Volume 8, Number 1 *2004*

Allied Academies
International Conference

New Orleans, Louisiana
April 7-10, 2004

Academy of Legal, Ethical and Regulatory Issues

PROCEEDINGS

Volume 8, Number 1 *2004*

Table of Contents

ACADEMICIAN, HEAL THYSELF: CAN WE TEACH ETHICS IN ACCOUNTING?

Thomas T. Amlie, State University of New York Institute of Technology
amliet@sunyit.edu

ABSTRACT

There have been increasingly urgent calls for an increased level of ethical sensitivity in the Accounting profession. This has in turn led to an increased emphasis on ethics instruction within the Accounting curriculum at many schools. The purpose of this paper is to examine how the ethical standards within professional and academic organizations related to the accounting profession may aid or impede the ethical development of accounting students.

Several different models of moral development are discussed to lay the groundwork for the importance of the examples set by others. This is followed by a critique of the ethical example set by academia, the professional organizations in the accounting field, and the standard setting bodies in the accounting field. It is argued that it will be difficult if not impossible to instill a high level of ethical and moral behavior in students when the examples which they are exposed to fail to reach that high level.

THE STATUS OF INFANT-INDUSTRY TARIFFS FROM 1965-1971

Robert L. Brittingham, Christian Brothers University
rbrittin@cbu.edu
Sarah T. Pitts, Christian Brothers University
spitts@cbu.edu
Rob H. Kamery, Christian Brothers University
rkamery@cbu.edu

ABSTRACT

From the mid-1960s to the early 1970s, infant-industry tariffs were the subject of much debate, most of it critical. This paper will survey the various arguments and interpretations and discuss the now-familiar question of the relative merits of taxes and subsidies.

INTRODUCTION

It is obvious that while contemporary economic thinking is not entirely opposed to past arguments in support of infant-industry tariffs, it finds other forms of intervention to be more justifiable on economic grounds. Of course, when evaluating various policies of intervention in a particular country, other factors must be considered, such as the government's source of funds for paying the subsidy, the relative efficiency of government agencies collecting duties, and the administration of a domestic program of taxation. When such factors are considered, temporary tariffs might appear to be useful after all.

THE NATURE OF DISTORTIONS

One study of the infant-industry argument was made by Jagdish Bhagwati and V.K. Ramaswami. Their analysis deals with the nature of the distortions that make such intervention feasible. According to them, "The achievement of an optimum solution is characterized by the equality of the foreign rate of transformation [FRT], the domestic rate of transformation in production [DRT], and the domestic rate of substitution in consumption [DRS]" (Bhagwati & Ramaswami, 1963, pp. 44-45).

Different types of distortions would call for different types of policy action. For example: "If the country has monopoly power in trade, a competitive free trade solution will be characterized by DRS=DRT/FRT" (Bhagwati & Ramaswami, 1963, pp. 44-45). In this case, a tariff could, according to the authors, equalize all three of the terms, whereas a subsidy would destroy the equality of DRS and DRT.

A domestic distortion similar to the types discussed above by Everett Hagen and D.W. Goedhuys would be presented by the mathematical statement DRS=FRT/DRT. A tariff could

remove the inequality between FRT and DRT, but it would destroy the equality between DRS and FRT. On the other hand, a subsidy might be able to eliminate the inequality without creating a new one.

Bhagwati and Ramaswami draw three conclusions for the case of domestic distortions:

1. A tariff is not necessarily superior to free trade.
2. A tariff is not necessarily superior to an export (or import) subsidy.
3. A policy permitting the attainment of maximum welfare involves a tax-cum-subsidy on domestic production. Just as there exists an optimum tariff policy for a divergence between foreign prices and FRT, so there exists an optimum subsidy (or an equivalent tax-cum-subsidy) policy for a divergence between domestic prices and DRT (Bhagwati & Ramaswami, 1963, p. 45).

The authors' conclusions appear more valid when comparing a system of permanent tariffs to permanent subsidies than when considering infant tariffs, for those who advocate such temporary tariffs would state that the temporary inequality between DRS and FRT is the necessary price for eventually achieving the equality of all three terms at a high-income equilibrium point.

COMMENTARY ON DOMESTIC DISTORTIONS

The same comment is applicable to Harry Johnson's statement in "Optimal Trade Interventions in the Presence of Domestic Distortions" (Caves, Johnson & Kenen, 1965, pp. 3-34). On the other hand, Johnson questions those who appear to assume too easily that correcting one distortion by introducing another is sound policy:

> ...it is impossible to predict on a priori grounds--that is, without comprehensive empirical information on the tastes and technology of the economy [as well as on the attitudinal factors discussed by Pranab Bardhan]--whether the substitution of one violation of the Pareto optimality conditions for another will worsen or improve economic welfare (Caves, Johnson & Kenen, 1965, p. 11).

Several other economists also express a preference for subsidies over tariffs. Pranab Bardhan (1967, pp. 12-13) employs the same distortion argument as Bhagwati and Ramaswami, as does Hla Myint (1971, p. 190). Syed Naqvi, on the other hand, argues that where externalities are the result of learning-by-doing:

> ...optimal government intervention should take the form of a subsidy on the learning process itself instead of protection ...since protection, besides imposing additional consumption and production costs on the economy, cannot guarantee that the learning accumulated in infant-industries will be made available to other domestic producers without charge (Naqvi, 1969, p. 141).

Robert Baldwin follows a similar approach when he states that "subsidies directed toward particular types of inputs--for example, in the infant-industry case, toward research activities--may be necessary" to achieve the optimum set of production techniques (Baldwin, 1969, p. 141). Herbert Grubel follows the above lines of reasoning but also introduces some administrative factors favoring subsidies over tariffs as temporary policies. He favors subsidies for three reasons:

> The first is that a subsidy avoids the loss of consumer surplus associated with the tariff, thus making the initial cost of having the industry smaller. Second, the payment of a subsidy is a constant reminder to society that nursing of the infant is costing it resources leading to more frequent and incisive reviews of the social value of the project. Third, dynamic changes in the rest of the world influencing the world price have direct impact on the size of the subsidy and are therefore more likely to be considered in review of the project (Grubel, 1966, p. 339-340).

One of the major sources of discussion concerning the infant-industry argument involves the relation of the argument to external economies. In addition, a close examination of the nature of these economies is necessary.

Naqvi considers the existence of external economies as one basis for state intervention (he treats learning-by-doing as a separate case), but he places restrictions on the types of economies which are applicable:

> It must be noted that there is a basic difference between 'externalities' resulting from cost reductions whose benefits cannot be captured by the private investor and a private rate of discount different from the social. This latter source of 'externalities' has nothing to do with the infant-industry argument (Naqvi, 1969, p. 139).

Bardhan considers the latter type of externalities as being of great importance. Considering externalities in a broader sense, then, Bardhan asserts that " ...the basic rationale for the infant-industry argument is provided by…irreversible external economies" (Bardhan, 1967, p. 3). Grubel (1966) adds a further requirement, that the external economies "...must be ...non-appropriable by the private agent connected with their creation…" (p. 327). Again, this additional restraint would be removed if a major barrier to investment were Bardhan's too-short "entrepreneurial horizon."

Taro Watanabe makes a different point about external economies. Watanabe (1963) agrees with Bardhan that "In all the different cases where no infant can learn without simultaneously teaching others (without pay), the infant-industry argument coincides with the (irreversible) external economies argument" (p. 21). However, he points out that "the two must be distinguished from...each other; for, whereas the infant-industry argument permits only temporary protection, ...the external economies argument advocates even permanent protection, provided that the external economies more than compensate for the cost of protection" (Bardhan, 1964, p. 43). Grubel similarly argues that if industrialization is seen as a worthwhile goal in itself, then permanent protection may well be justified.

It appears from the above discussion that a clear, universally accepted definition of external economies has still not been given. In its absence, there are still grounds for discussion of the manner in which temporary tariffs can affect an economy.

Another issue--but one which has been raised only since the late 1960s or early 1970s--deals with the distribution of the cost of the tariff. In the traditional infant-industry argument, the cost is borne by the consumers in the protected industry's country. Some have attempted to apply it to a different case.

Since the early 1970s, the infant-industry argument has been used to justify preferential treatment to the exports of underdeveloped countries (Prebisch, 1959, pp. 251-273). This would be done by the advanced countries lowering their tariff barriers to exports from certain countries. Economists from developed countries have expressed the view that, however noble it is for the strong countries to help the weak, such help cannot be justified on true infant-industry grounds. In the first place,

> ...the traditional argument called for transitional support of the industry at the expense of the consumers of the developing country, whereas the argument for preferences calls for support at the expense of the consumers of the developed countries [indirectly, by foregoing tariff receipts] (Johnson, 1967, pp. 30-31).

Second, the advantage received by the preference-receiving country would not flow from the same factors as would exist in the infant-industry case:

> ...the degree of advantage to particular industries conferred by a system of preferences would depend on the accident of relative tariff levels in the preference-giving countries rather than, as in the infant-industry case, on the potential international competitiveness of the industries receiving the tariff advantage (Frank, 1970, p. 251).

