Engineers and White-Collar Crime

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Abstract: Generally, engineers are held in high esteem for honesty and ethics. Even so, some engineers commit white-collar crimes. This paper provides a brief overview of white-collar crime. The *fraud triangle* is used as a framework to better understand why engineers would participate in white-collar crime. In addition, three case studies are presented where reputable engineers either participated in, or were pressured to participate in, white-collar crime. It is expected that this paper will be of interest to engineering educators who teach engineering ethics. It is also hoped that this paper will be of interest to practicing engineers who may feel pressure to commit white-collar crime.

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Introduction

The public has a high estimation of the ethics of engineers as a whole. A Gallup poll performed in December 2006 found that 61% of respondents rated engineers as having "high" or "very high" standards for ethics and honesty.[1] Presumably, that excellent reputation accurately reflects the honesty and ethical standards for most engineers. Even so, engineers are not exempt from dishonesty and white-collar crimes. This paper contains an overview of some psychological and legal aspects of white-collar crime. After that, several cases are presented where highly respected practicing engineers or engineering managers succumb to criminal behavior. This paper closes with an analysis of federal prosecution of corporations and its affects on employees.

There are two intended audiences for this paper. The first audience is practicing engineers—as an illustration of the ease at which fellow engineers, and engineering managers, have become criminals. The second audience is engineering educators—as there are few sources that deal specifically with engineers and white-collar crime.

Overview of Criminal Law and White-Collar Crime

Components of a Crime

The stereotype of a criminal is an evil and violent brute. Yet, many apparently decent professionals have been convicted of serious crimes. Recent famous white-collar criminals include: Kenneth Lay and Andrew Fastow of Enron, Martha Stewart, and White House aide Scooter Libby.

The law recognizes two types of wrongful actions: civil wrongs and criminal wrongs. A civil matter is a private matter between two or more parties. Unless the government is one of the parties, the government will not independently seek to remedy a civil wrong. A criminal wrong is an offense against the state. It is the responsibility of the state to prosecute criminal wrongs.

There are two elements to a crime: (1) an act that violates a criminal statute; and (2) the requisite state of mind. Merely thinking criminal thoughts does not create a crime. The criminal thought must accompany the criminal action. This criminal action is called an *actus rea* (a guilty act in Latin).

Formerly, criminal acts in the United States were established by judges under the common law. Today, all criminal acts in the United States must be defined by some statute. These statutes may be municipal, state, or federal. Where there is an ambiguity in a criminal statute, courts tend to interpret any ambiguity in favor of the defendant. Thus, enforceable statutes tend to be lengthy, so as to include all intended behavior.

In addition to a guilty act, a criminal must have some level of criminal intent or culpability. The law generally recognizes five levels of potential mental states for crimes:

1. **Intentionally** committing the illegal act.
2. **Knowingly** committing the illegal act.
3. **Recklessly** committing the illegal act.
4. **Negligently** committing the illegal act.
5. A few crimes are *strict-liability* crimes where no level of mental criminal intent is necessary.

These levels of criminal culpability are hierarchical. That is, if you knowingly commit an act, you also negligently and recklessly commit the act. However, if you recklessly commit an act, you have not necessarily acted intentionally or knowingly.

To illustrate the language of a criminal statute, consider 18 USC 1832, which is a federal statute criminalizing theft of trade secrets. This statute is verbose in an attempt to encompass all possible permutations of trade secret theft.

> 18 USC § 1832—Theft of trade secrets
>
> (a) Whoever, with intent to convert a trade secret, that is related to or included in a product that is produced for or placed in interstate or foreign commerce, to the economic benefit of anyone other than the owner thereof, and intending or knowing that the offense will, injure any owner of that trade secret, knowingly—

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(1) steals, or without authorization appropriates, takes;

(2) without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information;

(3) receives, buys, or possesses such information, knowing the same to have been stolen or appropriated, obtained, or converted without authorization;

(4) attempts to commit any offense described in paragraphs (1) through (3); or

(5) conspires with one or more other persons to commit any offense described in paragraphs (1) through (3), and one or more of such persons do any act to effect the object of the conspiracy,

shall, except as provided in subsection (b), be fined under this title or imprisoned not more than 10 years, or both.

(b) Any organization that commits any offense described in subsection (a) shall be fined not more than $5,000,000.

Notice the language in 18 USC § 1832 (a)—"Whoever, with intent to convert a trade secret. . . ." Under this statute, the level of criminal intent required for conviction of theft of a trade secret is *intentional* with respect to conversion of the trade secret and *knowingly* with respect the action of stealing, copying, etc. To be guilty of 18 USC § 1832, one must *intend* to convert a trade secret of another. One will not be guilty of that statute if they *negligently, recklessly*, or *knowingly* convert a trade secret.

Prosecution for Crimes: Trials and Procedure

One of the initial steps in a prosecution of a white-collar felony is an indictment. An indictment is a formal accusation of a crime. Generally, a prosecutor will present evidence of guilt to a grand jury. If the grand jury concludes that there is sufficient evidence to charge the accused then the grand jury will issue an indictment, a formal accusation of a particular crime. An indictment formally notifies the accused of the criminal accusation so that he/she may prepare a defense.

