This paper provides examples of polygraph misuses; details the increasing use of the polygraph inside and outside of law enforcement; explains what a polygraph is, what a typical polygraph test might consist of and its weaknesses in the detection of truth; and analyzes the available research with specific reference to the validity and reliability of the polygraph as scientific evidence. The paper notes that the modern polygraph was invented in 1923 by psychologist Leonard Keeler at the University of California (Berkeley) for use in experimental psychology and not as a lie detector. It discusses the polygraph as a First Amendment issue and as a violation of privacy. (Contains 33 references.) (BT)
The Polygraph and the Privacy Tort.

Alton Barbour
Abstract: This paper provides some examples of polygraph misuses, details some of the increasing use of the polygraph both in and outside of law enforcement, explains what a polygraph is, what a typical polygraph test might consist of, its weaknesses in the detection of truth, and an analysis of available research with specific reference to the validity and reliability of the polygraph as scientific evidence. Finally, there is a discussion of the polygraph as a first amendment issue as a violation of privacy. Key terms: invasion of privacy, lie detector, polygraph.

THE LOS ALAMOS FIASCNO COMPOUNDED

ITEM ONE: In 1998, when Los Alamos physicist Wen Ho Lee was first accused of passing U.S. nuclear secrets to the mainland Chinese, he denied it. The authorities from the Department of Energy had him wired to a polygraph to see if he was telling the truth. He passed the test. But later, when a polygraph expert from the FBI in the Department of Justice looked at the same test results, he concluded that Lee had not told the truth. Here is the question. How could the same lie detector test results lead two different government polygraph experts to completely opposite conclusions? This is a fundamental question that law enforcement experts have been trying to answer since the invention of the purported "lie detector" nearly eighty years ago. Does the polygraph actually distinguish between truth and falsehood? Based on the Wen Ho Lee case, one would have to say that there is no certainty that it does (Stroh, 2000). However, the federal government, Congress in particular, is slow to learn.

ITEM TWO: In spite of pleas from the Department of Energy, Congress approved a measure that would require polygraphs for 5000 additional workers of that department's nuclear weapons complex at Los Alamos, raising to nearly 20,000 the overall number who will be tested (Pincus, 2000). Energy Department employees who work on nuclear weapons programs have voiced
sharp resentment to this latest polygraph testing requirement. They now face a security regimen equal in the government only to that of the CIA, the U.S. spy agency. One official said that it would take five years to complete the testing. The requirement to polygraph more than 3000 new guards and drivers before they can begin work is unique in government because these workers have already undergone full background investigations and drug tests. The proposed polygraph test will include an item which asks whether they have, "caused deliberate damage to or malicious misuse of a United States government information or defense system" (Pincus, p. 3A). In essence, they are to be asked in the polygraph test whether they wish to confess to past treasonable acts against the government agency in which they wish to serve.

Is here something amiss here? Is there something wrong with this picture? Did we miss a premise in the syllogism? Item one says that two government polygraph experts looked at the same test results and came to completely contradictory conclusions. Based on the same test, they were unable to determine accurately whether Wen Ho Lee had or had not told the truth. Since he can't have done both, one of them has to be wrong. Based on this very shaky evidence Wen Ho Lee was imprisoned in solitary confinement for two years while the Department of Justice waited for a confession which never came. Ultimately, in a plea bargain late in 2000, fifty-eight of the fifty-nine charges against him were dropped when Lee agreed to admit to one lesser charge so that the Department of Justice would not look like complete fools. The second item says that Congress has intruded itself into the security business and, rejecting pleas from the Department of Energy, has decided that 20,000 workers at that one facility should be polygraph tested even though many of them have already recently completed security checks. We have a test that we are not sure works on one person, so we are going to give it to tens of thousands of employees so we can be equally uncertain about them. I first became interested in the issue of

So, the issue is old (Block, 1977; Larson, 1969) and yet it is current (Barbour, 2001; Ben-Shakhar, & Furedy, 1990; Pincus, 2000; Stroh, 2000; Vrili, 2000). My point here is that the new issues are the same as the old issues. The old issues have never really gone away. They have merely resurfaced. As I see it, the issues keep resurfacing because there is a prevailing misunderstanding about the polygraph as scientific evidence, and because the polygraph is usually viewed as a criminal justice rather than as a first amendment concern. The purpose of this paper is to address those issues.

