

AC 2009-1165: INCORPORATING ETHICS DISCUSSION INTO AN ENGINEERING TECHNOLOGY COURSE

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Incorporating Incorporating Ethics Discussion into an Engineering Technology Course

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Abstract

TAC-ABET accreditation requires that each program develop program outcomes that embrace ABET criteria 2a to k. Several of those, such as diversity, internationalization, and ethics, are often referred to as the soft skills. Generally students' exposure to these items is through their elective (or required) courses in the humanities and social sciences. However, ABET accreditation also requires that the achievement of the outcomes be assessed and evaluated. Obtaining direct evidence of achievement of the outcomes by the students can be problematical as the other departments may not be doing assessment. Even if they are, the technology students in a humanities course are probably just a small fraction of the course enrollment, so it may be difficult to obtain information about their performance. While we rely on other departments to provide the bulk of the students' exposure to the soft skills, we have tried to incorporate some material into the technical curriculum. This allows us to obtain some direct assessment of their attitudes and performance. This paper describes the incorporation of ethics material into a EET electric power course. The students were required to read a case study related to the Enron collapse and to answer questions concerning the ethics of the individuals involved. The answers were brought to class for discussion along with other ethical considerations. Student attitudes toward ethics were surveyed before and after the discussion and results are presented in the paper.

Introduction

Like the Engineering Accreditation Commission (EAC), the Technology Accreditation Commission (TAC) of ABET has moved to outcomes-based accreditation of engineering and technology programs, via a criteria set known as TC2K (Technology Criteria 2000). The TC2K criteria require that every accredited program develop a set of program outcomes that insure students demonstrate the achievement of eleven outcomes, the so-called "a" to "k" list. Table 1 shows a listing of the "a" to "k" outcomes for TC2K. With the change from previous accreditation criteria, ABET has gone away from the so-called "bean counting" that required certain numbers of credit hours in various categories, such as mathematics, sciences, social sciences, and humanities. Instead each program must evaluate and assess its curriculum on a continuous basis to show that graduates are demonstrating the required outcomes.

Looking at the ABET required outcomes, it is clear that a number of them are not technical and they are sometimes referred to as "soft skills." Among these soft skills are ethics (outcome "i"), teamwork ("e"), global perspectives ("j"), diversity ("j"), communications ("g"), and life-long learning ("h"). The focus of this paper is the ethics requirement.

Table 1: TAC TC2K Required Outcomes (Criterion 3)

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| <ol style="list-style-type: none">a. an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines,b. an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology,c. an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes,d. an ability to apply creativity in the design of systems, components or processes appropriate to program objectives,e. an ability to function effectively on teams,f. an ability to identify, analyze and solve technical problems,g. an ability to communicate effectively,h. a recognition of the need for, and an ability to engage in lifelong learning,i. an ability to understand professional, ethical and social responsibilities,j. a respect for diversity and a knowledge of contemporary professional, societal and global issues,k. a commitment to quality, timeliness, and continuous improvement. |
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The soft skills, including ethics, are generally learned by the students in their non-engineering technology courses; however, it is the responsibility of the engineering technology faculty to assess and evaluate the student learning in those areas. At many schools, there are a vast number of courses that students may take to fill their humanities and social science electives. One alternative would be to require certain courses that cover the desired materials, but that defeats some of the advantages of attending a large school, specifically the ability to tailor a program to one's interests. In addition, there is the problem of getting classroom assessment from faculty who are not in the engineering or technology department that is being accredited. In view of these problems, I believe that the technical courses in the curriculum should contribute to the teaching and assessment of the soft-skills. In particular, some of these topics can be taught using material that is germane to the technical course.

I teach a course titled, "Electrical Power and Controls," in the Electrical Engineering Technology Program. It is a fourth-semester course and is required for all students in the program. This course has been described previously¹, but it includes topics such as single and three-phase power, power quality, basic magnetics, transformers, induction motors, relay controls, motor protection and feeders, and programmable logic controllers. In looking to find a way to contribute to the department's assessment process I wanted to find something related to the course topics. The first area that came to mind was ethics, because unfortunately one didn't have to look very far to find ethical misconduct in the electric power business. Although it was largely brought on by a poorly designed deregulation process, the California Energy crisis was certainly exacerbated by the actions of some of the energy providers. Of course one name that came up frequently in articles discussing the California crisis was Enron, which later collapsed as a result of severe ethical shortcomings and financial chicanery, costing investors some \$100 billion. So I concluded that ethics was an area that could be discussed in the context of the energy business.

Having chosen to emphasize ethics in the course, I was faced with the question of how to include them. I decided that although the California and Enron situations were extensively reported in newspapers and magazines, it was unlikely that my students (most of whom are 20-21 years old) would have any detailed knowledge of the specifics. This is particularly true as the events

become more distant in time. To provide background information for the students, I developed a case study that could form the basis for class discussion of ethical misconduct in a large corporation. Appendix A to this paper contains the Enron case study. Initially, one 50-minute class period was devoted to the topic, but after several offerings of the course I have found it desirable to increase the coverage to at least a class and a half. In the remainder of the paper, I will describe how the case study was used in class.

