appendix J - Timeline of WPI

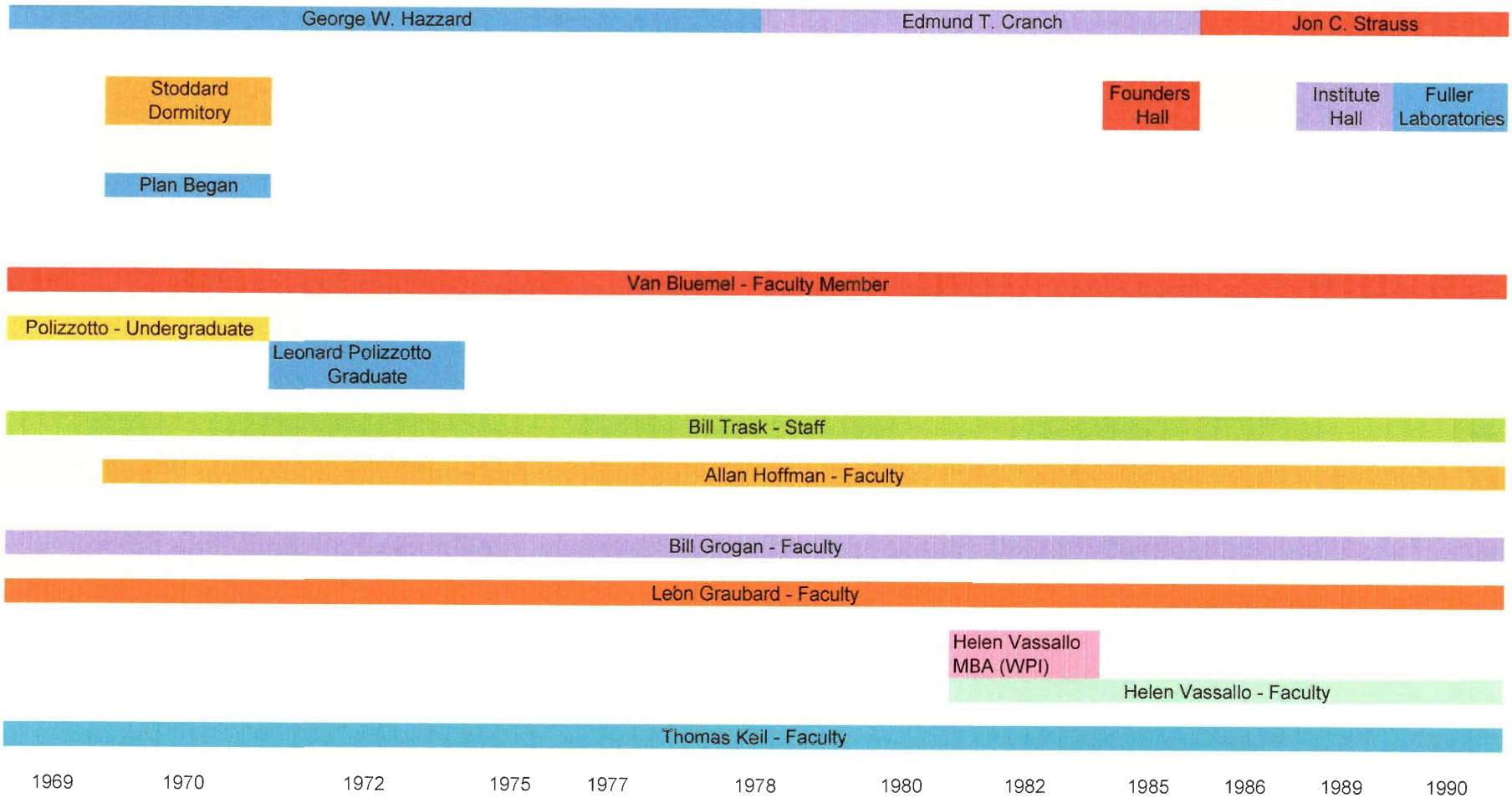
This timeline of WPI and its respective dates were obtained from literature and interviews conducted throughout our IQP.


Charles O. Thompson
Homer T. Fuller
Thomas C. Mendenhall
Boynton Hall
Washburn Shops
Magnetic Laboratory
Salisbury Laboratories
Stratton Hall
WPI Incorporated May 10, 1865
WPI Opened Nov 11, 1868
1865
1868
1882
1883
1886
1889
1890
1894
1895
1900
1901


Edmund A. Engler
Ira H. Hollis
Ralph Earle
Foundry/ Project Center
Atwater-Kent Laboratories
Alumni Field
Alumni Gym
Higgins House
Sanford-Riley Hall
1901
1902
1905
1907
1910
1911
1913
1914
1916
1923
1925
1926


Ralph Earle
Francis W. Roys (interim)
Wat Tyler Cluverius
Alvin E. Cormeny
Alden Memorial Auditorium
Earle Footbridge
Higgins Laboratories
Kaven Hall
Bill Grogan - Undergraduate
Bill Grogan - Faculty
1930
1939
1940
1942
1945
1946
1952
1953
1954
1955


Arthur Bronwell
Harold P. Storke
Morgan Hall
Olin Hall
Daniels Hall
Goddard Hall
Gordon Library
Harrington Auditorium
Women admitted
Van Bluemel - Faculty Member
Leonard Polizzotto - Undergraduate
Bill Trask - Staff
Allan Hoffman - Undergraduate
Bill Grogan - Faculty
Thomas Keil - Faculty
1955
1956
1958
1959
1960
1962
1963
1965
1966
1967
1968
1969


George W. Hazzard
Edmund T. Cranch
Jon C. Strauss
Stoddard Dormitory
Founders Hall
Institute Hall
Fuller Laboratories
Plan Began
Van Bluemel - Faculty Member
Polizzotto - Undergraduate
Leonard Polizzotto Graduate
Bill Trask - Staff
Allan Hoffman - Faculty
Bill Grogan - Faculty
Leon Graubard - Faculty
Helen Vassallo MBA (WPI)
Helen Vassallo - Faculty
Thomas Keil - Faculty
1969
1970
1972
1975
1977
1978
1980
1982
1985
1986
1989
1990


Jon C. Strauss
Jon Lott Brown (interim)
Edward A. Parrish
Van Bluemel - Faculty Member
Leonard Polizzotto
Faculty
Bill Trask - Staff
Allan Hoffman - Faculty
Bill Grogan - Faculty
Leon Graubard - Faculty
Helen Vassallo - Faculty
Thomas Keil - Faculty
1992
1994
1995
1996
1999
2000