THE MYSTIQUE WHICH LEADS TO ABUSE

People who have been raised on "Gangbusters," cops and robbers movies, detective novels, and "The Untouchables" believe they know about the polygraph. Of course, it is the "lie detector." It is "scientific police work." We can remember scenes in which the suspect is wired to the sensitive machine and grilled by the clever police detective. As the detective watches the needles scrawling lines on a moving cylinder of paper he probes closer and closer to the truth. Possibly we remember how such a scene ended with the suspect, a broken man, sobbing out his confession. Deceit was revealed. Truth was uncovered. Justice triumphed. Crime was punished. And the streets were safer for honest citizens to walk in. We all knew then that the lie detector was used on suspected law breakers and that it "worked" because it was "scientific" and moreover that the results were all that any decent citizen would wish for, the identification of law breakers for proper prosecution. This is the polygraph mystique. However, never in any of those dramas did the viewer learn that people who were not accused of any crime might be required to take the polygraph, that the polygraph is a very flawed instrument for determining "truth," and that refusal to take the polygraph might be seen as evidence of guilt even if no charge had been
made against the citizen's innocence. The point about both validity and misuse is made in the two items above, but perhaps a few more examples are in order to continue to make the case.

ITEM THREE: Football coach Dave Smith at Southern Methodist University had heard rumors about drug use in Peyton Hall, the athletic dormitory. Smith began calling athletes in for voluntary polygraphs. One SMU football player agreed to take a polygraph. He answered drug related questions and was judged innocent. Two others, Wayne Edmond and Al Secor were asked to take a polygraph and both refused it as an invasion of privacy. Within a week, both were dismissed from the SMU football squad. Both claimed it was because they had refused to take the polygraph (Harvey, 1975; see also Hughes, 2001). In this sense, a "voluntary polygraph" is an oxymoron in the same order as rap artist, French hospitality and family vacation.

ITEM FOUR: A 29-year old Wyoming housewife and mother of three went to her doctor for a routine examination. There, she says, the man who had treated her for four years and who had delivered one of her children, raped her. When she reported this to the police, she said, "I told them everything that happened. I explained it in front of my husband and people I didn't even know. I couldn't believe what happened." Apparently neither could the police. They gave her a polygraph test (The Denver Post, Sept. 26, 1979, p. 22). The administration of a polygraph to a victim of rape is a procedure rarely applied to victims of other crimes (See Corcoran, 1988). For example, if someone makes an allegation of a burglary, we don't put victims of burglaries on the polygraph. The treatment of rape victims has been changing in recent years, but it hasn't changed much (Gregory & Lees, 1999; Hazelwood & Burgess, 1995). The claims of victims are often doubted.

ITEM FIVE: The wife of Donald Davis of Winston Salem, NC was missing and he was suspected by the police of having murdered her. He denied having anything to do with his wife's
disappearance or even having any idea where she was. The polygrapher who tested Davis used the results to "reconstruct the murder." Davis, the examiner theorized, had shot his wife, put her body in a car and pushed the car into a lake. (He didn't know which lake.) The police told Davis to get a lawyer. They even found a "bullet hole" in his home. They kept on trying to get him to confess right up to the point when Davis' wife arrived home from an unannounced vacation in Florida. So much for "reconstruction" of the crime based on the polygraph.

ITEM SIX: New Yorker, Michael Shafrin, had to take a polygraph test for a job as a security guard at Lord and Taylor. He was asked, "Were you ever involved with the police?" He answered truthfully by admitting to a shoplifting incident when he was thirteen, even though the law allowed him to conceal this juvenile offense. He didn't get the job because he had revealed the information he was entitled by law to conceal. If he had lied, he might have been labeled as deceptive and still not gotten the job. This is a new kind of catch-22. Even though the polygraph is intended to uncover lying, you can be penalized for telling the truth during the examination.