Ethics Case Study

Prior to the class, I have the students answer several questions, anonymously. The responses to these questions were collected via electronic responders that are used as part of the course.² These questions were designed to show the students that unethical behavior is everywhere. Some results over several offerings of the course are shown in Table 2 and will be discussed later.

Question	Fa 06	Fa 07	Sp 08	Fa 08	Sp 09
1. Do you consider yourself to be an ethical person?	N/A	N/A	N/A	92%	87%
2. Do you think you would report ethical violations at a company where you were employed?	71%	96%	83%	92%	74%
3. Have you ever downloaded music without buying the CD?	91%	92%	93%	88%	76%
4. Have you ever downloaded a movie?	74%	81%	71%	81%	70%
5. Cheated on an exam or quiz?	29%	8%	14%	12%	15%
6. Would you report someone you knew was cheating?	29%	31%	44%	19%	24%

I begin the class with a discussion of what ethics is. Two dictionary definitions are:

1. *The study of the general nature of morals and the specific moral choices an individual makes in relating to others*
2. *The rules or standards of conduct governing the members of a profession.*

I point out to the students that engineering ethics is not just a checklist. Engineers apply their technical and profession judgement to projects that may be large and expensive, high risk, and affect the public safety. While some choices are black and white, many are “gray.” As a result sometimes the choice is between two “right” solutions and sometimes it is the “lesser of two evils.” Failing to act ethically can have legal and disciplinary consequences, such as the loss of

personal or corporate reputation, loss of a job, failure of a company, or personnel injuries and property damage.

This leads into a discussion of professional codes of ethics, in particular the IEEE (Institute of Electrical and Electronic Engineers) Code of Ethics. I provide the students with some background, such as the first AIEE (American Institute of Electrical Engineers) Code of Ethics was published in 1906, that the IEEE has had one since it was formed in 1963, and that the latest revision was in 2006. The most recent revision was a direct result of the Enron situation. In particular, the word engineering was removed from the phrase, “to accept responsibility in making *engineering* decisions consistent with the safety, health, and welfare of the public.” During the discussion of the provisions of the IEEE Code, we discuss how they were apparently violated by employees of Enron and how that led to financial disaster for Enron, its employees, and many others.

I also provided them with copies of the NSPE (National Society of Professional Engineers) Engineers’ Creed as another example of a Code of Ethics and the class discussed how those provisions were violated at Enron. In particular, some of the trading schemes that Enron used were described and discussed. I pointed out that some of the work to implement those schemes had to involve engineers and programmers. During the past year I added a case study from the NSPE for the students to discuss. This involved a graduating student who planned to work for one company but decided to take a recruiting visit and ski trip to another company. Many students saw nothing wrong with that and were surprised that the Professional Engineer Chapter stated that the student was unethical to accept the invitation to interview with the second company.

Another thing that surprised the students was that Enron had its own code of ethics. Some of its highlights were:

- Issued July 2000, 64 pages
- Nothing detrimental to company allowed
- No separate financial gain for employee
- Truthful advertising and promotion
- No favors given for bribes, kick backs, gifts
- No libel or slander about company, people
- Honest relations with customers, public

Of course many of these provisions were violated by various individuals at Enron. In addition, I point out that the length of the document probably prevented most employees from being familiar with it.

As shown by the response to the second question in Table 2, a very large percentage of students indicate they would report ethical violations at a company where they worked. After showing them their results, I showed results (Figure 1) from a national survey.⁴ These results indicate that people were more willing to report ethics violations following the Enron collapse in 2001 and passage of the Sarbanes-Oxley Act in 2002. However, the percentage of people not reporting

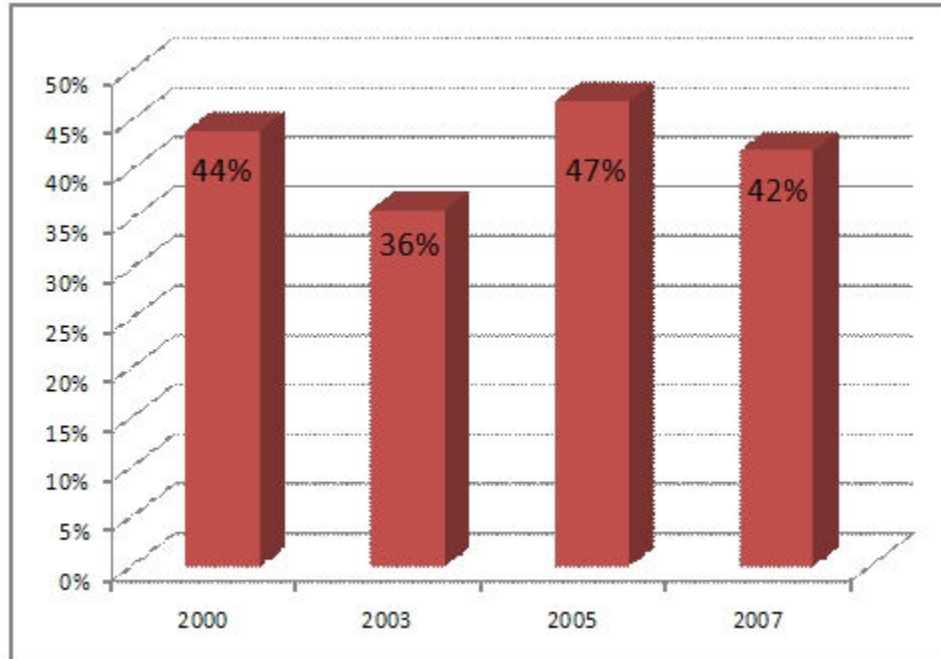


Figure 1: Percentage of employees not reporting observed misconduct

misconduct quickly returned to its previous levels in 2005 and 2007.