After an indictment the accused is arraigned before a judge. At the arraignment, the judge will ask the defendant for a plea. The defendant may answer with a plea of guilty, not guilty, or no-contest (nolo contendere). A plea of no-contest has the effect of a guilty plea. However, unlike a guilty plea, a plea of no-contest is not an admission of guilt.[2]

Most criminal cases do not reach the trial stage. Often the defense and the prosecuting attorney will reach a negotiated compromise called a *plea bargain*. Typically, the prosecuting attorney will charge a lesser crime in exchange for a plea of guilty. In addition, sometimes an accused will offer testimony against another individual in exchange for a reduced sentence or even immunity.

If the case goes to trial, the *burden of proof* relates to the level of certainty required to find a person liable or guilty. In civil cases, the general burden of proof is a "preponderance of the evidence." Under the preponderance of the evidence standard, liability may be assessed if there is slightly more than 50% certainty. In criminal cases, one may only be convicted if there is "no reasonable doubt" regarding guilt. Further, to convict in a criminal trial the members of the jury usually must be unanimous in determining guilt. Conversely, most states do not require a unanimous jury in civil cases.

In a criminal procedure, the defendant has two important Constitutional rights. The 5th Amendment to the U.S. Constitution guarantees the right to refrain from self-incrimination:

> **5th Amendment**: "No person . . . shall be compelled in any criminal case to be a witness against himself."

Similarly, the 6th Amendment guarantees the right of all accused to representation by an attorney:

> **6th Amendment**: "In all criminal prosecutions, the accused shall enjoy the right to . . . have the Assistance of Counsel for his defense."

The essence of these amendments is summed up in the Miranda warnings that have been made famous by police television shows and motion pictures: "You have the right to remain silent. Anything you say. . . ."

White-Collar Crimes and Fraud

The term white-collar crime is a generic term for nonviolent business or professional crimes. There is a broad range of white-collar crimes that may be encountered by an engineer including:

- Back-dating stock options;
- Bribes and kickbacks;
- Embezzlement;
- Insider trading;
- Environmental crimes; and
- Obstruction of justice.

Most of the above-listed crimes involve an element of fraud. Criminologists have devised a theory of fraud called the *fraud triangle*.[3] According to this theory, three conditions are necessary for fraud:

1. A perceived *opportunity* to commit the fraud without being punished;
2. A perceived *pressure* to commit the fraud; and
3. A *rationalization* that it is acceptable to do the wrong action.

According to the fraud-triangle theory if any of these three conditions is absent, then fraud is unlikely to occur.

Reducing the opportunities to commit fraud can be accomplished with adequate supervision, controls, and documentation. Unfortunately, when an organization increases requirements for supervision, controls, and documentation unintended negative consequences also occur. For example, too much control may stifle creativity or reduce productivity. An extreme example might be an office where engineers need several managers to approve purchases of office supplies such as printer paper.

The pressure to commit fraud can come from both external and internal sources. Sources might include financial pressures, peer pressures, or internal competitive pressures. Pressures are neutral, they can lead to both excellence and fraud. For example, pressure to perform well in school drives some students to study harder. The same pressure can motivate others to cheat on examinations.

Pressure and opportunity can be controlled by others. Rationalization is the personal processes of mentally excusing the wrong behavior. Rationalizations include concepts such as:

- "Everyone is doing it";
- "They owe it to me";
- "I'll just borrow it, then return it"; or
- "My family needs this."

A new engineer can expect that with career advances, both

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opportunities to commit fraud and pressures to cut corners will likely increase. Greater levels of responsibility are generally associated with greater opportunity for deception. Likewise, more responsibility generally enhances the pressure to meet performance goals.

As both opportunities and pressures to commit fraud are likely to increase with an advancing career, controlling rationalization becomes key to avoiding fraudulent behaviors. Rationalization of fraud is internal and personal. It is the element that is most under the individual control of each professional.

Not all white-collar crime is the result of a few "rogue" employees. White-collar crime is encouraged in some corporate cultures where a lax attitude toward fraud permeates a corporation. Rationalization of fraud is certainly easier in an environment where "everyone" is "doing it."

Several case studies are presented in the following. As you read these case studies, identify how the crime involved fraud and how each of the three elements of the fraud triangle were present: opportunity, pressure, and rationalization.

Examples of White-Collar Criminal Conduct by Engineers

Case 1: Amr Mohsen—Inventor, Entrepreneur, and High Tech CEO

In 1965, Intel's cofounder Gordon Moore predicted that the number of transistors on a single chip would double about every 2 years.[4] To facilitate this phenomenal growth a new industry developed, electronic design automation (EDA). EDA is a type of computer-aided engineering used by electronic chip designers and manufacturers to rapidly design, analyze, and manufacture complex silicon chips.

The EDA industry was a fiercely competitive industry in the 1980s and 1990s. These rivalries facilitated the rapid development of the industry. In addition, these rivalries resulted in a host of civil and criminal trials. Some of these trials revolved around Dr. Amr Mohsen.