ITEM SEVEN: Eighteen-year old Peter Reilly of New Canaan, Conn. took a polygraph test just six hours after finding his murdered mother's body. He responded badly to questions like, "Peter, have you ever hurt your mother?" and "Peter, do you remember stomping on her legs?" (Imagine for a moment how upset anyone might be six hours after finding his/her mother murdered.) Although he hadn't committed the murder, Reilly had such faith in the polygraph that he signed the confession anyway. Since he knew none of the details of the crime, the police convinced him that he had repressed from his mind all of those details of exactly how he had gone about it. He had managed somehow to "forget" them. Here is another catch-22; if there is no evidence of guilt, the polygraph can be used to explain why someone knows nothing of the crime. The more innocent you appear, the more it must be true that somehow you are guilty and
repressing what you know (Jenkins, 1979).

AN EXTRALEGAL GROWTH INDUSTRY

These testimonials to the misuse of polygraphs are not especially unusual examples. Although many Americans view the polygraph as a "lie detector" and "scientific police work," the reality is that lie detectors often fail to discern between lies and truth. They often fail to identify liars and they have stigmatized honest people as dishonest. Despite intense opposition from civil libertarians, the business of conducting the tests has become a growth industry. Despite the fact that Congress banned private industry's use of lie detectors as a condition of employment in 1988, it is still used as a requirement for government jobs, in law enforcement and security employment around the country, and there is a growing market for polygraphs outside of law enforcement (Stroh, 2000). Polygraphers handle everything now from divorce cases to fishing tournaments (See Hallissy, 2001). Approximately one million tests were administered last year by commercial polygraph firms for between 25-50 dollars per test. The number of polygraphers has increased 50% in the last five years (Stroh, 2000). Who is qualified to be a polygrapher? In most states anyone who has passed a six-week course is certified to examine people in areas that can sometimes end careers or destroy reputations. In other states, there is no certification or licensing requirement at all. Of the thousands of examiners operating in the United States, only ten are Ph.D.s in psychology (Stroh, 2000).

WHAT IS THE POLYGRAPH?

The modern polygraph was invented in 1923 by psychologist Leonard Keeler at the University of California at Berkeley for use in experimental psychology. This first model was widely used by John Reed of Reed and Associates, Inc. in Chicago. Reed is seen as the dean of modern polygraphy because he was the first person to use it in police work as a lie detector. There are
portable and desk models; both do the same job and both are equally sensitive. The portable model can be carried in an attaché case. There are two manufacturers of polygraphs, the Keeler Co. and the Stoeling Co., both of Chicago (Block, 1977).

Usually there are three components with three attachments, and sometimes there are four. The first is the cardio unit (a cardiograph) which registers heartbeat and blood pressure. It consists of a medical type arm cuff with a pump bulb assembly. There is also a sphygmomanometer which measures blood pressure in millimeters. The heart has two sides and four chambers. Blood pressure is based on the movement of blood from one side of the heart (systolic-beat-maximum) to the other side (diastolic-rest-minimum) past what is termed the diachronic notch. The second component is the pneumograph. We usually take between thirteen to twenty breaths per minute. The pneumograph measures rate of breathing and breathing changes. This unit is a ring of rubber tube around the chest, held in place by a beaded chain on a hook. Sometimes there is a second one around the stomach to monitor diaphragmatic breathing. The third component is the GSR or galvanic skin response. It is a unit with two steel finger electrodes. It measures electrical skin conductivity because of sweating or resistance because of dryness. It is measured in ohms.

Finally there is a kymograph unit for moving recording paper under four recording pens. This is the only part of the polygraph which moves on its own. The paper tape is an eight inch wide grid which moves at six inches per second. Each of the four pens records the different functions being monitored. The GSR pen is seven inches long; the others are five inches long. They all draw ink from a well using capillary action (See Block, 1977; Larson, 1969; Matte, 1980).