We discuss some of the reasons people might not report ethics violations and of course fear of retribution was the top reason cited. Other reasons were a perception that nothing would be done or that the reporting wouldn't be kept confidential.

The other questions in Table 1 were designed to demonstrate to the students that everyone has ethical issues and that how you deal with them may depend on your personal situation. Question 2 in Table 1 shows that virtually all students have downloaded music without paying—the percentage dropped a bit in the Fall 2008 class. I think that may be a result of the well-publicized lawsuits by the Recording Industry Association of America (RIAA) against several students on campus. Additionally, question 3 shows that almost a like percentage have downloaded movies. Question 4 shows that some students will admit (anonymously) to cheating. When first used, the question read as shown, but in later classes it was changed to “cheated on an ECET exam or quiz.” Finally, question 5 shows that typically only a small percentage of students would turn in someone they knew was cheating. I point out to the students the disparity between the results of questions 1 and 5.

I conclude the class with information about what is required by Sarbanes-Oxley and what should be included in a comprehensive ethics and compliance program. In addition, I show students two possible ways of looking at ethical problems. The first, “Seven Steps to an Ethical Decision,” is used by a number of companies.⁵ The individual should consider: is the action legal; is it wrong; if it isn't black and white, how would it look in the newspaper; does the action violate company rules; and will you feel bad about doing it. After considering those, ask someone for guidance

and keep asking until you get an answer. The second is suggested by the NSPE and is known as the “P-L-U-S” Framework. The individual should consider whether the action is consistent with: Policy/Regulations, Laws/Regulations, Universal societal/organizational values, and self/personal values.

Assessment

To demonstrate that students have a basic understanding of the importance of ethics, I used several methods. At the end of the class session, I asked students to write down what were the two most important things they learned in the class. A number of students were surprised at how wide spread the misconduct was at Enron. Several noted that it involved financial people and engineers; one student perceptibly noted, “It takes a lot of people looking the other way for something like the Enron scandal to occur.” Several indicated that they really hadn’t considered small decisions, such as downloading music, from an ethical standpoint before or that it is easy to break a code of ethics if excuses are made.

I also asked an essay question on a midterm exam. Initially, that question involved discussed elements of the IEEE Code of Ethics, but during the last year, I have asked the students to discuss another NSPE case study. I typically allocate 10 points to the essay question and the average score on it is generally between 9 and 9.5

I also used survey questions from a published paper that provided results of students’ attitudes towards ethics issues⁶. The students were asked to anonymously respond to sixteen questions from the paper (Table 3) following the discussion of the Enron scandal and its effects on the energy business. The responses were Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). Table 3 shows weighted averages of the responses for three semesters. With these results, I can compare my students attitudes to the students reported in the paper and potentially include this as evidence for ABET. By way of note, most of the results from my students were similar to the published results, although my students generally scored a bit lower regarding the importance of ethics than the reported results. I attribute this to the fact that my students were surveyed after a 50 to 75 minute class, while the reported groups participated in a six-week program, involving a three-hour case study and three writing assignments.

Finally, near the end of the semester, I gave a survey to get the students’ opinion of whether the outcomes of the course had been accomplished. Answers were again on a scale of 1 to 5 with 1 indicating strongly disagree and 5 indicating strongly agree. The response to the question, “The material covered in the ethics case study discussion helped me to understand the ethical responsibilities of a career in engineering technology,” has yielded an average score over 4.0 each semester, indicating the students did believe the class discussion was useful.

Table 3: Results of student responses to survey questions concerning ethics				
Semester:	Fa06	Fa07	Fa08	Sp 09
Number of Students:	35	28	27	45
1. It is important for me to receive some formal ethics training during my college career	3.82	3.77	3.35	3.67
2. It is important for engineers to be aware they may encounter ethical conflicts in the workplace	4.29	4.12	3.88	4.24
3. It is important for engineers to actively anticipate potential ethical conflicts	3.97	3.62	3.81	3.66
4. I would benefit from training in ethics	3.57	3.54	3.31	3.29
5. I will encounter ethical dilemmas in my career.	4.06	4.19	4.27	4.02
6. I have encountered ethical dilemmas in school or at work	4.06	3.88	4.27	3.98
7. If a person clearly understands ethical standards, then solutions to most ethical conflicts can be readily ascertained	3.14	3.33	3.31	3.45
8. There is often a right way and a wrong way to resolve an ethical conflict	3.06	3.36	3.46	3.39
9. As long as I do my job the way it's supposed to be done, I won't experience ethical conflicts	2.43	1.80	2.00	2.23
10. One's religious beliefs should be the primary consideration when trying to resolve an ethical conflict	1.94	1.85	1.88	2.19
11. One's personal well being should be the primary consideration when trying to resolve an ethical conflict	2.69	2.65	2.96	2.88
12. The best interests of the employer should be the primary consideration when trying to resolve an ethical conflict	2.11	2.17	2.42	2.16
13. The overall good of everyone should be the primary consideration when trying to resolve an ethical conflict	4.09	3.88	3.73	3.93
14. Minimizing financial loss should be the primary consideration when trying to resolve an ethical conflict	2.69	2.13	2.38	2.43
15. The primary consideration when trying to resolve an ethical conflict will vary from situation to situation	4.26	3.96	3.81	4.02
16. A code of ethics for engineers would be useful to have	4.31	4.08	3.73	3.84