Dr. Mohsen received his Ph.D. in electrical engineering from the California Institute of Technology in 1971. He went on to obtain 50 patents and become a Fellow in the IEEE. In addition, Dr. Mohsen was a highly successful Silicon Valley entrepreneur during the booming years of the 1990s. His entrepreneurial accomplishments include:

- Founding ACTEL in 1985. An ACTEL product earned *Best Product of the Year Award* from Electronic Product Magazine in 1988;
- Founding Aptix in 1989 and leading the invention and development of reconfigurable interconnect and system architectures, technologies, and products; and
- Receiving the *Best Product of the Year Award* from Electronic Product Magazine in 1991 and the *Most Innovative Product of the Year Award* from EDN Magazine in 1992.[5]

In September of 1989, Dr. Mohsen applied for a patent for his "field programmable" circuit board invention. This patent issued in 1996 as U.S. Patent No. 5,544,069 (Patent 069). Mohsen assigned the rights to Patent 069 to Aptix, where he was CEO.

In 1998, three of the important EDA firms were: Mentor Graphics (Mentor), Aptix, and Quickturn Design Systems (Quickturn). Mentor and Aptix were in an alliance against Quickturn.

Quickturn was using technology that overlapped the claims of Aptix's Patent 069. Aptix licensed patent rights associated with that patent to Mentor with the agreement that Mentor would sue Quickturn for patent infringement.[6] Federal Judge Alsup was the presiding judge for the lawsuit.

One of Quickturn's defense strategies was to show that the ideas behind the invention of the 069 patent predated the 1989 patent application date. If Quickturn could prove that there was *prior art* that predated Dr. Mohsen's invention date, then Patent 069 could be invalidated. As a counter move, Aptix claimed an invention date of July 31, 1988 for the invention behind Patent 069.[7] This was more than a year prior to the 069 patent application date.

A common means for establishing an invention date that is earlier than the patent application date is to keep detailed and dated lab notebooks. These notebooks are typically bound blank books where the progress of an invention can be entered and dated. To establish the validity of the contents of these notebooks, the inventor will often have a colleague read the notebook entries, then sign and date them.

In an attempt to prove an invention date of 1988, Aptix provided Quickturn's attorneys with photocopies of parts of two lab journals written by Dr. Mohsen: one journal was dated 1988, the other dated 1989.

Quickturn obtained a second copy of the 1989 notebook from the patent application files. The 1988 notebook was not included in the patent application files.

Quickturn's attorneys found substantial discrepancies between the copy of the 1989 notebook supplied by Aptix and the one from the patent application files. In addition, the copy of the 1988 notebook had several highly suspicious characteristics, indicating that it was fraudulently fabricated.

Quickturn requested that Judge Alsup order Dr. Mohsen to turn over the original 1988 notebook so that it could be tested for authenticity. Just before Judge Alsup was to rule on the request, Mohsen claimed that the notebook was stolen from his car.[8]

Judge Alsup concluded that Mohsen had defrauded the court by altering the 1989 notebook and fabricating the 1988 notebook. As a result, he invalidated the 069 patent and awarded Quickturn over $5 million to cover fees and costs.[9] (Note: The invalidation was later overturned on appeal by the Federal Circuit Court)[10].

Judge Alsup was so incensed by Mohsen's deceptions that he wrote to federal prosecutors suggesting they investigate Dr. Mohsen for perjury and falsification of evidence.[11] In March 2003, Amr Mohsen was indicted for obstruction of justice and perjury. Trial was set for March 2004, with Judge Alsup presiding.

Three days before the criminal trial was to start, Mohsen was arrested as a flight risk. He was caught carrying a newly issued Egyptian passport, in violation of his bail agreement, and $40,000 in cash.[12] To make matters worse, Mohsen was recorded making offers to hire a hitman to kill Judge Alsup.

In 2006, Mohsen was convicted of "conspiracy, mail fraud, perjury, subornation of perjury, obstruction of justice, contempt, attempted intimidation of witnesses, and solicitation of the arson of a government witness's car." What started as a deception in a relatively minor patent case resulted in a 17-year prison sentence.[13]

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As of August 2008, Dr. Mohsen was imprisoned at Safford Federal Prison in Arizona. His an anticipated release date is January 16, 2019.[14]

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Case 2: Bill McKay, Ashland Oil's V.P. for R&D

Bill E. McKay started working in the petroleum industry when he worked part time at an oil refinery in Detroit, Mich. After he received his degree in chemical engineering, McKay took a position with Universal Oil Products (UOP). He was so successful at UOP that he became the youngest operating director in the history of that company. After leaving UOP, McKay became the plant manager in Minnesota for Koch Refining Co.

In 1976, McKay was recruited by Ashland Oil. Ashland had recently been accused of making disguised payments to public officials for favorable treatment. These payments likely violated the Foreign Corrupt Practices Act (FCPA). The FCPA prohibits U.S. companies, their employees, and many associated persons from bribing foreign officials. In 1975 Ashland had signed a *consent decree* with the Securities and Exchange Commission (SEC) to cease such payments. At first McKay was reluctant to join Ashland. McKay agreed to join Ashland after several of Ashland's senior officers guaranteed him that such practices had stopped.