Back in 1900, psychologist Walter Cannon identified the fight-flight mechanism and became the father of modern psychosomatic medicine. Basically, the idea is that just as the body can affect the mind, the mind can affect the body; they are all part of the same system. The polygraph
is reliant on this psychophysiology idea. The examination format makes a presumption that the person taking the examination is guilty. The polygrapher first provides "control" questions (such as "Do you drink water?") to establish a physiological base for comparison, and then provides stress questions about guilt. The polygrapher then looks for coordinates which indicate some special changes in response to the stress questions. The changes, it is reasoned, would come about because of anxiety about guilt (Ben-Shakhar & Furedy, 1990; Matte, 1980).

HOW DOES IT WORK?

What exactly happens in a polygraph test? Yours is about to begin. Be seated and remain perfectly still. An expandable rubber hose will be wrapped around your upper chest. Another will surround your abdomen. Both will measure your breathing patterns. We will then attach electrodes to the index and ring fingers of your hand to measure minute changes in perspiration. A blood pressure cuff will be wrapped snugly around your forearm and pumped up tight. On a machine behind you, you will hear the noises made by four styluses which will continuously trace changes in the various functions being monitored. These changes will be recorded on a slow moving paper tape similar to the way an electrocardiograph works. Don't move. Just look straight ahead at the blank wall in front of you. We just want to ask you a few questions (Larson, 1969; Matte, 1980).

"Have you ever committed a crime you were not convicted of?"
"Have you ever taken anything from an employer?"
"Have you ever shoplifted anything?"
"Have you ever participated in any kind of protest march, sit-in, or demonstration?"
"Do you have any overdue bills or delinquent debts?"
"Have you ever filed for bankruptcy?"
"Have you ever taken any controlled substances?"
"Have you ever had an extramarital affair?"
"Do you ever have fits of rage or anger?"
"Have you ever been served with a summons to appear in court on a civil or criminal case?"
These are extremely intrusive items. Do you think that any of them might make you catch your breath or make your heart race? It will be necessary to remember these items later when we get into the discussion about invasions of privacy. In case you think I made these items up and that these questions are fanciful and could not possibly be the actual questions asked by a real polygrapher, I can report that these are real questions taken from a real polygraph test given by a real company (Jenkins, 1979; see also Miller, 1971).

Consider for a moment how you might react during such an interview. You might be offended, resentful, upset, angry, disgusted, or frightened, all or any of which might be interpreted as signs of guilt. Many people are prone to anxiety because of a variety of things that might currently be going on in their lives, who have committed no crime whatsoever.

HOW GOOD IS IT?

If that is what a polygraph is and how an examination might be conducted, how good is it? In the language of the social and behavioral sciences, what is the validity and reliability? The truth is that while there may be an instrument named the polygraph, there simply is no such thing as a "lie detector." There is no machine currently in existence that can detect the criminal mind. When the polygraph was first invented there were dreams of finding a specific "lie response," of pinpointing some minute change in bodily function that occurred only when someone told a lie (See Boyce, 2001), but that has never been found and probably never will be. There is no specific physiological symptom for lying (Lykken, 1981b). The machine cannot detect a lie any more than a scalpel can perform an operation, so the results of the polygraph are highly dependent on the inferences of the person who uses it (Cracraft, 1980). The most that any examiner, no matter how skillful and experienced, can infer is that one question is more disturbing than another, but not why (Jenkins, 1979).
In addition, the taking of the test can in itself induce stress. The machine and procedure can make people frightened or angry, but the polygrapher cannot tell if one person is angry or another person is frightened or if one or both are deceptive (Lykken, 1981b). Statistics run on university laboratory tests using polygraphs show that they are heavily biased against the innocent (See "Testing the Lie Detector," 1982). If you have ever been falsely accused of something and still somehow felt upset, you might understand how that feeling might operate against you in a testing situation. What is amusing to me about this phenomenon (of being innocent but upset) is that the people who are most easily made to feel distress and anxiety about their innocence are people with strong consciences and strong religious beliefs.