Other differences may also be mentioned, such as the fact that tariffs favor import-competing industries while preferences favor commodities exported from the underdeveloped country, so that the two different policies would result in two different patterns of production. It appears that those who justify preferences on infant-industry grounds are giving the argument a rather novel interpretation, one that does not appear to be valid on purely economic grounds.

Isaiah Frank suggests, however, that preferences are more apt to foster efficiency in production. However, industries would still have to compete with industries in other preference-receiving countries as well as with industries in the preference-giving country, rather than be protected from all foreign competition by a tariff.

CONCLUSION

One can conclude from this paper that the final word on the infant-industry argument has not been written, nor is it likely to be. One reason is that policymakers have found the argument to be an easy way of rationalizing highly suspect economic policies, and as long as the "economic man as policymaker" exists only in treatises, such rationalizations will be needed and employed. A more respectable reason is that infancy actually can be a distinct economic state with its own set of resource allocation problems, and as long as infants appear in a changing environment, specific

problem areas will have to be isolated and remedies proposed. Even though previous expositions of the infant-industry argument may be inapplicable to the current problem, a historical review such as this should serve as a guide for locating problems and formulating solutions.

REFERENCES

Baldwin, R.F. (1969). The case against infant-industry tariff protection. *Journal of Political Economy, 77*(5&6), 295-305.

Bardhan, P. (1964). External economies, economic development, and the theory of protection. *Oxford Economic Papers, 16*(5), 40-54.

Bardhan, P.K. (1967). An optimum subsidy to a learning industry: An aspect of the theory of infant-industry protection. Working paper, Department of Economics. Cambridge, MA: Massachusetts Institute of Technology, 10(11).

Bhagwati, J. & V.K. Ramaswami (1963). Domestic distortions, tariffs and the theory of optimum subsidy. *Journal of Political Economy, 71*(2), 44-50.

Caves, R.E., H.G. Johnson & P.B. Kenen, eds. (1965). *Trade, growth and the balance of payments: Essays in honor of Gottfried Haberler*. Chicago: Rand McNally.

Frank, I. (1970). New perspectives on trade and development. In T. Morgan and G.W. Betz (Eds.), *Economic Development, Reading in Theory and Practice* (p.251). Belmont, CA: Wadsworth Publishing Company. Article originally published 1947 in Foreign Affairs, (4).

Goedhuys, D.W. (1963). Social cost and private cost in the infant industry argument. *South African Journal of Economics, 31*(6), 127-137.

Grubel, H.G. (1966). The anatomy of classical and modern infant industry arguments. *Weltwirtschaftliches Archiv, Bd., 97*(12), 325-344.

Hagen, E.E. (1958). An economic justification of protectionism. *Quarterly Journal of Economics, 72*(11), 496-514.

Hagen, E.E. (1961). Reply. *Quarterly Journal of Economics, 75*(2), 145-151.

Johnson, H.G. (1960). The cost of protection and the scientific tariff. *Journal of Political Economy, 68*(8), 327-345.

Johnson, H.G. (1965). An economic theory of protectionism, tariff bargaining, and the formation of customs unions. *Journal of Political Economy, 73*(6), 256-283.

Johnson, H.G. (1967). *Economic policies toward less developed countries*. New York: F.A. Praeger.

Jorgenson, D.W. & Z. Grillches (1967). The explanation of productivity change. *Review of Economic Studies, 34*(7), 249-284.

List, F. (1856). *The national system of political economy*. Translated by G.A. Matile. Philadelphia: J.B. Lippincott and Company.

List, F. (1966). *The national system of political economy.* New York: Augustus M. Kelley.

Myint, H. (1965). Economic theory and the underdeveloped countries. *Journal of Political Economy, 73*(10), 477-491.

Myint, H. (1971). *Economic theory and the underdeveloped countries*. New York: Oxford University Press.

Naqvi, S.N.H. (1969). Protection and economic development. *Kyklos, II, Fasc. 1*, 124-154.

Nurkse, R. (1966). *Problems of capital formation in the underdeveloped countries*. New York: Oxford University Press.

Prebisch, R. (1959). Commercial policy in the underdeveloped countries. *American Economic Review, 49*(5), 251-273.

Watanabe, T. (1963). Some problems in the infant-industry argument for protection. *Osaka Economic Papers, 14*(7), 17-25.

THE PROBLEM OF SOLID WASTE DISPOSAL VS. REVENUE: THE CITY AND COUNTY GOVERNMENT DILEMMA

Frank E. Hood, Mississippi College
fhood@mc.edu
Sarah T. Pitts, Christian Brothers University
spitts@cbu.edu
Rob H. Kamery, Christian Brothers University
rkamery@cbu.edu

ABSTRACT

The technological methodology employed to dispose of solid waste leaves much to be desired. Most of the solid waste disposal in the U.S. is performed through open dumping, which is unacceptable to almost everyone. This paper explores two of the three most promising methods of solid waste disposal: incineration and resource reclamation.

INTRODUCTION

The daily generation of solid waste was approximately one billion pounds in 1970 and tripled by 1980. This total makes it imperative that a sound and practical technological methodology be implemented by municipalities to avoid both physical and fiscal problems in the future. The exact figure for solid waste generation on a day-to-day basis in the U.S. is difficult to determine because of poor statistical services. However, one billion pounds a day is commonly thought of as a conservative estimate.

Pollution regulations that limit the number of alternative choices of disposal actions will probably continue to be enacted. As the accumulation of solid waste increases and the land area suitable for disposal action decreases, citizens will demand efficient disposal services that are not too painful to finance.

INCINERATION

Burning is one of the oldest methods of disposing of organic solid waste. Matter can be neither created nor destroyed, but its form can be changed to accommodate man's needs. The process of incineration is not the destruction of solid waste, but rather it is the changing of matter into a more easily handled form. Burning has evolved from the primitive open dumps used extensively a few years ago as the accepted methodology for solid waste disposal to the complex engineering systems used today to reduce organic matter to about 10 percent of its original mass.

Unfortunately, the remainder is discharged into the atmosphere as gases and particles, which together with atmospheric conditions result in air pollution. The social cost of air pollution will possibly render the current level of technology unsuitable for many large municipalities that appear to be caught in a dilemma. On one side, the pollution caused by incineration requires the installation of costly pollution abatement devices. The other side of this dilemma is that the land space available for alternative technologies is scarce; thus, many large population centers may be forced to utilize expensive technology.

The purpose of a municipal or private incinerator is to provide an economical alternative to the methodology of landfill disposal. The decision to utilize, or not utilize, incineration depends on the costs associated with the alternative solutions that are available to the municipality. There are several distinct advantages of incineration:

1. The total land area required for operation is much less than for alternative solutions. Also, the hauling distance to the dumps or landfills may add a prohibitive amount to disposal costs of other methods.
2. An incinerator can be centrally located because a well-landscaped incinerator will often be acceptable in many areas where a landfill will not.
3. An incinerator produces ash residue which is equal to only about 10 percent of the original volume of the solid waste, and which may be transported to a sanitary landfill area relatively easily and inexpensively.
4. An incinerator is not directly affected by climate or unusual weather.
5. An incinerator may provide a source of incidental income by using waste to generate steam for electrical power or to practice resource recovery. Incinerators may also serve several communities at equitable rates.
6. An incinerator is flexible in that it can adjust to normal fluctuations in quantity (American Public Works Association, 1970).

The disadvantages associated with incineration are:

1. An incinerator requires a large capital investment. As public concern over air pollution grows, a larger investment in plants will result through the cost of pollution control devices.
2. Operating costs are relatively high. An incinerator may require fewer employees than an alternative operation, but the wage scale is higher for incinerator personnel because the degree of skill required for the safe operation of an incinerator is higher than that required for a landfill operation.
3. The economic justification for incineration often rests with the location variable. Obtaining a site that allows substantial savings is often difficult because frequently a location in a highly populated region must be obtained, and the emissions caused by the incineration process may be resented by some citizens of the community. Also, the resultant truck traffic may be a significant nuisance in highly populated neighborhoods.
4. The residue from incineration may provide difficulty in disposal since incineration is not a complete disposal method (American Public Works Association, 1970).

There are two incineration operations that are being used to provide power through the production of steam. In the early 1970s, Montreal and Chicago operated pilot plants that were capable of handling five tons per day, which is equivalent to the trash output of a city of 200,000 people. These cities are testing the hypothesis that the sale of steam as a by-product of incineration will significantly offset the fiscal burden of the collection budget (Union Carbide claims non-polluting process to treat solid waste, 1972). If these test projects are successful, then the conservation of oil, gas, and coal can be enhanced. These plants each cost approximately $15 million to build, but hopefully by converting 60 percent of the trash into steam the remaining 40 percent can be salvaged to provide revenue to offset the total cost of disposal (Refuse converted to power, heat, 1971). It must be remembered, however, that these were experimental operations in the early 1970s that encountered the same difficulties of regular incinerators. The technology necessary to implement such a plan is possible from an engineering standpoint, but is still untested from an economic standpoint.