McKay prospered at Ashland. In 1979 he was promoted to President of Ashland Development, the research and development subsidiary of Ashland Oil. The next year his portfolio was expanded to include crude oil supply acquisitions for Ashland.[15]

The years 1979–1980 were turbulent times for the oil industry. In 1979 the U.S. embassy in Iran was occupied by militant Islamists. The U.S. Government embargoed Iranian oil. Ashland had obtained 25% of its oil from Iran. After the embargo Ashland desperately needed new sources of crude oil.[16]

To help secure more crude oil supplies, Ashland's President, Orin Atkins, bribed an official of the Sultanate of Oman (an oil-rich Persian Gulf state). Atkins arranged to pay a $1.35 million bribe to the official for the purchase of oil belonging to the government of Oman. To complete the bribe payment, Atkins ordered McKay to provide for the transfer of funds through a Swiss bank account.

McKay refused to transfer the money, insisting that such a payment would violate the FCPA and the consent decree with the SEC. Despite McKay 's protests, the $1.35 million transfer was made. McKay continued to protest the illegality of the bribe. Atkins threatened to fire McKay if he continued to challenge such payments. In 1981 Atkins was asked to step down as President of Ashland. He was replaced by John Hall. Mr. Hall assured McKay that all bribes would stop—but they did not.[17]

In late 1982 the Internal Revenue Service (IRS) contacted McKay asking him to answer questions about Ashland's business transactions. Mr. Hall was asked the same questions and answered the inquiries first. Afterward, McKay was pressured by officials at Ashland to sign a set of predetermined responses that agreed with Hall's answers. McKay believed that Hall's responses were false and refused to sign the document. Instead, McKay answered the IRS's questions with substantially different answers than those given by Ashland's new president.

In early 1983 Ashland consulted an outside attorney to gather information to terminate McKay's employment. Later that year the SEC subpoenaed McKay to testify about Ashland's business dealings with Oman and his answers to the IRS questions. McKay testified several times before the SEC. In mid-1983 McKay was placed on "involuntary leave" from Ashland. Later, in September, he was fired with full salary through the end of the year.

McKay filed a lawsuit for wrongful-termination against Ashland. Ashland countersued claiming that McKay had breached his fiduciary duty to Ashland. In 1988, after an 8 week trial, the jury decided in favor of McKay, awarding him over $44 million in damages. However, to avoid a prolonged appeals process McKay settled with Ashland for a reduced payment of $16.7 million.[18]

Even though he won his lawsuit against Ashland, the toll of 4 years of court battles was difficult for McKay and his family. After the ordeal, McKay stated "I would not urge anyone to subject their families to what I've had to do." McKay had this warning for those who strive for legal and ethical principles: "If you stand up and insist on not going along with wrongdoing, you're going to have people try and crush you."[19]

Epilogue

In 1986 the SEC entered into a civil action against Ashland Oil resulting in a permanent injunction that prohibits Ashland from making unlawful political contributions.[20] Some of Ashland's shareholders sued McKay and other officers and directors of Ashland in a shareholder's derivative suit. The shareholders sought $132 million in damages for illegal bribes paid with Ashland funds. McKay was not found to be responsible.[18]

Case 3: Crime at Boeing under the Leadership of Philip Condit and Michael Sears

Philip Condit was an aviation enthusiast, earning his pilot's license at age 18. He received a bachelor's degree in mechanical engineering from the University of California at Berkeley and a master's degree in aeronautical engineering from Princeton.

Fresh out of Princeton, he joined the Boeing aircraft company in 1965 as an aerodynamics engineer. At the time, Boeing was the leading civilian aircraft manufacturer. Shortly after arriving at Boeing, Condit solved a vexing aerodynamic problem related to the strength of the vortex created by jumbo jets as they take off. This solution allowed the federal regulators to develop rules for safe spacing of aircraft.[22]

Condit was well on his way up the corporate ladder at Boeing. In 1971 he was named the performance lead engineer for the Boeing 747. He continued to excel at Boeing, becoming the Chief Executive Officer (CEO) in 1996 and Chairman of the Board in 1997.[23]

Michael Sears earned a Bachelor's and a Master's degrees in electrical engineering from Purdue as well as a master's degree in engineering management from the University of Missouri–Rolla. Throughout his career, Sears earned many engineering awards, including being named a Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and receiving the *Engineering Manager of the Year Award* for 2003.[24] In 2000, Sears was named Chief Financial Officer (CFO) for Boeing.

Top executives tend to set the ethical tone for a corporation. Prior to the tenure of Condit and Sears as CEO and CFO, respectively, Boeing "had long been a paragon of American industrial excellence."[25] Under the leadership of Condit and Sears, Boeing's reputation would become sullied by two major ethical and legal scandals. The stories of these two scandals are chronicled in the following.

EELV Program Competition with Lockheed

In the late-1990s, Boeing was in a fierce competition with Lockheed Martin for a long-term Air Force contract for the Evolved Expendable Launch Vehicles (EELVs). The EELVs were advance rockets designed to replace the Delta II, Atlas II, and Titan IV boosters.