The leading authority in the United States on polygraphs is David Lykken, author of A Tremor in the Blood (1981a). According to Lykken (1982; See also 1975) there are two good published studies which say that while the test may detect liars up to ninety percent of the time, it will also identify innocent people as guilty fifty percent of the time, yielding an average accuracy of no better than seventy percent (See also Cracraft, 1980). If we allow guilty criminal defendants to introduce polygraph evidence into court proceedings, the court will only see those that they have passed. It will not see the other ninety percent. Looking at it from the opposite side, the innocent one, let us assume that not everyone who comes to trial is guilty, that there is a presumption of innocence. Lets imagine that people are innocent in perhaps two cases out of ten (though it might be even greater). And let us imagine that all of these people are given polygraphs. In every one hundred cases then, there ought to be twenty innocent people who pass the polygraph test, but they won't. Because the polygraph is wrong fifty percent of the time with innocent people, only ten will pass the test. This fifty percent margin of error is simply too enormous for courts to allow polygraphers to determine guilt or innocence. If it is too large an
error for the courts, then isn't it too large also for determining who is a security risk or who has or hasn't been raped?

THE PRIVACY ISSUE

Validity and reliability issues aside, there is finally the privacy issue. Nearly any standard dictionary would say that privacy is "the state of being away from observation or company," but legal theorists now place that meaning in a contemporary context because privacy may also involve acts performed in public view such as wearing unorthodox clothing, worshipping in a synagogue, or loafing in a public park. The usual starting point in tracing the legal development of privacy is Charles Warren and Louis Brandeis' article "The Right to Privacy" in the Harvard Law Review (1896). In his book, A Civil Rights Reader, (1968) Milton Konvitz cites Judge Cooley's 1888 treatise on torts which articulates privacy as the "right to be left alone." (A tort is any wrongful act, damage or injury.) Yet guidelines vary from state to state, court to court, and privacy law remains amorphous. Some structure and guidance in the area of privacy has been provided however. William Presser, Dean of the University of California Law School has done an extensive review of privacy cases. He has concluded that the tort of privacy is actually four torts each having nothing in common with the others except that each is an interference with the "right to be left alone." The four separate torts, according to Presser, are 1. Intrusion into a person's seclusion, solitude or private affairs, 2. Public disclosure of embarrassing facts, 3. Information which places a citizen in a false light in the public eye, and 4. Appropriation of the citizen's name or likeness (McCray, 1972).

The right to be left alone is eroding now in a variety of ways. One example is "datamania," the extent to which data are being collected about ordinary citizens and are being shared by commercial interests. Data concerning citizens' personal lives, from their drinking habits to their
political interests to their marital problems to their spending habits are being collected and being made widely available. Another example is the ubiquitousness in public spaces of video cameras which record the comings and goings of citizens. Still another example is the increasingly widespread use of the polygraph to uncover information which the citizen may not wish to disclose. If one refers back to the kinds of intrusive questions identified earlier in this paper which can be asked by polygraphers and you compare them with the four torts described by William Presser, it is clear that both the process of taking the examination and the kinds of questions asked may constitute a violation of privacy, hence a violation of first amendment rights. Ask yourself if the questions are an intrusion into someone's private affairs or if they may require a public disclosure of embarrassing facts, or if they may require information which may place the citizen in a false light in the public eye? Ask yourself whether or not all of these torts were present in the Wen Ho Lee case? If Wen Ho Lee lost some of his rights because of this misguided use of the polygraph, haven't we all lost some of ours? Thomas Jefferson warned that we need to be eternally vigilant against the wearing away of rights, especially first amendment rights (Barbour, 1996, 1997). The current growth of the use of the polygraph is also a parallel erosion of rights of disclosure and disclaimer. The American Civil Liberties Union contends that requiring someone to take a polygraph is both unfair and degrading. They contend that it violates the constitutional principle that a citizen is innocent until proven guilty and that the test constitutes a form of "illegal search and seizure" of a person's thoughts, attitudes and beliefs (Barbour, 1981). In legal proceedings, the thirty percent average rate of error is so enormous that the validity of any particular test may be called into question in the attribution of guilt. And outside of law enforcement usage, each time someone who is accused of no crime is wired to a polygraph, the right of a citizen to be left alone is less secure.
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Top five competitive papers presented to Communication and Law and Freedom of Expression Section of Western States Communication Association Convention, Long Beach, CA, March 5, 2002. Alton Barbour, Ph.D. is Professor of Human Communication Studies in the School of Communication at the University of Denver. He can be contacted at abarbour@du.edu.
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