Summary

A case study was developed to provide background for in-class discussion of ethics in an introductory power and controls course. Student responses on the end of class quizzes and end of semester survey indicated they gained an understanding of these topics. By including the ABET soft-skills directly in technical courses, it is much easier to assess the students achievements of the ABET outcomes for TC2K.

References

1. Skvarenina, T.L. * & DeWitt, W. (1998). Development of an EET Electrical Power and Controls Course [CD-ROM]. 1998 Annual Conference Proceedings, ASEE, six pages.
2. Skvarenina, T.L (2007). Lessons Learned Using Electronic Responders in a Power and Controls Course [CD-ROM]. 2007 Annual Conference Proceedings, ASEE, 12 pages
3. Mead, J. (2002). Ethics in Business: A Summary of the Research Sponsored by the Ethics in Business Research Fund. Charlottesville, VA. Available at http://www.aicpa.org/download/ethics/Ethics_Business_Research_Fund-12.pdf
4. Ethics Resource Center. 2007 National Business Ethics Survey. http://www.ethics.org/nbes2003/2003nbes_summary.html
5. IEEE Spectrum, December 2002
6. Clancy, E. A., Quinn, P., and Miller, J.E. 2005. Assessment of a Case Study Laboratory to Increase Awareness of Ethical Issues in Engineering. IEEE Transactions on Education. Vol. 48, No. 2.

Appendix A

Case Study: Enron

One of the names mentioned frequently during the California crisis was the Enron Corporation, which, at one time, was the largest trader of electricity and natural gas in the world and one of the ten largest companies in the United States. However, Enron came crashing down at the end of 2001 and was forced to file bankruptcy. At the time, it was the largest bankruptcy in the history of the United States. It provides an interesting case study in business ethics.

The Key Players

- Kenneth Lay:** He was one of the founders, and first Chief Executive Officer (CEO), of Enron. Chairman at the time of its demise, Lay is a Ph.D. economist who had formerly held several business and government positions. Resigned from Enron in January 2002.
- Jeffrey Skilling:** Originally an engineering student, he found business more to his liking and received an MBA from Harvard. Employed by McKinsey & Company, he served as a consultant to Enron prior to joining Enron. He became President and Chief Operating Officer (COO) in May 1996 and CEO in February 2001. He resigned in August 2001.
- Andrew Fastow:** As Chief Financial Officer (CFO) of Enron, he was responsible for putting together many “off the books” transactions. He was fired in October 2001.
- Michael Kopper:** Kopper was an Enron employee who reported to Andrew Fastow.

Enron Background

The Enron Corporation was formed after a 1985 merger between Houston Natural Gas and Internorth, a gas pipeline company based in Omaha, Nebraska. Thus, Enron began as an interstate natural gas pipeline company. Shortly after the merger, Kenneth Lay became the chairman and Chief Executive Officer (CEO) of Enron. He had a vision for his new company and wanted to take it away from being a pipeline company, remaking it into an energy trading company.

Specifically, with the deregulation of the natural gas business and the proposed deregulation of the electric utilities, price controls would be removed and more companies would be providing energy to the market. However, with a free market, there would also be volatility as prices varied depending upon supply and demand. Here, Lay saw the opportunity for Enron to carve out a business as a trader of energy; i.e., Enron would buy energy from suppliers and contract to sell it at stable prices to customers, while making a profit for itself. A consultant, Jeff Skilling, shared Lay’s vision and began helping him implement it by setting up a futures market for gas contracts and by 1989 Enron began trading gas commodities. In 1990, Lay recruited Skilling to join Enron. By 1994, Enron was also trading electricity.

In an interview with the Public Broadcasting System, Jeff Skilling compared the operation of Enron to a bank, with the following explanation. If a large company wants to borrow money they could theoretically go to individuals and borrow the money, but the money in individuals’ bank accounts varies on a daily basis, depending upon when they get paid and when

they pay their bills. So a bank consolidates all the accounts, which tends to smooth out the fluctuations, and loans the money to the large corporation. Enron, according to Skilling, provided a similar service for energy. They contracted with many gas producers and electrical generation companies to buy their output and then sold it to customers at firm prices so the customer could plan on a known cost for energy.