In 1996, Kenneth Branch was a Lockheed Martin employee working on the EELV. Branch approached McDonnell Douglas

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engineering manager William Erskine hinting that he would bring proprietary Lockheed Martin documents related to the EELV project in exchange for employment.[26] Erskine offered Branch a position as a *Senior Engineer/Scientist*. In January of 1997, Branch left Lockheed Martin for his new position at McDonnell Douglas. Later that year, McDonnell Douglas was acquired by Boeing.[27]

In late 1997, a fellow employee reported seeing Branch with proprietary documents marked "*Lockheed Martin*." An internal investigation was commenced. The investigator determined that Branch did not have any proprietary Lockheed documents.[28] In October of 1998, the Air Force awarded some of the EELV contracts. It was generally believed that Lockheed was the superior rocket builder. However, Boeing had lower prices and won 19 of the first 28 EELV launches.[29]

In June of 1999, another fellow employee reported that Branch had proprietary Lockheed papers. A Boeing attorney was dispatched to investigate. After investigating, the attorney reported to the Air Force that seven pages of harmless Lockheed data had been found, and that no one but Branch and Erskine had seen or used the data.[30]

In August of 1999, Boeing fired both Branch and Erskine for possession of proprietary Lockheed papers. Both Branch and Erskine sued Boeing for wrongful termination. They claimed that Boeing fired them to cover up a company policy to seek out sensitive Lockheed information. Boeing denied those charges, and won the lawsuit on a summary judgment.[31]

The legal problems for Branch and Erskine did not end there. After an investigation by the Defense Criminal Investigative Service they were both indicted in 2003 on federal charges of conspiracy, theft of trade secrets, and violating the Procurement Integrity Act.[32]

Boeing's internal investigation in 1999 grossly understated the extent of the problem. Air Force personnel examined the Lockheed documents from Branch's and Erskine's work areas. They found 141 documents (consisting of 3,800 pages) that apparently originated at Lockheed. Thirty-six of these documents were labeled "*Lockheed Martin Proprietary or Competition Sensitive*." According to the Air Force EELV staff, "possession of these proprietary documents by a competitor could have had a 'high' or significant chance of affecting the outcome of a competitive bid."[33]

In addition, Branch and Erskine were not the only Boeing employees with purloined proprietary data. The U.S. Department of Justice (DOJ) claims that "a [third] Boeing engineer, a Boeing parametrician, a Boeing manager, and a Boeing marketing director" used purloined proprietary information.[34]

Boeing's Air Force Procurement Scandal

Darleen A. Druyun became the deputy assistant secretary of the Air Force for acquisition and management in 1993. She supervised the management of Air Force procurement programs.[35] In this position, she had oversight of contracts with Boeing worth billions of dollars.

In 2000, Ms. Druyun approached Michael Sears about a position at Boeing for her daughter, Heather, and her fiancé. Both Heather and her financé were subsequently hired by Boeing.[36] The next year, Ms. Druyun selected Boeing over Lockheed to upgrade the C-130 transport planes. The selection of Boeing stunned industry analysts. Lockheed had manufactured the C-130 and was expected to win the contract to upgrade them.[37]

In late 2002, Druyun was negotiating a controversial $20 billion contract involving a lease of refueling-tanker aircraft from Boeing. As an Air Force procurement officer, it was a felony for Ms. Druyan to seek employment with a company that dealt with her office unless she first notified the Air Force and disqualified herself from work related to that company.[38]

Druyun retired from the Air Force in November 2002 and joined Boeing in January 2003. At the time, there was some suspicion that Ms. Druyun had favored Boeing when she was negotiating the tanker lease. These suspicions proved to be accurate. Although she still had oversight of Boeing contracts at the Pentagon, Druyun was covertly negotiating future employment with Boeing. Druyun was secretly contacting Sears using her daughter, Heather, as an intermediary.

Sears agreed to meet with Druyun in Orlando, Fla. on October 17, 2002. They met alone in a private conference room. At the meeting, Druyun told Sears that she had not disqualified herself from oversight of contracts with Boeing.[39] In spite of this warning, Sears continued to pursue Druyun's employment with Boeing. Sears offered her an executive position with a $250,000 salary and a signing bonus.

Unfortunately for Sears and Druyun, Senator John McCain had become suspicious of the tanker lease contract and the relationship between Druyun and Boeing prior to her retirement in November 2002. Boeing claimed that it had not approached Druyun until after she had retired.[40]

Senator McCain and his staff continued their investigation until they uncovered a series of e-mails. These e-mails confirmed that Sears and Druyun were negotiating her employment with Boeing well before she notified the Air Force of her private negotiations with Boeing. In addition, the e-mails confirmed that Sears was aware that Druyun had not notified the Air Force of the matter.

In November of 2003, both Druyun and Sears were fired by Boeing. Later, both Druyun and Sears were criminally charged. Michael Sears plead guilty to aiding and abetting illegal employment negotiations. He was fined $250,000 and sentenced to 4 months in prison and 2 years probation.[41]

Darleen Druyun admitted that Boeing's favors of hiring herself and her daughter had influenced her contracting decisions while at the Pentagon.[42] In her guilty plea, she acknowledged that she had arranged for the Air Force to pay Boeing an amount that exceeded what she felt was appropriate. She referred to this preferential treatment as a "parting gift" for Boeing.[43] Druyun was sentenced to 4 months in jail followed by 7 months community confinement.[44]

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Boeing. The DOJ investigated Boeing for potential criminal prosecution. Boeing and the DOJ reached an agreement where Boeing agreed to pay $565 million in civil damages and a $50 million penalty associated with a criminal agreement. In exchange, the DOJ did not prosecute Boeing.[45]

Branch and Erskine. The criminal cases against Branch and Erskine were resolved in 2006. Erskine received a pre-trial diversion (where the charge was dismissed on the condition that he stay clean for a year). Branch pleaded guilty to obstruction of justice. He was sentenced to 1 year of probation, which included 6 months of home detention. He also paid a $6,000 fine.[46]

EELV. In July 2003, Boeing was sanctioned by the Air Force by denying Boeing about $1 billion in contracts.[47] In 2005, Boeing and Lockheed decided to stop competing on launch vehicles.