THE COSTS ASSOCIATED WITH INCINERATION

The aggregate economic costs of the technology of incineration can be segregated by functions. These functions of incineration can be further separated by those functions that must be handled on-site and those that must be performed away from the site. Functions such as collection, handling, and transportation are present in other disposal methods. The off-site functions, which are present in all disposal operations, will be considered in another paper. The functions to be handled on the premises of the incinerator are as follows: handling (including the physical movement of the solid waste during all stages of the incineration process), storage, and the disposal of the residue (ash) that remains after incineration. Routine maintenance of the physical plant adds another large increment to total cost. Although construction costs vary among geographical areas, they have been shown to be the largest single element of the total cost of incineration (American Public Works Association, 1970).

Construction costs in dollars per ton of daily rated capacity have approximately doubled since 1959. In 1959, the average cost per ton of capacity was almost $8,000. High construction costs and stringent safety and pollution requirements make the cost of construction of a central incinerator prohibitive to many municipalities.

Several factors govern whether or not a given municipality will adopt the technology of incineration. One of the most important of these is the length of time (hours) that the incinerator can be continually operated economically. Probably the most economical length of time for an incinerator to be operated is 24 hours; however, only the largest incinerators can be operated for long periods of time. In many communities, the quantity of waste generated daily can be burned in an eight-hour period. Incinerators operated on less than a continuous basis, however, will incur several nuisance factors that will be prohibitive to the attainment of economies of scale. Economies of scale are defined as declining average costs as the scale of operation increases. One reason for diseconomies of scale is that small incinerators must be shut down at the end of the incineration process and reheated at the beginning of the next incineration period. This interruption causes damage to the refractory linings of the furnace. Also, the resulting odor from incineration is greater with the smaller incinerator.

RECLAMATION OF ECONOMIC RESOURCES

The operation of the free enterprise economy in the U.S. has accomplished the tremendous task of allocating resources--at close to optimal cost conditions in many cases--while obtaining the use of near cost-free resources such as air, water, and in some cases land space. The abundance of land space in the U.S. enables some enterprises to obtain free use of adjoining deserted land for little additional cost, except the cost to society. However, the industrial system has done little to devise a practical program of recycling. In the past, recycling has been found to be a poor substitute for the use of raw materials. Added capital was needed to institute any technology of recycling, and there was little incentive to incur any additional cost that appeared to add nothing to output. Also, competition has acted in restraint of innovation in the recycling area. At the present time, however, strong incentives for recycling exist. Future resource needs will require a workable program of recycling to ensure a continuing supply of resources to maintain productive standards.

The reclamation of economic resources has produced an attempt in almost every industry to find alternative supplies of raw materials. Occidental Petroleum Corporation has demonstrated a process for converting solid waste into a synthetic oil. The conversion of solid waste into oil is not a new use for solid waste. However, the process has usually experienced very high reclamation cost per barrel reclaimed. The Occidental program utilizes a low cost pyrolysis process (the reduction of matter through the application of heat and pressure) rather than the more expensive hydrogenation process (Occidental converts solid waste [garbage] into oil, 1972).

Recycling is a reverse channel of distribution. The resource found in solid waste is produced at the same stage as the product. There is little justification for the term's final product or final user in economics since consumption will create the economic good that will flow back to the producer, and no good is completely consumed. Consumption of a soft drink leaves the problem of disposal of the bottle, can, or cup. A durable good such as an automobile or a television set leaves a hulk when worn out. These leftovers from consumption and production must be utilized in part to provide further goods and to reduce the quantity of solid waste that must be disposed of by municipalities. This section will examine the recycling of paper, steel, glass, and aluminum. Considerable space is devoted to the sections on the recycling of glass and aluminum for two reasons. First, both glass and aluminum represent problems in solid waste disposal as they are both non-biodegradable--glass to a lesser degree than aluminum since glass can be reduced in size through breakage. Second, since the late 1960s, both the glass and aluminum industries have devised economically viable programs for recycling.

RECYCLING GLASS

The manufacture of glass is probably the oldest stable container industry known to man. Glass provides an excellent material for containers because it is both inexpensive and simple to make. In 1968, sales of glass containers approached $2 billion and the industry provided employment for approximately 77,000 persons in the U.S. The largest portion, 44 percent, of glass production is attributed to glass containers. Flat glass production--glass used as plate glass for automobile windshields--and other plate glass products account for 27 percent of total production. Pressed and blown glass provides over $8 million in sales, 29 percent of total glass production.

The largest consumers of glass are those industries that require containers designed for food and drink. Of the total demand for glass production, 32.5 percent goes to food, 20.2 percent goes to beer, 5.4 percent goes to liquor, 2.7 percent goes to wine, and 22.1 percent goes to soft drinks. With the inclusion of 0.2 percent for dairy products, the large percentage of 82.9 is allocated to food and beverages. This large allocation to food and beverages is significant because this type of container usually is most likely to present problems in solid waste disposal.

Food and beverage containers are purchased more frequently than are containers of chemicals and medicines. Also, food and beverage containers become a part of the solid waste accumulation almost immediately upon use, and perform only a limited storage function. It is important to note, however, that glass composes only about eight percent of total solid waste (Litter Facts, 1971). The large quantities of glass containers used in packaging and the problems associated with the disposal of the glass component of solid waste encouraged the Glass Container Manufacturers Institute to try to establish a technology of recycling glass. Incinerator operators report some difficulty in the disposal of glass by burning. When glass bottles are disposed of in a landfill they often break, causing a weak link in the cellular construction of the landfill. Although glass comprises only a small part of total solid waste, glass containers are easily discernible in solid waste collections. Because of this ease of recognition, glass is often singled out as a potential villain in the solid waste problem.

Glass is almost 100 percent recyclable because uses for glass far exceed waste glass supplies. John H. Abrahams, Jr. (1970), Manager of Environmental Pollution Control Programs of the Glass Container Manufacturers Institute, stated in a paper:

> *And let me emphasize here that we already have uses for every scrap of waste glass produced in the country today. What to do is not the problem. How to get it--how to separate it from the vast bulk of municipal refuse--is the problem.*

Unfortunately, many municipalities that investigate recycling probably do so with the intention of making a profit. That the salvaging of economic resources by municipalities can ever be profitable is doubtful; thus, the problem currently facing city and county governments is the disposal of solid waste rather than revenue. However, a significant portion of the ever- growing solid waste cost can be offset by including in the existing refuse systems the sale of salvagable materials for the purpose of recycling. This point was also made by Abrahams (1970): "It may never be economical to separate glass alone from refuse, but add to this the salvage volume of paper, ferrous metals, aluminum, and compost, then the economic picture changes."

CONCLUSION

Reclamation of economic resources from solid waste is rapidly becoming a necessity. The growing public concern about the environment and the greater financial demands placed on municipalities by the growing accumulations of solid waste provide new incentive to firms to attempt further utilization of the salvagable part of solid waste. Public sympathy can now be earned by those companies willing to attempt utilization of the residue of the production and consumption of their products. Companies that are willing to commence an early program of resource reclamation probably will be able to capitalize on goodwill and advertising advantage.

REFERENCES

Abrahams, H.H., Jr. (1970). Utilization of waste glass. Paper read at the Second Mineral Waste Utilization Symposium, March, Chicago. (Mimeographed), 3.

American Public Works Association (1970). Municipal refuse disposal. Chicago: Public Administration Service, 151-152.

Litter Facts (1971). Glass container manufacturers institute, inc. New York: Public Affairs Department, 1.

Occidental Converts Solid Waste [Garbage] into Oil (1972, April 1). Marketing News. New York, 8.

Refuse Converted to Power, Heat. (1971, June 21). The Clarion Ledger [Mississippi].

A HISTORICAL PERSPECTIVE FROM THE EARLY 1970s: THE SCOPE OF THE SOLID WASTE PROBLEM IN THE U.S.

Frank E. Hood, Mississippi College
fhood@mc.edu
Sarah T. Pitts, Christian Brothers University
spitts@cbu.edu
Rob H. Kamery, Christian Brothers University
rkamery@cbu.edu

ABSTRACT

Disposal of solid waste presents a significant public finance problem that has emerged in the U.S. since World War II. With the increase in disposable income and the emergence of convenience packaging, the accumulations of throw-away goods are reaching critical proportions. No city in the U.S. will escape the problems now being faced by municipalities with large population concentrations. This paper discusses the scope of the solid waste problem in the U.S. in the early 1970s.

INTRODUCTION

Neither the physical nor fiscal burdens of the solid waste problem are new, but public recognition of the problem is of recent origin. Problems of land use, pollution, and public health received national attention beginning in the early 1970s in context with the solid waste problem. Nevertheless, the large municipal accumulations of solid waste that first appeared in the 1960s have become very noticeable. These large refuse collections are natural by-products of an increasingly affluent and urban population. Municipalities are ill-equipped to handle the solid waste problem because of decreasing land space available for disposal activities, increasing city budgets, and a general lack of public interest in the solid waste problem.