In addition to creating an energy market in the United States, Enron became an international company, building a large power plant in India and water systems in several countries, for example. It also created new trading markets. In 1997, Enron began trading so-called weather derivatives, which essentially insured customers against the results of bad weather, and in 1999 it launched EnronOnline, which as the name implies was a web-based system to trade virtually anything. By 2001, Enron was trading in North and South America, Europe, Asia, and Australia. Among the products traded were Power, natural gas, emission allowances, weather derivatives, coal, oil, steel, shipping, credit (money), and paper. As a result the company income (sales) went from \$13 billion in 1996 to about \$50 billion in 1999 and \$101 billion in 2000. Profits, as announced by the company, also continued increasing and Enron became the model for the company of the future, according to a number of published articles. Enron was named as the most innovative company in the U.S. for six years in a row by Fortune magazine.

Enron prided itself as being a “good citizen” and donated significant sums to a variety of charities, universities, museums, and other agencies, although its giving was only average amongst other major companies. Among the donations from Enron were over \$330,000 with a pledge of \$1.5 million for a capital campaign to the University of Texas Anderson Cancer Center and \$50,000 to the George Mason University's Mercatus Center. Enron signed a \$100 million long-term contract to rename the baseball park in Houston as Enron Field. In addition, Enron became highly visible in the political arena, with large contributions to many politicians in both major parties in the United States.

Highly touted by the media, investors bought Enron's stock, causing a rapid run-up in its price, as shown in Figure 1. However, the stock, along with most others, fell from its high point during the latter half of 2000 and early 2001. Unlike, most other companies, though, Enron crashed completely and had to file for bankruptcy in December 2001. The decrease in Enron's stock price from \$90 to pennies per share, wiped out some \$60 billion in shareholder equity, much of which was held in retirement accounts and mutual funds. How, could this seemingly huge corporation suddenly collapse? The details are extremely complex and involve a variety of accounting procedures, so the next section will briefly describe the fall of Enron. We will then examine it from the perspective of several key players.

The Fall of Enron

The first well-known complaints about Enron came from California during its energy crisis. Enron, along with other energy marketeers, was charged with price manipulation by the Governor of California, among others. At the time, Jeff Skilling vehemently denied any market manipulation by Enron; however, later documents showed that Enron engaged in a variety of transactions with names like Deathstar, Fat Boy, Ricochet, and Get Shorty. These transactions were quite complex, but as a simplified example let's consider the Deathstar scheme. Under this action, Enron apparently booked space on power lines from California to Oregon that were controlled by the California ISO, ostensibly to send power to their Oregon subsidiary. However,

at the same time, they booked space on a parallel line that was controlled by a California municipal utility to send power in the opposite direction. The result was the transmission lines appeared to be congested, causing the price of delivered power to increase.

While Enron's activities during the California crisis were embarrassing, they did not bring down the company, although they were an example of how the company did business. In 2000, the company reported over \$900 million in profit, but it turned out that most of it was a mirage. Back in 1992, Jeff Skilling convinced federal regulators to allow a major change in the accounting procedures for Enron. He adopted a method called mark to market, which allowed the company to include earnings that it projected for long term contracts as current income, even though the money might not be collected for 20 years. Following the collapse of Enron, ex-employees asserted that mark to market had been used to inflate reported earnings and to manipulate projections.