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Instead, they formed a consortium called United Launch Alliance LLC (ULA). With the combined capabilities of Boeing and Lockheed the ULA created a near monopoly for medium-to-heavy launch services.[48]

Darleen Druyun's replacement at the Pentagon was Charles Riechers. Riechers was trained as an electrical engineer and was a retired Air Force officer. He committed suicide in October 2007, after reports that he had been paid $13,400 per month over a 2 month period by a Pentagon contractor who expected no work from him.[49]

Phil Condit resigned in December 2003 as Boeing's CEO and Chairman under the cloud of the EELV and Druyun/Sears scandals. Boeing stock prices dropped 6.5% under Condit's leadership, whereas the Standard & Poor's 500 index rose 61.8%.[50]

Federal Prosecution of Corporations

Corporations are legally like artificial persons. As such, corporations can be criminally charged. However, prosecuting a corporation for criminal behavior may have far reaching consequences for innocent third parties. For example, Arthur Andersen LLP,[51] the accounting firm associated with the Enron scandal, employed 26,000 U.S. employees prior to being convicted of obstruction of justice in 2002. Though the conviction was later overturned by the U.S. Supreme Court, Arthur Andersen had only 200 employees by June of 2005.[52]

When federal prosecutors from the DOJ suspect criminal activity by a corporation, they tend to seek a settlement agreement with that corporation. For example, Boeing avoided prosecution for its part in the EELV and Druyun affairs by reaching such an agreement with the DOJ. As part of this agreement, Boeing "fully cooperat[ed] with the government's investigation" and paid $615 million in fines.[53]

Federal prosecutors are given broad discretion when deciding whether or not to seek an indictment of a corporation. Factors to be considered in this decision include:

1. "the pervasiveness of wrongdoing within the corporation, including the complicity in, or condonation of, the wrongdoing by corporate management;"
2. "the corporation's timely and voluntary disclosure of wrongdoing and its willingness to cooperate in the investigation of its agents;" and
3. "the corporation's remedial actions, including any efforts…to replace responsible management, to discipline or terminate wrongdoers, . . . and to cooperate with the relevant government agencies."[54]

That is, corporations can minimize the risk of corporate criminal prosecution by reporting criminal acts by employees to "the relevant government agencies." Such reporting of employees by an employer has been called *reverse whistle-blowing*.[55]

The fate of former Boeing employees Branch and Erskine is illustrative of reverse whistle-blowing. It appears likely that some managers at Boeing encouraged the use of proprietary Lockheed documents by Boeing engineers. It also appears that Boeing's internal investigations into the matter were half-hearted at best. Reasonable people could conclude that Boeing was deliberately seeking and using proprietary Lockheed documents illegally.

Branch and Erskine were fired when it was no longer possible to keep the existence of the Lockheed documents secret. Under

Table 1. Select Federal White-Collar Crimes[57]

Crime	Maximum fine or penalty	Maximum sentence	Comments
Insider trading (Securities Exchange Act of 1934—15 USC § 78ff)	$5 million (individuals), $25 million (corporations, plus profits)	20 years	Tippers and tipees may be jointly and severally liable
Misappropriation of trade secrets (Economic Espionage Act—18 USC § 1831)	$500,000 (individuals) $10 million (corporations)	15 years	
Workplace safety laws willful violation-Resulting in death of an employee (OSHA—29 USC §666)	$10,000 (first conviction) $20,000 (subsequent convictions)	6 months (first conviction) 1 year (subsequent convictions)	
Bribery (18 USC § 201)	$250,000 (individuals) $500,000 (organizations, and twice the gain to violators or loss to victims or triple the bribe)	15 years	
Bribery of a foreign official (Foreign Corrupt Practices Act—15 USC § 78 dd-2)	$100,000 (individuals) $2M (corporations) Fines can be twice the gain to violators	5 years	
Computer fraud (Computer Fraud and Abuse Act—18 USC § 1030)	$250,000 (individual) $500,000 (organizations, and twice the gain to violators or loss to victims)	10 years (first offense) 20 years (subsequent offenses)	May include "hacking"
Obstruction of justice (18 USC §§ 1501–1520)	$250,000 (individual) $500,000 (organizations, and twice the gain to violators or loss to victims)	20 years	Includes destroying or altering of documents intending to keep them from an official investigation
False statement or claim to U.S. government (False Statements Act & False Claims Act—18 USC § 1001 & 287)	$250,000 (individual) $500,000 (organizations, and twice the gain to violators or loss to victims)	5 years	

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the above-mentioned factors, Boeing could limit its criminal liability by firing Branch and Erskine and reporting their illegal activities. Boeing's corporate criminal liability could be further reduced by attempting to demonstrate that the illegal practices were limited to just a few *rouge* Boeing employees.