THE LAW

Senate Bill 306, which later became the Solid Waste Disposal Act of 1965, was the first national legislation that focused attention on the solid waste disposal problem. Significantly, however, the solid waste portion of the bill was subordinate to the section on air pollution and the government regulation of the installation of air pollution abatement equipment on automobiles. Most of the floor debate on the bill centered on the air pollution portion of the bill rather than on the disposal of solid waste. Signed into law by the President on October 20, 1965, the solid waste

section soon surpassed the companion measure on air pollution in national importance because of the ever-growing residue of waste associated with affluence.

THE SOLID WASTE DISPOSAL ACT

There are essentially six major objectives contained in the Solid Waste Disposal Act of 1965. These objectives are as follows (Solid Waste Disposal Act, PL-272, 1965):

1. To begin a national research and development program for new and improved methods of solid waste disposal and to provide technical and financial aid to state and local governments in developing solid waste disposal programs.
2. To define solid waste as garbage, refuse, and other discarded materials, excluding sewage.
3. To divide the responsibility between the Department of Health, Education, and Welfare and the Department of the Interior, with the Interior Department having responsibility over the waste resulting from mining or fossil fuels. The Department of Health, Education, and Welfare would be responsible for solid wastes from all other sources.
4. To authorize grants to public and private agencies and institutions and individuals to encourage research in the area of solid waste disposal.
5. To authorize appropriations of $7.0 million in fiscal 1966, $14.0 million in fiscal 1967, $19.2 million in fiscal 1968, and $20.0 million in fiscal 1969.
6. To require that all information, uses, processes, patents, and other developments resulting from activities conducted with a grant under the act be readily available on fair and equitable terms to industries and institutions involved.

The Solid Waste Act of 1965 laid the groundwork for the solution to the solid waste problem, but the final solution has proven to be far more elusive than was originally thought. The complexities of municipal solid waste disposal had become so great by 1965 that it was evident that the problem could be solved only if selected prevailing public services on the local level were abrogated. The time required to develop new disposal technology and the fiscal burden that the adaptation of new disposal technology would impose on local governments would prove to be enormous. The mechanism needed to provide a flow of funds from the national level to the municipalities in this area apparently proved to be inadequate.

THE RESOURCE RECOVERY ACT OF 1970

Public Law 91-512 (The Resource Recovery Act of 1970), which can possibly be attributed to the recognition of the extent of the solid waste problem, established the desire of the federal government to aid in the problem of solid waste disposal by granting a three-year extension of the Solid Waste Disposal Act of 1965 and expanding the funds allocated to the problem of solid waste. This legislation, which represents a recognition that the third pollution is truly a problem of national dimensions, increased the amount of public funds available for federal solid waste projects to approximately $462.75 million. Accomplishments of the law are as follows (Congressional Quarterly Almanac, 1970):

1. Directed the Secretary of Health, Education, and Welfare to promote research on health and welfare effects of waste, operation, and financing of solid waste disposal programs.
2. Directed the Secretary of Health, Education, and Welfare to construct studies of economic means of recovering useful materials from solid waste: uses of such materials and the market impact; appropriate incentive programs, including tax incentives, to aid in solid waste disposal; and reasonable changes in packaging, namely a reduction in the use of certain packaging materials.
3. Authorized the establishment of demonstration projects.
4. Authorized planning grants of up to two-thirds of the costs for single municipalities, and three-fourths of the costs for other areas, for making survey of solid waste projects.
5. Authorized grants to public agencies for demonstration of resource recovery systems for construction of innovative solid waste disposal facilities.
6. Authorized the Secretary of Health, Education, and Welfare to formulate guidelines for solid waste recovery as soon as possible.
7. Authorized grants to public agencies, educational institutions, or other organizations to train personnel to work in solid waste programs or to train teachers in some related area.

EXTERNALITIES

Externalities can be viewed as either a social gain or a social cost accruing to one or more economic units. These social gains or social costs are the result of the action of other economic units, namely producers, consumers, or governmental structures. A social benefit received by an economic unit, resulting from the independent action of a second unit, is referred to as a positive externality. Conversely, a social cost received by an economic unit is commonly referred to as a negative externality. Municipalities, as economic units, establish their cost schedules based on increments of physical cost and constraints faced by the municipality, which may be the result of activity in the public sector or independent activity in the private sector.

LITTER

To a certain extent, the U.S. economy is dependent upon solid waste generation. More production means more consumption, both of which give rise to increased quantities of solid waste accumulation. As Americans strive for affluence, they leave behind a growing monument to consumption in the form of cast-off packages and partially consumed goods. Paul Ehrlich, in an interview with Time magazine, explained his belief that each American child is 50 times more of a burden on the environment than each child from India. Although the U.S. contains about six percent of the world's population, it consumes about 40 percent of the world's production of natural resources.

Assuming a 70-year life span beginning in the early 1970s, the average American will consume 26 million gallons of water, 21,000 gallons of gasoline, 10,000 pounds of meat, and 28,000 pounds of milk and cream, as well as $8,000 worth of school buildings, $6,000 worth of clothing, and $7,000 worth of furniture. To add to the problem, a 1970 Gallup poll showed that 41 percent

of Americans considered the ideal family size to be four or more children (Fighting to save the earth from man, 1970).

The problem of litter readily becomes apparent to anyone who travels the nation's highways and roads. A publication of the Glass Container Manufacturers Institute, Inc. defines litter as anything that is discarded improperly along streets, highways, parks, and beaches (Litter Facts, 1971). Table 1 illustrates the composition of litter that is found on the nation's highways. The largest portion of the litter burden is composed of common paper items; however, the six percent composed of plastic items is possibly the most troublesome. Plastic containers are non-biodegradable. Once a plastic container is discarded, the natural forces of heat, water, and exposure cannot cause the plastic to revert back to its original elements (U.S. Environmental Protection Agency, 1970).

Table 1: The Composition of Litter Found on Highways in the United States in 1970

Classification	Percentage
Paper (newspapers, containers, wrappers)	59
Cans (aluminum and steel)	16
Bottles (food and beverages)	6
Plastic items	6
Miscellaneous refuse	13

Source: *Litter facts* (New York: Public Affairs Department, Glass Container Manufacturers Institute, Inc., 1971), 6.

A continuing supply of litter appears to be assured to succeeding generations. As to the composition of the littering fraternity, the Glass Containers Manufacturers Institute provided some interesting insight (Litter Facts, 1971). Young people litter more than their parents. Men tend to litter more than women do. Local residents deposit a greater quantity of litter along their own roadsides than tourists. People living in smaller communities litter more than those in large metropolitan areas do. Many of the preceding examples, however, are indications of tendencies rather than an indictment of any particular group. Also, many people can be classified in more than one category; young people, for example, may also be city dwellers.

People litter for many reasons. Some persons appear to be slovenly by nature and extremely careless in solid waste disposal. Every person probably is guilty of littering at one time or another, but the visible traces of some litterers are more apparent than those of others. An example is the individual who uses the streets and highways to dispose of his weekly accumulations of trash as opposed to the individual who occasionally throws away a gum wrapper. A study made by Gallup International, Inc. revealed that people litter through laziness, thoughtlessness, or simple inconsideration (Litter Facts, 1971).

The problem of stopping litter is an integral part of the solid waste problem. Since litter is scattered geographically, its collection presents some interesting cost problems for local

governments. John H. Abrahams, Jr., manager of the Environmental Pollution Control Programs for the Glass Container Manufacturers Institute, stated before the Second Mineral Waste Utilization Symposium that the cost per item for the collection of litter should be estimated at thirty cents (Abrahams, 1970). The exact cost per item for litter collection is difficult to establish. According to B.R. Redding, District Public Health engineer representing the Mississippi State Board of Health, the cost of litter collection is dependent upon several factors. Wage rates, equipment operation, equipment maintenance, and related costs influence the final cost per item. It has been established that the cost of recovering litter items from the roadsides in Mississippi is greater than the production cost of many of the goods that at one time occupied the now discarded containers (Personal conversation with B.R. Redding, June 1, 1972). In the early 1970s, the only way to collect litter was to gather it by hand and transport it to a central collection point or disposal area. Obviously, the collection of litter by hand is not the ideal solution, even though such a project has often been suggested as a type of work project for the unemployed. Such a project could possibly result in a misdirection of priorities and might not lead to a resolution of the litter problem. An analogy to such a project might be a cure for the common cold. A drug that eases pain and reduces discomfort is not a substitute for a cure. So it would be with hand-collected litter. The symptoms might be temporarily lessened, but the nation's roads, highways, and streets would still be the recipients of unwanted cans, bottles, trash, and other residue.