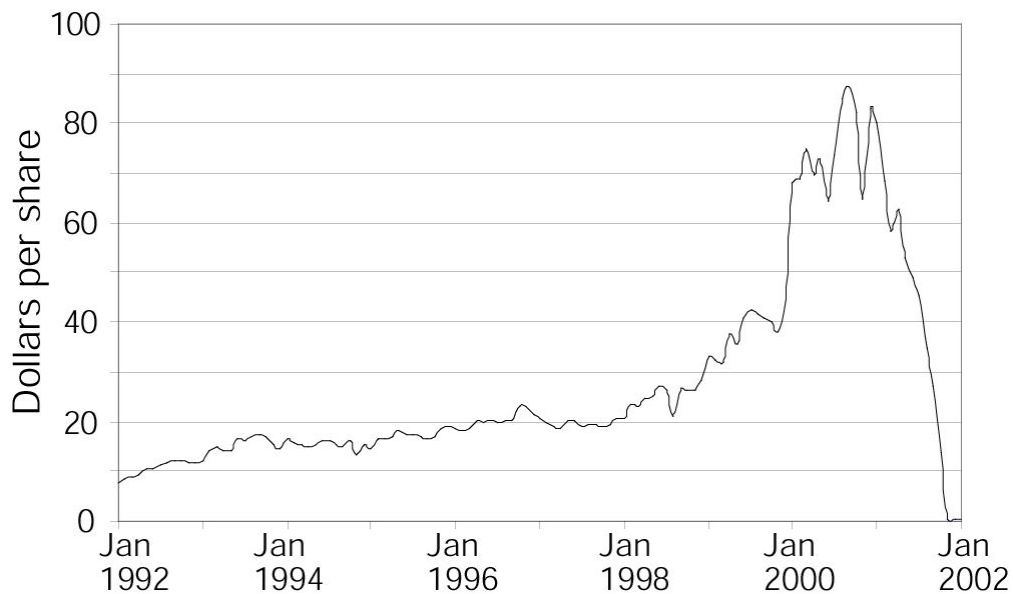


Figure 1: Price of Enron stock from 1992 to 2002

What brought Enron down was its use of very complex, aggressive accounting involving off-balance-sheet transactions and so-called special purpose entities. As a growing company that was creating new markets, Enron found it necessary to acquire assets and then build a market around the assets; for example, power companies, pipelines, and water companies. The problem with acquiring assets was they required money to be purchased, which meant borrowing and if the assets were part of the company, investors expected a return on investment (ROI). Unfortunately for Enron, many of the assets it acquired could not generate sufficient revenue in the short term. Thus, Enron began using a technique known as off-balance-sheet. In this method, Enron would sell an asset to another company, which theoretically would be a joint venture between Enron and outside investors. The special purpose entity (SPE) would then

borrow money to pay for the asset, but since it was separate from Enron, its debts and assets did not have to appear on Enron's books. This had the effect of reducing the apparent indebtedness of Enron and increasing the ROI. In order for the entity to be treated separately, two major conditions had to be met. First, at least 3% of the ownership of the SPE had to be independent of Enron and that investment had to be at risk. Second, the independent owner has to have control of the SPE.

Enron used this method successfully for several years, but in 1997 it had some assets to be put into an SPE but there weren't any investors willing to take the risk. As a result, Michael Kopper became the manager and owner of the SPE, known as Chewco (which was short for Chewbacca—Andy Fastow seemed to favor Star Wars movies as Chewco was formed to buy out another partnership called JEDI). However, with insufficient outside capital, Chewco should not have qualified to be treated as a separate company. In 2001, the original decision to treat it separately was reversed and Enron had to reduce its earnings by \$544 million for the period and reduce its assets by \$1.2 billion. That action caused investors to want out, rating agencies to reduce the credit rating of Enron. Shortly thereafter, additional SPEs operated by Andy Fastow unraveled and Enron was forced into bankruptcy.

The roles of the key players

Kenneth Lay was the CEO and Chairman until February 2001, after which he was the Chairman. A Board of Directors investigation found that he did not exercise sufficient oversight of the SPEs that were authorized by the Board through the corporate officers that reported to him. Following the resignation of Jeff Skilling in August 2001, Lay assured the world through an interview in Business Week that there was no bad news to come and that the company was in excellent shape. Lay, as part of his employment, had a revolving credit line of \$7.5 million from Enron. During 2001, he reportedly borrowed from the account on 15 occasions, each time paying the company back with Enron stock that he had held. Had Lay sold the stock in the market, he would have had to report the sale during the following month, but using this technique he wasn't required to report it until February 2002. During the three years prior to the bankruptcy, Lay reported exercising options and selling Enron stock for a profit of \$200 million. Following Skilling's departure, he held an "all hands" meeting with Enron employees and told them that Enron stock was a bargain and that they should be buying it. On October 23rd, he held another meeting with employees, promising they would see their Enron shares back at the high values they had seen earlier. But the next day, Lay took a \$4 million cash advance from the company and \$19 million more over the next three days. He repaid \$6 million using Enron shares, again avoiding the reporting requirement of a stock sale. As Chair, Lay was responsible for bringing items to the Board of Directors for action. In the year prior to bankruptcy, the Board approved bonuses for key personnel totaling \$745 million, at a time when the company was supposedly making about \$900 million in profit.

Jeffrey Skilling instituted a very competitive evaluation system at Enron, which provided large rewards to those who could make the big deals that would drive the stock price higher. He was responsible for hiring Andy Fastow as the CFO and according to former employees was very much involved in the formation of the SPEs that ultimately bankrupted the company. Specifically, Skilling preached the notion that the company of the future would be composed of

intellectual resources not hard assets. He wanted Enron to be an “asset light” company. According to the Board of Directors investigation, Skilling bears significant responsibility for the failure to institute and apply internal controls to control the risk of the SPEs. Skilling reportedly sold stock acquired with options in 2000 that netted some \$62 million in gains. In August 2001, Skilling told Lay he was leaving the company due to family considerations and on August 14th, he and Lay announced his departure. Skilling maintained that the company was in strong financial condition and highly profitable when he left.

Andy Fastow was the mastermind behind the scheme to shed assets and debt. Because he was unable to get his bosses to allow him to front the company, he selected Michael Kopper to head up the Chewco Company, which would make Kopper a profit of \$10 million on a very small investment. Later Fastow would form additional SPEs, called LJM and LJM2 (using the initials of his wife and children) that he himself headed. According to the Board of Directors investigation, Chewco was formed without the Board’s knowledge. When LJM and LJM2 were formed, Skilling and Lay presented them to the Board, which approved the SPEs and Fastow’s involvement, which involved a waiver of the corporate ethics code. Fastow and six other individuals, all Enron employees or spouses of Enron employees, sought out investors for the LJM partnerships, ranging from Foundations to Teacher Retirement Funds, and eventually made a profit of \$42 million on a \$161,000 investment. At the employees meeting on October 23, 2001 Ken Lay expressed complete confidence in Fastow, but Fastow was fired on the 24th. Fastow was indicted in October 2002 on 78 counts. In April 2003, he was indicted on another 109 counts; at that time, his wife and seven other former Enron officials were also indicted on a variety of charges.