Private communication with a corporate attorney may also be turned over to governmental investigators. Department of Justice policy encourages corporations to waive attorney-client privileges "when there is a legitimate need for the privileged information to fulfill [federal] law enforcement obligations."[56]

Engineers should be aware of the above-noted incentives for corporations to "reverse whistle-blow" on employees. If an engineer feels pressure from a corporate employer to commit a crime, he/she should not expect to be shielded by that employer or by the corporation's attorney. Rather, he/she should realize that the corporation will have an incentive to shift much of the blame to the employee to reduce corporate criminal liability (Table 1[57]).

Conclusion

Engineering is well respected as a profession. In spite of this, successful and well-respected engineers can and do fall into white-collar criminal behavior. This paper presented a short discussion of some legal and psychological aspects of white-collar crimes and criminal procedure. This was followed by three case studies illustrating engineers and engineering managers who committed crimes involving fraud. Finally, DOJ policies strongly encourage corporations to report criminal activities by employees to reduce criminal liability for the corporation.

Glossary of Terms

Burden of proof: The level of certainty required to convict (in a criminal trial) or find liable (in a civil trial).

Consent decree: A judicial decree that formalizes an agreement between two parties. Consent decrees may be used to formalize an agreement between a defendant and a government agency. The agency agrees to drop the charges in return for an agreement by the defendant to cease some illegal activity.

Convert or conversion: Unjustly depriving an owner of his/her property without the owner's permission.

Felony: A serious crime. Generally, the penalty for a felony can be incarceration for more than 1 year. A *misdemeanor* is a crime that is less serious than a felony.

White-collar crime: A generic term for nonviolent business or professional crimes such as fraud, embezzlement, etc. The name comes from the stereotype that professionals wear white collars, whereas laborers wear blue collars.

List of Cases

Aptix Corp. v. Quickturn Design Systems, Inc. (N.D. Cal. 2000).
Aptix Corp. v. Meta Systems, Inc. Corp., 269 F.3d 1369 (Fed. Cir. 2001).
Arthur Andersen LLP v. United States, 544 U.S. 696 (2005).
U.S. v. Amr Mohsen, (E.D. Cal. 2005).
McKay v. Commissioner of IRS, 102 T.C. 465 (1994).
Erskine v. Boeing (M.D. Florida, July 9, 2002).

Endnotes

[1]Gallup Poll for Dec. 8–10. The survey polled 1009 adults nationwide. Results may be found at ⟨http://www.pollingreport.com/values.htm⟩. Viewed August 20, 2008.

[2]A plea of no-contest may be a wise choice if a guilty plea may be used in a later civil trial.

[3]See for example, *Effects of the Fraud Triangle on Students' Risk Assessments*, Journal of Accounting Education, Vol. 25, n 1–2, pp. 74–87 (2007).

[4]See Intel's Web site at ⟨http://www.intel.com/technology/mooreslaw/index.htm⟩. Viewed on August 20, 2008.

[5]Amr Mohsen's home page at ⟨http://www.amrmohsen.com/achievements.htm⟩. Viewed on August 20, 2008.

[6]*Aptix Corp. v. Meta Systems, Inc. Corp.* 269 F.3d 1369 (Fed. Cir. 2001).

[7]"Fraud and Enforceability: Potential Implications for Federal Circuit Litigation," 2002 Duke L. & Tech. Rev. 0001.

[8]See *Aptix Corp. v. Quickturn Design Systems, Inc.* (N.D. Cal. 2000), *Aptix Corp. v. Meta Systems, Inc. Corp.* 269 F.3d 1369 (Fed. Cir. 2001) and *U.S. v. Amr Mohsen*, (E.D. Cal. 2005).

[9]Susan Beck, *Faked Evidence Turns Patent Case Ugly—Really Ugly*, The American Lawyer, Oct. 11, 2004.

[10]*Aptix Corp. v. Meta Systems, Inc. Corp.*, 269 F.3D 1369 (Fed. Cir. 2001).

[11]Susan Beck, *Faked Evidence Turns Patent Case Ugly—Really Ugly*, The American Lawyer, Oct. 11, 2004.

[12]*Way Down In The Valley*, Business Week, April 19, 2004.

[13]U.S. Dept. of Justice Press Release, "Former Chairman and CEO of Technology Company Sentence to 17 Years," Jan. 5, 2007. Available at ⟨http://www.usdoj.gov/usao/can/press/2007/2007_01_05_Mohsen_sentencing.html⟩. Viewed August 20, 2008.

[14]See ⟨http://www.bop.gov/iloc2/LocateInmate.isp⟩. Viewed August 20, 2008.

[15]*McKay v. Commissioner of IRS*, 102 T.C. 465, (1994).

[16]"They Whistled and Won," *Time Magazine*, June 24, 2001.

[17]*McKay v. Commissioner of IRS*, 102 T.C. 465 (1994).

[18]*Ibid.*

[19]"They Whistled and Won," *Time Magazine*, June 24, 2001.

[20]FCPA Civil Enforcement Actions by the SEC, Appendix B, available at ⟨http://www.usdoj.gov/criminal/fraud/fcpa/append/ix/appendixb.pdf⟩. Viewed August 20, 2008.