CONCLUSION

Solid waste can be lessened to a degree just as the common cold can be eased. A system of public education as to the causes and dangers of solid waste can be instituted. Because of the nature of the individual, there will probably always be some accumulation. Still, for example, the quantity of roadside residue can and should be lessened. There is no estimate as to what percentage of total solid waste accumulation is composed of litter. In all probability, that percentage of total solid waste that is considered as litter represents only a small part of a community's solid waste.

REFERENCES

A systems approach to the problem of solid waste disposal (1970). Anheuser-Busch, Inc. St. Louis.

Abrahams, J.H., Jr. (1970). Utilization of waste glass. Paper read at the Second Mineral Waste Utilization Symposium, March, Chicago. (Mimeographed.)

Baumol, W.J. (1965). *Welfare economics and the theory of the state.* Cambridge, MA: Harvard University Press.

Congressional Quarterly Almanac (1970). 91st Congress, 2nd Session, 26, 514-519.

Environmental Protection Agency (1970). *Plastic waste in the coming decade.* H.H. Connolly (Ed.). Washington: U.S. Government Printing Office, 14.

Fighting to save the earth from man (1970, February 2). *Time*, 45, 56.

Herfindahl, O.C. & A.V. Knesse (1969). *Duality of the environment.* Baltimore: Johns Hopkins Press.

Litter Facts (1971). Glass container manufacturers institute, inc. New York: Public Affairs Department, 1.

Mishan, E.J. (1967). *The costs of economic growth*. New York: Frederick A. Praeger.

Solid Waste Disposal Act (1965). (PL 89-272) § 202, Stat. 997 (1965), 42 U.S.C. § 3251.

Solid Waste Fact Book (1971). Glass container manufacturers institute, inc. New York: Public Affairs Department.

Testin, R.F. (1971a). Recycling of used aluminum products. Paper prepared for the Reynolds Metals Company, Richmond, VA. (Mimeographed.)

Testin, R.F. (1971b). Director of Environmental Planning, Reynolds Metals Company, remarks before the Environmental Protection Administration, March 11, New York. (Mimeographed.)

THE FEDERAL GOVERNMENT AS A CHANGE AGENT

Carl A. Kogut, University of Louisiana at Monroe
kogut@ulm.edu
Larry E. Short, University of Louisiana at Monroe
short@ulm.edu

ABSTRACT

This paper assesses the federal government's ability to bring about social change by examining the results of its program to ensure equality of employment opportunity in federal employment for minority group members. For more than a century the federal government has attempted to develop a fair and impartial personnel system. During the past 40 years the federal government has intensified its efforts to ensure equality of opportunity for all persons regardless of race, color, or national origin. These efforts have met with success by increasing significantly the overall employment of minority group members but have been unable to obtain equality of opportunity for all minority group members. Thus, it appears that the federal government is effective in bringing about macro changes in the environment of federal employment, but is unable to fine tune the micro changes needed to ensure that the environment is an equal opportunity employer.

ETHICS IN INVESTING

Don Morris, Sam Houston State University
stddwm11@shsu.edu
Darla Chisholm, Sam Houston State University
darla@shsu.edu

ABSTRACT

Over the past few years ethics in corporate America has received a black eye. Corporate scandals have ranged from fraud, to false reporting, insider trading, late trading, and other forms of malfeasance and have wrecked investor trust and public confidence. The current scandals have led to the Sarbanes-Oxley Act, but reforms are almost certain to continue. Sarbanes-Oxley failed to address issues within the funds industry and cannot address the real problem: ethical bankruptcy. If the government requires business to make the necessary reforms and business re-dedicates itself to high ethical standards, all stakeholders will benefit and corporate stability will return.

INTRODUCTION

Most investors realize there are risks involved with investing, especially with all of the corporate scandals in the last few years. Headlines reported the downfall of Enron, WorldCom, and others and the subsequent prosecution of many of their former executives. What many may not have noticed are the waves of mutual fund and investing companies that have come under scrutiny recently for their unethical behavior. Probably even fewer have noticed the pattern of unethical behavior in corporate America because much of it has only recently come to light.

The decay of ethical standards generally precedes corporate collapses of the magnitude we have seen in the past few years. Erosion of corporate and personal ethics is a precursor and a tangible aspect of financial collapse. The ability to make financials look more glamorous than they are is often taught in MBA programs and business schools around the country. There is pressure to maintain performance, achieve goals, fear and silence on the part of participants, inexperience on the part of senior management, and feeling that the philanthropy of the corporation counterbalances misreporting (Jennings, 2003).

LITERATURE REVIEW

In an examination of ethics in the United States stock markets, Syron (1999) incorrectly finds that customer demands are enough to keep ethics in check. With the benefit of hindsight, we find that his study was almost entirely wrong. Unregulated business, left to its own devices, will inevitably chase profits, ethical or not.

Ethics in investing has been examined from a number of different perspectives, including corporate ethics and the need for additional reform and reinforcement (Hatcher, 2003), the need to

restore credibility and trust in corporate practices (Oliver, 2002), and common traits of ethical collapse in the corporate setting (Jennings, 2003).

In addition to ethical problems endemic to individual firms, the mutual fund industry has come under scrutiny for its unethical practices as well. Zuckerman (2003) cautions investors to question the role of the fund directors and closely examine mutual fund fees. Dugas (2004) describes an alleged market-timing scheme between Pimco and Canary Capital, which provides an example of a corporation breaching trust with stakeholders and a State Attorney General acting to protect investors. Shepler (2003) examines mutual fund malpractice and recommends that The Investment Company Institute (ICI) take action to restore investor confidence. Dwyer, Borrus, and Young (2003) also examine the ethics behind the mutual fund industry, and they find that the SEC maintains relationships with other organizations which make it difficult for them to be objective and regulate industry properly. In his study of recent mutual funds scandals, Maiden (2003), puts the SEC's feet to the fire. With the reported prevalence of recent market timing and late trading, his expectation seems to be that the SEC needs to be more proactive in its policing of the funds industry. The significance of the study seems to be that there is a disunited state of regulation: more reform is needed to protect the public.

DISCUSSION

Given the means, the motive, and the right environment, it is easy to see how an ethical dilemma for some, might be an opportunity for success for others. The Enron scandal has taken business ethics to new lows and has hurt investors and the market itself by an indeterminable measure. Enron produced ventures that never made any money, while the company reported inflated earnings and hid the spiraling debt from the public. Yet Enron's executives continued to pump up its stock to investors saying that it was undervalued, while selling their own shares (Malkiel, 2003). Unfortunately, Enron was not the only corporation dabbling in accounting fraud. WorldCom and Tyco had their own problems with unethical accounting and reporting. Auditors such as Arthur Andersen facilitated the cycle of corruption by certifying the books for these companies. In the end, the investors were victims, both in financial terms and in loss of investor confidence.

In an attempt to remedy possible breaches of ethics, the Sarbanes-Oxley Act of 2002 created rules and guidelines for ethical business practices for publicly traded businesses, CPA firms, auditors, attorneys, brokers, dealers, investment bankers, and financial analysts. It requires accounting oversight by independent experts, annual inspections of public accounting firms, changes in insider trading policies and a variety of other reporting and control measures. It protects pension funds from insider trading, increases penalties on retirement reporting and disclosure violations and prohibits loans to executives and directors. Additionally, whistleblowers are protected and cannot be dismissed by their employers. Companies are to facilitate confidential means of communication for whistleblowers as well. Also, since the bar has been raised and culpability elevated for corporate officers, it is important that corporate officers, such as the CFO, be qualified and knowledgeable (Hatcher, 2003).

Although accounting and reporting fraud ushered the business world into the new century, it was not the only unethical behavior to be addressed. More recently, market timing, late trading and insider trading has come to the forefront of the business world. Even though the scandal has not

generated the press that Enron or WorldCom's bankruptcies did, it affects an even larger group of investors. There are over 95 million investors holding $7 trillion dollars in mutual funds, so accusations of defrauding shareholders is of great consequence not only to the affected investors, but also to the public as a whole.

Market timing is a technique that exploits old prices with the aid of current information to take advantage of time differences using rapid short-term trades. This approach is not illegal, but is unethical in that it adversely affects the small investor and benefits the traders. Late trading occurs when a party, usually a large investor, is allowed to buy funds at their closing prices after the market is closed. By using the information that corporations release after closing, these investors can take advantage of this information to profit from the trades when the markets open the next day. Some large fund investors have been able to place late orders that allowed them to take advantage of late breaking news to make profits at the expense of shareholders (Zuckerman, 2003). This behavior is not only unethical, but it is illegal as well. One quarter of the firms surveyed by the SEC said that they had placed or confirmed orders after 4 p.m. and one half had at least one arrangement allowing market timing (Maiden, 2003). Other alleged unethical behavior attributed to some brokerages and mutual funds involve publicly stating that they discourage market timing and then assisting larger clients, including large hedge funds, time the markets. In this case the hedge fund would collect profits, the fund company would collect fees, and the long term investors would be the only losers (Shepler, 2003).