Michael Kopper was Fastow’s top aide. He was the head of the Chewco, Company although his role was never presented to the Enron Board of Directors for approval, and which did not have sufficient outside investors to qualify as a SPE. As a result of his involvement with Chewco, Kopper made a profit of some \$12 million, and alleges that he made kick back payments to Fastow’s family members. In August 2002, Kopper pleaded guilty to charges of money laundering and conspiracy to commit wire fraud. His sentencing was delayed, however, until February 2004, presumably because he was cooperating with authorities investigating other Enron personnel. He also is reported to have promised restitution of the \$12 million he collected.

The Board of Directors

The role of a Board is to insure that a company is acting responsibly. Boards are normally composed of inside and independent directors. The Board investigation found that the Board did not sufficiently exercise its oversight responsibilities. The Board approved the formation of the LJM partnership, with Fastow as the head, during a one-hour teleconference that had several other agenda items. After approving Fastow to participate in the LJM partnerships, the Board did not demand sufficient information from the company to determine the effects they had on the company. In its 2001 proxy statement, 14 directors were up for re-election and eight did not have disclosable relationships with Enron. However, several did have financial relationships that might tend to make them less independent.

One member, Wendy Gramm, was the wife of Phil Gramm, U.S. Senator from Texas.

Enron had contributed nearly \$100,000 to Senator Gramm over 12 years, ranking him number 2 in Congress as far as Enron contributions. Ms. Gramm had served as Chair of the Texas Commodity Futures Trading Commission, where in 1993 she helped obtain approval for a regulatory exemption that aided Enron. Five weeks, later, she left the commission and joined the Enron Board. The Directors of Enron were well-paid; Wendy Gramm reportedly earned between \$915,000 and \$1.85 million between 1993 and 2001 in cash and stock. Wendy Gramm headed the George Mason University's Mercatus Center at the time of Enron's collapse. She also served on the Board's Audit and Compliance Committee, which was responsible for overseeing financial operations of the company.

Another member of the Audit and Compliance Committee was John Mendelsohn, president of the University of Texas M.D. Anderson Cancer Center and the chair of the Compensation committee, Charles LeMaistre, is the Cancer Center's president emeritus. The compensation committee had the role of monitoring Fastow's compensation for the LJM partnerships, but in fact never carried out a review. It was not until after he was fired that the board learned of Fastow's and Kopper's financial windfalls. Wendy Gramm pointed out that the company would have to tell the Securities and Exchange Commission (SEC).

The Auditors

Arthur Andersen served as Enron's auditors from the inception of the company and as such was required to render opinions concerning the setting up of the SPEs and keeping them off the books. Enron was one of Andersen's largest customers, generating some \$50 million in auditing and consulting fees and Andersen had offices in the Enron Building. Andersen, like most major accounting firms, had an oversight committee; however, the local partner in Houston was allowed to overrule suggestions from the oversight committee. Thus, when the appropriateness of the LJM ventures was questioned, the Houston office of Andersen chose to ignore the warning. Later, after Enron was collapsing, a member of the Andersen Headquarters legal staff sent an email to the Houston office reminding them of Andersen's document retention policies and to destroy unneeded documentation. That memo resulted in massive document shredding and deletion of emails at the Houston office and other offices, which eventually resulted in the conviction of the company for obstruction of justice. As a result of the conviction, Andersen essentially ceased to exist as an accounting firm.

The Whistleblower

Sherron Watkins was a vice-president for corporate development at Enron. The morning after the resignation of Jeff Skilling, Watkins sent an anonymous email to Ken Lay stating, "I am incredibly nervous that we will implode in a wave of accounting scandals." When Lay did not address her concerns at the all-hands meeting, she came forward and arranged a meeting for August 22. During the week between her first email and the meeting she wrote a seven page memo for Lay. Lay met with her and suggested he would have the law firm that the company used extensively look into the matter. Watkins advised against using the same company that had approved most of the deals, but Lay went ahead with them. Watkins had worked at Andersen prior to Enron and knew the people in the Houston office so she sent her concerns to the head Andersen partner assigned to Enron. The partner disseminated her concerns to the Andersen Enron audit team. Her concerns did not become public until January 2002.

In February 2002, while preparing to testify before Congress, Watkins was shown a

memo from the law firm to Lay concerning an employee that made a sensitive report. In the memo, the law firm indicated that Texas law did not prohibit the discharge of corporate whistleblowers. While she was not fired, her boss confiscated her hard drive and her office was moved down 33 floors in the Enron building. Despite her actions, some criticized her for not taking her concerns to the SEC or for selling \$47,000 of Enron stock after writing her memos.