[21]*McKay v. Commissioner of IRS*, 102 T.C. 465 (1994).

[22]Boeing: What Really Happened, *Business Week*, Dec. 13, 2003.

[23]Boeing corporate biography of Philip Condit, available at ⟨http://www.boeing.com/history/boeing/condit.html⟩. Viewed August 20, 2008.

[24]ASEM 2003 Conference Brochure, Draft version available at ⟨http://www.asem.org/conferences/brochure.pdf⟩. Viewed August 20, 2008.

[25]*Boeing: What Really Happened*, Business Week, Dec. 15, 2003.

[26]David Bowermaster, *Boeing probe intensifies over secret Lockheed papers*, Seattle Times (Jan. 9, 2005).

[27]*Erskine v. Boeing*, (M.D. Florida, July 9, 2002).

[28]*Ibid.*

[29]David Bowermaster, *Boeing probe intensifies over secret Lockheed papers*, Seattle Times (Jan. 9, 2005).

[30]*Ibid.*

[31]*Erskine v. Boeing* (M.D. Florida, July 9, 2002).

[32]Dept. of Justice Press Release, *Two Former Boeing Managers Charged in Plot to Steal Trade Secrets from Lockheed Martin*, dated June 25,

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2003. Available at ⟨http://www.usdoj.gov/criminal/cybercrime/branchCharge.htm⟩. Viewed August, 2008.

[33]*Ibid.* Dept. of Justice Press Release *Two Former. . . .*

[34]*Civil Settlement Agreement* (between the U.S. and Boeing—dated June 29 and 30, 2006). Available at ⟨http://www.corporatecrimereporter.com/documents/boeing_001.pdf⟩. Viewed May 28, 2008.

[35]See the archived Air Force biography available at ⟨http://web.archive.org/web/20021221215107/http://www.af.mil/news/biographies/druyun_da.html⟩. Viewed Feb. 7, 2008.

[36]Cashing in for Profit?, CBS News, Jan. 5, 2005. Available at ⟨http://www.cbsnews.com/stories/2005/01/04/6011/main664652.shtml⟩. Viewed August 20, 2008.

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[38]See 18 USC § 208 (a–b).

[39]Government's Position With Respect to Sentencing Factors, Criminal Case No. 04-310-A, p. 2. (E.D. Va. 2005). Available at ⟨http://www.pago.org/m/cp/cp-USAtry-SearsSent-02152005.pdf⟩. Viewed May 26, 2008.

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[41]Leslie Wayne,*Former Executive at Boeing Given 4-Month Prison Term. NY Times, Feb 19, 2005*.

[42]Dept. of Justice Press Release: *Boeing to Pay United States Record $615 Million to Resolve Fraud Allegations*, June 30, 2006. Available at ⟨http://www.uusdoj.gov/opa/pr/2006/June/06_civ_412.html⟩. Viewed May 26, 2008.

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[44]Kimberly Palmer, *Former Air Force Acquisition Official Release from Jail*, Government Executive, Oct. 3, 2005. Available at ⟨http://www.govexec.com/dailvfed/1005/100305k2.htm⟩. Viewed August 20, 2008.

[45]Dept. of Justice Press Release: *Boeing to Pay United States Record $615 Million to Resolve Fraud Allegations*, June 30, 2006. Available at ⟨http://www.usdoj.gov/opa/pr/2006/June/06_civ_412.html⟩. Viewed August 20, 2008.

[46]E-mail from Dept. of Justice spokesman Thomas Mrozek, dated January 23, 2008.

[47]*Documents Show Extent of Lobbying by Boeing*, New York Times, Sept. 3, 2003.

[48]Renae Merle, *Rocket Monopoly Approved*, Washington Post, Oct. 4, 2006.

[49]*Top Air Force Official Dies in Apparent Suicide*, New York Times, Oct. 15, 2007.

[50]*Boeing: What Really Happened*, Business Week, Dec. 13, 2003.

[51]Technically, Arthur Andersen LLP was a limited liability partnership—not a corporation.

[52]See "Justices Overturn Andersen Conviction," Washington Post, June 1, 2005.

[53]Dept. of Justice Press Release: *Boeing to Pay United States Record $615 Million to Resolve Fraud Allegations*, June 30, 2006. Available at ⟨http://www.usdoj.gov/opa/pr/2006/June/06_civ_412.html⟩. Viewed August 20, 2008.

[54]U.S. Dept. of Justice, Criminal Resource Manual, § 162 (Ill), Available at ⟨http://www.usoj.gov/usno/eousa/foia_reading_room/usam/title9/crm00162.htm⟩. Viewed May 26, 2008.

[55]See William S. Laufer, "Corporate Prosecution, Cooperation, and Trading of Favors," Iowa Law Review, Vol. 87, pp. 643–667 (2002).

[56]U.S. Dept. of Justice, Criminal Resource Manual, § 162 (VII) (B) (2). Available at ⟨http://www.usdoj.gov/usao/eousa/foia_reading_room/usam/title9/crm00162.htm⟩. Viewed May 26, 2008.

[57]See Exhibit 14.5 of Managers and the Legal Environment, 5th ed. by Constance. E. Bagley and Diane W. Savage, Thompson—West (2006).

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