Some argue that unethical business practices in the mutual fund industry can be attributed to several factors including light regulation; The Investment Company Institute, or ICI, a persuasive trade organization; a compliant Congress; a brutal bear market; and competition for dwindling investment dollars. In addition, some contend that the SEC has been too trusting of mutual funds and is overly influenced by the ICI. As an example, the ICI made sure that the Sarbanes-Oxley reforms of 2002 did not include the fund industry and would not subject them to the strict internal controls that were to be verified by external auditors (Dwyer, 2003). The SEC points out that the investment management industry was already facing reforms in the proxy disclosure and hedge fund sector before the recent scandals surfaced. Additionally, the SEC has been criticized for making settlements too quickly, and with too few consequences. The SEC counters that it had to act quickly to protect the investors and that it had left ample room for punishment in the agreements that it has made (Maiden, 2003).

The SEC also has been criticized for a number of other shortcomings, including their failure to quickly respond to tips from whistleblowers. Although many ethical people may be willing to come forward, there are not enough resources to examine every complaint in a timely fashion. The SEC seems to be trying to respond and has increased the number of enforcement cases over the years, but it will be impossible to detect every case of fraud in the securities and exchange realm. As a step in the right direction, Congress increased the SEC's budget, enabling the SEC to build a watch-dog team to monitor fraud and manipulation in the fund industry.

What does all of this mean in terms of ethics? Many companies have seized upon the recent ethical collapses in the business world to rebuild their corporate values and ethics. Long-term and substantive changes in character and values development, as well as sustainability of ethical organizational climates and cultures must be addressed by businesses today. Systems and processes of ethics, not just a code of ethics hanging on the wall, are needed for a culture of ethics to develop

and benefit a business. Systems of rewards, punishments, learning and development must be in place to reinforce ethical values. A culture that fosters an environment where the ends of making money justify the means will prevail over training and a code of ethics. Enron had a highly developed code of ethics, but its board of directors suspended that code when the board thought it was necessary (Hatcher, 2003).

Once a strong, resilient culture of ethics is ingrained into a corporation, how does it win the trust and confidence of the public back? One strategy for winning back the trust of investors is to go beyond the minimum governance requirements. The real aim is to push the envelope and go beyond minimum governance standards to protect stakeholders, and establish transparency in governance and ultimately establish trust and confidence in corporate America (Oliver, 2002). Others call on business to engage in modeling ethical behavior, hiring and training to build a culture of integrity, training the trainers in ethics, and overhauling the ethics codes and policies to meet SA8000 and ISO14000 standards (Hatcher, 2003).

SUMMARY

Awareness that there is a problem is part of the solution. During the bull market of the late nineties, there seems to have been a culture of naivety with regard to ethics. This quote was from a Fall 1999 issue of Business & Society Review: "We all read about unethical practices that businesses used to be engaged in, but are no longer acceptable. The margin for error in ethics is diminishing. It's not diminishing because of increased government regulation, or more zealous prosecutors in New York or anyplace else. It's because of what customers demand and what's best for them. This is particularly true among brokers, dealers, stock markets and everyone involved in the financial food chain" (Syron, 1999, 311).

If this were really the prevalent perception at the time, we have to ask, "How were we so wrong?" This statement was written pre-Enron, pre-WorldCom, pre-Tyco, pre-Adelphia, pre- Market Timing scandal, pre-Late Trading scandal. Ethics in reporting and investing has taken on a new meaning and the rose-colored glasses are now off. We as a nation of investors should demand that our government effectively regulate and punish violators of the investor's trust to preserve the well-being of our corporations and our economy as a whole. But certainly regulation alone will not prevent this from happening again.

It will require a re-dedication of corporate America to ethical behavior and a true commitment by corporate boards and executives to the public trust.

REFERENCES

Dugas, Christine (2004, February). Pimco Parent Charged with Fraud, *USA Today*,18.

Dwyer, Paula, Amy Borrus, and Lauren Young (2003, December 15). Breach of Trust, *Business Week,* 98.

Hatcher, Tim (2003). New World Ethics, *T+D, 57*(8), 42-48.

Jennings, Marianne (2003). The Critical Role of Ethics, *Internal Auditor, 60*(6), 46-52.

Maiden, Ben (2003). SEC Faces Critics Over Mutual Funds Scandal, *International Financial Law Review, 22*(12), 21-24.

Malkiel, Burton G. (2003). *A Random Walk Down Wall Street* New York: W.W. Norton & Company.

Oliver, Richard W. (2002). How Boardroom America Can Restore Trust, *Journal of Business Strategy, 23*(6), 7-12.

Shepler, Bob (2003). Mutual Funds - The Next Big Thing, *Financial Executive, 19*(9), 68.

Syron, Richard F. (1999). Ethical Imperatives for Stock Markets in the New Millennium, *Business & Society Review, 10*(3), 311-324.

Zuckerman, Mortimer B. (2003). Making Scam Artists Pay, *U.S. News and World Report, 135*(14), 76.

THE SARBANES-OXLEY ACT: IMPACTS ON AMERICAN CORPORATIONS

James J. Bagwell, Clayton College & State University
jamesbagwell@mail.clayton.edu

ABSTRACT

Corporate responsibility is now being reinvented in American business. Recent issues involving financial fraud, audit failures, earnings management, and misapplication of complex accounting standards have led the United States Congress and the Securities & Exchange Commission to enact new laws and regulations governing financial reporting. The Sarbanes-Oxley Act has greatly impacted the landscape of the financial reporting and disclosure frontier, with many disclosures required to be implemented this year in short order by corporate management.

As the enforcer, the Securities & Exchange Commission is empowered and emboldened to be aggressive. Strict criminal penalties have now been put in place to punish violators. This analysis of the Sarbanes-Oxley Act identifies the critical implications that corporations must address immediately in order to maintain an attractive representation of corporate responsibility for their diverse stakeholders.

INTRODUCTION

"Fraud," "scandal," and "abuse" are words we don't like to frequently think about in business. Most certainly, the word "criminal" invokes heightened security levels of concern. Worst of all, we can't mention these words without considering one of the most dreaded words in business – "loss." We remember the old adage, "preventing a loss is the easiest way to make a profit." Yet with all the higher education, business experience, and common sense under our belts, a host of business executives somehow went awry. Winning became much more important than playing by the rules of the game.

Meeting investors' expectations regarding corporate profits became so important that the "rules" all of a sudden became subject to management discretion and override. Somehow, though, in the middle of the intensity of the big game, some business leaders seemed to forget another proverb, "you can't do wrong and get by!" The referee eventually sees the fouls, whistles the play dead, and steps off the penalty.

Have you heard the whistle? For sure, some executives have, including the leaders at business giants, or in some cases former business giants, such as Enron, Worldcom, Tyco, Adelphia, and Andersen. As the referee steps off the penalty, we observe the assessment of criminal convictions, jail time, staggering fines, and career ending stigma. To encourage us to behave, game officials make the penalties tougher and observe players more closely to encourage sportsmanlike conduct. In corporate America, we've heard the whistle!

SEC REPORTING REQUIREMENTS AND ENFORCEMENT TOOLS

The impact of the Sarbanes-Oxley Act (SOX) on corporate America involves strengthening existing requirements and imposing additional standards regarding financial reporting certification, disclosure controls, assessment of internal controls, auditor independence, audit committee requirements, code of ethics disclosure, and the creation of the Public Company Accounting Oversight Board (PCAOB). The potential impacts on business and investors of each of these changes will be addressed in greater detail in the discussion that follows.

In addition to these new regulatory and reporting requirements, the SEC has also introduced tougher enforcement provisions with increased penalties and prison terms for fraudulent and illegal behavior by business executives and financial professionals.

FINANCIAL REPORTING CERTIFICATION

As a result of the continued fraud and abuse by corporate management, SOX now requires the CEO and CFO to include a certification for each annual or quarterly financial report for the corporation. Section 302 is a civil provision required by Securities and Exchange Commission (SEC) regulations issued in August 2002. Section 906 imposes criminal penalties against violators who certify fraudulent financial statements.

SEC regulations under Section 302 now require the CEO and CFO to certify in each periodic financial statement regarding the following:

- Financial and other information included in the report
- Establishment, maintenance, and evaluation of disclosure controls and procedures
- Internal control disclosures must be made to the independent external auditors and the Audit Committee of the Board of Directors.
- Evaluation of internal controls and any changes to internal controls must be disclosed to the independent auditors and the Audit Committee.

It remains to be seen if companies will begin requiring lower level managers to certify information reported by a manger's department or area of control. Advantages of sub-certifications include improving the level of confidence of the CEO and CFO in the reported information.

REQUIRED DISCLOSURE CONTROLS

At financial reporting time, much management discussion occurs regarding exactly what information to disclose in the annual financial reports, as well as in the SEC Report 10-K. New SEC rules 13-a-15 and 15d-14 define the new required disclosure controls and procedures. Under the new rules, controls and other procedures must be designed to ensure that all required information is recorded, processed, summarized, and reported within the time specified in the SEC rules. Controls must also include procedures to ensure that information is communicated to the CFO and CEO in order to allow timely decisions to be made regarding proper disclosure, if necessary.