The Brokers/Investment Bankers

A key partner in Enron's expansion was the investment banker community, many of which were affiliated with stock brokerages. The bankers raised billions of dollars to invest in the company and the LJM partnerships, while the brokers rated the stock a strong buy nearly to the end of the company. The first sell recommendation was issued on October 24, 2001, the day Fastow was fired. However, in late August 2001, a UBS Paine Webber broker emailed 73 clients and suggested they consider selling their shares. Unfortunately for the broker, some of his clients were Enron executives and the managers of the company's stock option plan demanded that action be taken against broker. Paine Webber was publicly promoting the stock, as well as handling investments for some of the top Enron executives. The broker was fired for giving advice against the company's policy without authorization.

The Aftermath

As a result of the Enron collapse, there were 34 defendants in legal proceedings. Fifteen of the defendants plead guilty, often as part of a plea bargain. Of these 15, nine received jail terms and six received probation. Four defendants were convicted by juries, two were acquitted, two prosecutions were dropped, three convictions were overturned (including that of the Arthur Andersen Co.), two cases are still awaiting action, and six are awaiting trial or retrial.

Ken Lay and Jeff Skilling were convicted by a jury; however, Ken Lay died before sentencing so his conviction was vacated, although the government is seeking money from his estate. Jeff Skilling was convicted on 19 counts and is currently serving a 24 year term in a Federal prison. The government is seeking up to \$183 million from him. Andy and Leah Fastow worked out a plea deal with the government. Leah Fastow plead guilty to filing a false income tax return and served one year while her husband remained out and able to care for their children. Andy Fastow plead guilty and testified against both Lay and Skilling. He is currently serving a six year sentence. Michael Kopper was the first to plead out and cooperate with the government. He was sentenced to 37 month in prison and surrendered \$12 million. The Board of Directors of Enron reached a \$168 million settlement with the creditors of Enron, which included \$13 million of their own money and \$155 million from insurance companies. David Duncan, the Andersen partner in charge of the Enron audit team, reached a settlement in January 2008 in which he agreed to never work as an accountant on matters that involve the Securities and Exchange Commission (SEC).

Finally, in September 2008, some of the financial institutions accused in participating in the Enron fraudulent activities agreed to pay \$7.2 billion to Enron shareholders and investors. The distribution came about as the result of a \$40 billion lawsuit filed against the financial institutions.

References

1. W. Powers, R. Troubh, and H. Winokur. Report of the Investigation by the Special Investigative Committee of the Board of Directors of Enron Corp. February 1, 2002
2. *Business Week* has published numerous articles about the Enron and its collapse, including:
 - Street Wise: Why Enron Isn't Your Run-of-the-Mill Utility, December 6, 2000
 - Newsmaker Q&A, Enron's Ken Lay: There's No Other Shoe to Fall, August 24, 2001
 - The Enron Debacle, November 12, 2001
 - The Fall of Enron, December 17, 2001
 - Enron: Let Us Count the Culprits (Editorial), December 17, 2001
 - Commentary: How Governance Rules Failed at Enron, January 21, 2002
 - Special Report—The Enron Scandal, January 28, 2002
 - The Man Behind Enron's Deal Machines, February 4, 2002
 - Jeff Skilling: Enron's Missing Man, February 11, 2002
 - At Enron, "The Environment Was Ripe for Abuse," February 15, 2002
 - News Analysis, Out of Control at Andersen, March 28, 2002
 - Commentary: No Excuses for Enron's Board, July 29, 2002
 - News Analysis, Enron: The Prosecution's Game Plan, October 3, 2002
 - Was Sherron Watkins Really So Selfless? December 16, 2002
 - What About the Lawyers, December 23, 2002
3. The *Washington Post* published an extensive analysis of Enron in a five-part series, written by April Witt and Peter Behr:
 - Visionary's Dream Led to Risky Business, July 28, 2002
 - Dream Job Turns Into a Nightmare, July 29, 2002
 - Concerns Grow Amid Conflicts, July 30, 2002
 - Losses, Conflicts Threaten Survival, July 31, 2002
 - Hidden Debts, Deals Scuttle Last Chance, August 1, 2002
4. N. Benac. Enron and Phil and Wendy Gramm. Associated Press. January 24, 2002
5. K. Eichenwald. Inquiry Now Examining Whether Enron's Assets Were Inflated. *New York Times*. December 26, 2002
6. R. McCullough. Congestion Manipulation in ISO California: Testimony Before the Select Committee to Investigate Price Manipulation of the Wholesale Energy Market. *McCullough Research*. June 5, 2002
7. K. Buchler Phillips. Creative accounting and things 'off balance sheet.' *Business Money*. September 2002

Discussion Questions

1. Look up the IEEE Code of Ethics and determine which, if any, of its provisions were violated by the key players.
2. Discuss the actions of Mr. Lay from an ethics standpoint.
3. Discuss the actions of Mr. Skilling from an ethics standpoint.
4. Discuss the actions of Mr. Fastow from an ethics standpoint.
5. Discuss the actions of Mr. Kopper from an ethics standpoint.

6. Discuss the actions of the Board members from an ethics standpoint.
7. Discuss the actions of Arthur Andersen from an ethics standpoint.
8. Discuss the actions of the investment bankers from an ethics standpoint.
9. Should Sherron Watkins have done more than just warn the Chairman of the company that there were problems with the accounting methods?
10. Were the individuals that created trading schemes such as Deathstar acting in an ethical manner?