Section 302 of SOX requires that management must disclose whether controls are effective at a level of reasonable assurance, as well as disclose plans to correct any control deficiencies,

including a timetable for correcting the control deficiencies. The SEC is empowered to ask for copies of communications between auditors and the Audit Committee and may require a risk factor to be assigned to control weaknesses.

Section 307 of SOX requires certification of the conclusions of the CEO and CFO regarding the effectiveness of the design and operation of disclosure controls, based on an evaluation at the end of each quarter. This CEO and CFO certification regarding disclosure controls is required whether or not there were significant changes in the internal controls or other factors that could significantly affect these controls, during the period covered by the financial report, including any corrective actions taken for significant control deficiencies.

ASSESSMENT OF INTERNAL CONTROLS

Section 404 of SOX requires that a corporate issuer's annual report must contain a report from management on the internal control structure and procedures for financial reporting. In order to be in compliance with SOX Section 404, corporate management is required to document internal controls, perform actual tests of the design and operation of internal controls, and document internal control testing and results. The new law requires that the internal control testing be performed by corporate management, since inquiry alone regarding the design and operation of internal controls is no longer sufficient to provide the requisite knowledge regarding the preparation of financial reports.

If a material weakness is found by evaluating the system of internal controls, SOX Section 404 requires the material weakness to be reported to the Audit Committee and to the independent auditor. The material weakness will serve to preclude both management and the independent auditor from providing a clean report on the internal control system. In addition, the material weakness in the internal control system, must be disclosed in the annual report under SOX Section 307, regarding disclosure controls, as previously discussed. The new internal control rules under Section 404 of SOX will become effective beginning June 2004. Preparation time is of the essence!

ROLE OF INDEPENDENT AUDITORS

With regard to the internal control evaluation, independent auditors may help document, but not design internal controls under management supervision. Traditionally, both internal and external independent auditors have utilized their substantial experience in tracing and documenting internal controls as part of designing and conducting regular audit programs. Under Section 404 of SOX, management may continue to take advantage of independent auditors' experience in documenting existing internal controls, but not in designing new internal controls.

Under the new rules, independent auditors may also provide limited assistance during management's evaluation of internal controls, including answering management's questions, pointing out areas in which controls may be improved, making suggestions for improving the testing of internal controls, and providing software templates to use in documenting or testing internal controls. However, independent auditors cannot actually perform the internal control evaluation for management under the new rules. The intent of SOX Section 404 is to encourage management to

both realize and take responsibility of the ownership, documentation, and testing of the company's internal control system.

Under SOX Section 404, the independent auditor's attestation report is required to discuss the scope of the auditor's examination, along with the independent auditor's opinion as to whether the company's internal control assessment is fairly stated by management. If for some reason the independent auditor cannot provide an opinion on management's assessment of internal controls, then the auditor should explain why it is not possible to provide an opinion on management's assessment of internal controls.

AUDITOR INDEPENDENCE

As a result of unfortunate evidence that existed in some corporations that seemed to gradually minimize the impacts of auditor independence on the part of both corporate management and independent auditors, the new SOX provisions are designed to fortify the wall of independence between corporate management and independent auditors. Under the new SEC rules of SOX Section 404, corporate officers may not fraudulently influence, coerce, manipulate, or mislead an independent auditor.

In fact, one of the new SOX changes that has far reaching business implications relates to the performance of non-audit services by independent auditors. Under the new rules under SOX Section 404, an independent auditor may not perform any of the following non-audit services for audit clients:

- Accounting or Bookkeeping services
- Financial information systems design and implementation
- Appraisal or valuation services or fairness opinions
- Actuarial services
- Internal audit outsourcing services
- Management or human resources functions
- Investment banking services
- Legal services
- Expert services

SOX also requires the lead independent audit and review partners to rotate between audit engagements at least every five years. The new regulations also add a provision for a maximum of seven years rotation period for all audit partners.

AUDIT COMMITTEE REQUIREMENTS:

In order to ensure that the Audit Committee has board members that are able to understand the financial statements to be issued by the corporation, SOX Section 407 now a requires that at least one financial expert serve on the Audit Committee. The SEC also requires the disclosure of the name of at least one financial expert and whether or not the financial expert is an independent director. A financial expert is defined as a person with all of these attributes:

- An understanding of financial statements and GAAP
- An ability to assess the general application of such principles in connection with the accounting for estimates, accruals, and reserves
- Experience in actively supervising, preparing, auditing, analyzing, or evaluating financial statements with a level of complexity of accounting issues that are generally comparable to the company's financial statements
- An understanding of internal controls and procedures for financial reporting
- An understanding of Audit Committee functions

CODE OF ETHICS DISCLOSURE

While SOX creates more strict standards and additional regulatory reporting requirements, perhaps the most effective way to facilitate the accuracy and fairness of financial reporting is to require companies to develop, implement, and disclose the code of ethics. Sections 406 and 407 of SOX require financial statement issuers to include the code of ethics disclosure in their annual report for fiscal years ending on or after July 15, 2003. SOX also requires the disclosure of waivers to or amendments of the code of conduct following the annual report in which the code of ethics disclosure is first contained. Under the new rules, the code of ethics must apply to the issuer's principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions.

PUBLIC COMPANY ACCOUNTING OVERSIGHT BOARD

In addition to the above rules that apply to business corporations, the Public Company Accounting Oversight Board (PCAOB) was established by SOX. The SEC has appointed the Chair and members of the newly created PCAOB. As a non-profit organization, the PCAOB will have the following responsibilities:

- Oversee the independent auditing of public companies
- Establish independent audit report standards and rules
- Investigate, inspect, and enforce compliance relating to registered public accounting firms

The PCAOB will be financially supported by fees levied on corporate issuers of annual financial statements, based on the market capitalization of the firm. As a result, the PCAOB will spread its operating budget over the total population of SEC companies. Financial statement issuers with a market capitalization of less than $25 million are exempt from the PCAOB fee requirements. The PCAOB may also serve as the collection agent for the Financial Accounting Standards Board (FASB) for convenience to the financial reporting companies. In addition, this new procedure will allow the FASB to focus on proposed changes in accounting standards as determined to be needed by the fraud occurrences in recent years.

CONCLUSION

From the above analysis, it is clear that the SEC referee is in process of defining a new corporate order for the benefit of investors. It is vitally important that corporate management be aware of these new regulatory standards and processes in order to meet its obligations in serving

investors by complying with the new regulations. As a result of the recent convictions of business fraud on the part of companies and management, it has never been more important to establish and confirm investor trust in order to continue to facilitate growth in stock prices and the future ability to raise additional capital for business expansion. The clear advantage is to be aware of the new requirements early and be prepared in advance in order to successfully report excellent financial performance to investors on a clean slate while valuing business ethics in all business activities. It is much better to have a winning season, than losing games due to penalties!

REFERENCES AVAILABLE UPON REQUEST

GETTING THEIR FAIR 'SHARE': THE IMPACT OF DISK COPYING ON THE MUSIC INDUSTRY

Stephen C. Betts, William Paterson University
bettss@wpunj.edu
Zinaida Taran, St. John Fisher College
ztaran@sjfc.edu

ABSTRACT

The music industry contends that copying of music CD's negatively affects their bottom line. The basic argument is that copied CDs represent lost sales. In this paper we explore the historical precedents of such an argument, such as the advent of recordings, radio, and cassette recorders each of which presented a potential threat to a segment of the entertainment industry. This is followed by an examination of the underlying assumptions that drive the music industry's conclusions. The results of a simulation are presented where the effects of CD copying are calculated under various conditions. These results show the conditions where CD sales are negatively effected, but also show conditions where there is a net benefit to the CD music industry. The discussion is extended to related issues such as music file sharing, and addresses possible responses by the industry.

INTELLECTUAL PROPERTY RIGHTS AND THE MUSIC INDUSTRY

Intellectual property rights follow the Constitutional Provision stating that "The Congress shall have Power… To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." (United States Constitution, article I, Section 8).

Several episodes in the history of music copyright issues provide useful context for our consideration of disk copying. The player piano was a threat to sheet music, recordings were a threat to live performers (Lessig, 2002) and radio was considered to be a threat to the recording industry when it was introduced in the 20s. In fact, record sales seemed to have been affected by this emerging threat, falling from $105.6 million in 1921 to $5.5 million in 1933 (Dowd, 2001). The recording industry claimed that radio would destroy their market, yet the recording industry still managed to survive and flourish. Moreover, the promotional effects of playing songs on air on sales of records was so undeniable that, following extreme success of Capitol Records in the 40's record companies started to mail free records to radio DJs (Dowd, 2001).

Although intuitively appealing, there is no evidence that the holders of copyrights need renumeration to continue to produce artistic works (Liebowitz, 2002). In addition, there is a long standing arguement that copyright is unnecessary because the market will provide returns without such protection (Hurt & Schuchman, 1966; Plant, 1934). The Fair Use has been an important doctrine limiting the application of copyright laws when copyrighted work is used for non-commercial purposes, taking into consideration the impact on "the potential market for or value of the copyrighted work." (Title 17, Copyright Law of the United States, § 107). The Fair Use Doctrine

was the basis of the Supreme Court's 1984 decision allowing consumers to use VCRs to tape television programs. Making tapes from purchased CDs for personal use has received the same protection (Wilson & Healey, 2002) and many think that it should be extended to copying CDs. Despite the questionable claim of a loss in sales, a tax of 2% of manufacturers sales of CD recorders was to be collected for artist royalties since the Audio Home Recording Act of 1992 (AHRA) went into effect. As of 2003 no artist has received royalties (Boycott-RIAA, n.d.).

More recently the 'swapping' of digital music, particularly the 'Napster' case and legal action taken by the RIAA (Recording Industry Association of America) have made headlines, claiming a loss or potential lose of sales due to unauthorized copying of copyrighted material. However, the evidence does not show any loss of sales (Alexander, 2002).

DISK COPYING

In this paper we examine the impact of copying CDs on sales. Disk copying, as we are using it, needs to be differentiated from bootlegging and pirating. Bootlegging is the unauthorized recording, copying and selling of previously unreleased music. Recording of concerts is the primary form of bootlegging. Bootlegging is thought to increase product variety and has not been found to negatively effect legitimate sales (Naghavi & Schulze, 2001). Pirating, the copying and selling of released music is clearly illegal and does crowd out legal sales because to the consumer they are equivalent. In this paper we consider disk copying the copying of a legally purchased CD for the owner's private use or to give to a friend at not cost to the friend. In this case, the copying replaces the owner transferring the CD from location to location or borrowing CDs among friends.

The idea that a copied CD results in a lost sale rests on the assumption that an additional CD would have been bought if the copy was not made. In our model we acknowledge that this might be possible, however we also include several other considerations. First, we consider the buying behavior of the copier. There might be additional CD purchases based on the justification that the disk can be copied, or there might be a delay in purchasing in anticipation of receiving a copy.

METHODS AND MODEL SPECIFICATION

To estimate the potential impact of disk copying on sales, a model was formulated and a Monte-Carlo simulation was performed. Monte-Carlo simulation involves multiple sampling of outcomes of a model whose independent variables are at least partially based on specified probability distributions (Bieker, 2002) and thus obtaining a distribution of the outcome variable. The outcome variable modeled is the percentage change in total sales of music CD units relative to a baseline level of sales without music CDs being copied. Such a change is modeled as affected by several different processes. First, sales will increase with the additional justification of purchase provided by the opportunity to copy a disk and give it to others among otherwise non-buyers of that disk. Second, sales will decrease in anticipation of receiving a copy of the CD. Third, sales will increase with the promotional effect of disks that the user has received from others and liked enough to want other records by the same musician/composer/ etc. Fourth, sales will decrease with consumers receiving from others disks that they would have otherwise bought. The model is a one-period model with no carryover effects from past periods. With no empirical data on the relevant

processes, in our simulations we use theoretical distributions based on their shape. The number of CDs copied as a proportion of CD sales is defined exogenously, and the rest of the variables are of probabilistic nature.

The Model:
$X = AJ + NC \times GL \times LB - NC \times WB \times NB$

Variables:
X - change in unit sales of music CDs.
AJ - additional disks purchased because ability to copy minus disks not purchased in anticipation of receiving a copy.
NC - number of CDs copied as a proportion of CD sales.
GL - probability that CD copy is liked by the receiver
LB - probability that CD liked by receiver will result in an additional sale.
WB - probability that the receiver would have bought the CD if they had not received a copy.
NB - probability that the receiver will not buy a CD once they have received a copy.
$NC \times GL \times LB$ is the increase in sales because of people buying additional CDs once they found out they like the artist/composer/music style etc
$NC \times WB \times NB$ is the decrease in sales due to people not buying CDs after having received a copy

METHODS, ANALYSIS AND RESULTS

The simulation was performed using a widely used add-on to Excel called 'Crystal Ball', version 2000.5 (Decisioneering, 2004). Each scenario had 10000 trials. *AJ* was modeled as lognormal with various means (varying with NC), standard deviation of 1 and shifted to the left (varying with NC). NC values of 5%,15%, 40% and 100% were used. *GL* was distributed as normal with a mean of 0.67 and standard deviation of 0.33 within the limits of 0 and 1. *LB* was distributed as lognormal with mean of 0.5 and standard deviation of 1 within the limits of 0 and 1. *WB* was distributed as normal with mean and standard deviation of 0.25 within the limits of 0 and 1. *NB* was distributed as normal with mean of 0.95 and standard deviation of 1 within the limits of 0 and 1.

Table 1
Change in CD Sales for Different Copying Rates

% of CDs Copied	Mean Change	Median Change	Standard Deviation	Skewness	Kurtosis
5%	2.4%	-2.2%	0.36	19.72	485.84
15%	8.2%	-4.9%	0.80	22.61	824.45
40%	21.7%	-4.0%	0.94	7.14	89.48
100%	22.6%	-6.3%	1.17	8.02	138.66

Scenarios with different assumed numbers of copied CDS are presented in Table 1. The simulation results for every assumed copying rate has a mean above 0, and a median slightly below. An example of the shape of the outcome distributions is presented as Figure 1.

Insert Figure 1 about here

As we see from Table 1 and Figure 1, the mean change in sales resulting from disk copying is positive, ranging from 2.4% with 5% disks copied to 22.6% with 100% copied. The distribution is skewed to the right. The median ranges from -2.2% to -6.3%. With the rate of copying of 15%, reflected in Figure 1, only one case fell below 20% drop in sales, while 10% cases exceed 20% increase in sales.

DISCUSSION

The simulation results each are an aggregate of many possible situations. The dynamics of these situations differ greatly in how copying of CDs impacts sales. For example, the role of the promotional impact of receiving disks of little-known artists may be greater than that of popular titles which are constantly played on TV and radio allowing for familiarity prior to purchase. Rare disks would probably have an additional constraint on person's buying them by themselves in lieu of copying, as they might be willing but not able to purchase them. However, on average the ability to copy CDs increases sales regardless of the assumed degree of copying.

"The issue at the heart of the copyright is the degree to which copyright owners can appropriate the value produced by the consumption, or appreciation, of their works by others" According to Liebowitz (2002 p.3). According to our simulation, on average the ability to copy disks positively affects sales. Congress and the courts are having problems coping with copyright law in the digital world. Although parties have been generally satisfied with specific recent decisions, it is unlikely that a case-by-case approach will suffice in the long run (Heidmiller, 2002). Our simulation supports the retrospective findings of the past, that the threats to the music industry are not as severe as the industry would have us believe.

Different dynamics depending on whether or not the particular artist and/or record is well-known, popular and available will have differential effect on sales according to our model. For unknown artists, especially those who have more than one CD, the promotional effect of copyied CDs will bring a bigger increase in sales. Hard to find rare records will not experience change in sales, as those who would get a copy would not have bought one by themselves. The heavy tail on the right-hand side of Figure 1 may be interpreted as increase in sales due to promotional effect when multiple CDs of relatively unknown artist are available. The peak at around -8% and the median of -5% reflect more traditional popular artist sales. In the case where sales are lower, some promoters believe the wider exposure can stimulate concert sales (King, 2002).

The discussion of copyrighting centers on the protection of the holder of the copyright, yet it might be the consumer who needs the protection. 85% of all music is distributed by 5 major labels (BMG, EMI, Sony, Time Warner, UMG) (FTC, 2000), and they account for 95% of sales at the distributor level (Alexander, 2002). These five biggest music distributors were found to violate anti-trust laws. Their Minimum Advertised Price (MAP) policies, which restrict retailers from advertising

below prices set by the distributors, were determined to be facilitate horizontal collusion and anticompetitive vertical restraints (FTC, 2000).

A Lockean natural law argument can be made regarding intellectual property, and specifically applied to the major music labels. "Nothing was made by God for Man to spoil or destroy" (Locke, 1690). This can be interpreted as a prohibition against the waste of the product of labor, and specifically the intangible products because tangible goods can be bought and sold thus preventing their waste (Damstedt, 2003). At any given time, a great amount (some (Boycott-RIAA, n.d.) estimate as high as 80%) of recorded music is not on the market with much of it being warehoused by the major record labels. Although it may be an overstatement to say that society suffers when a CD is not available on store shelves, by extension there may be situations, such as warehousing drug patents where suffer is an appropriate term.

This research supports a strong fair use stance. A strong fair use stance would allow for copying as long as no profit is being made by the copier. The holder of the copyright is not being deprived of a share of the profits if there are no profits being made. The simulation showed an average increase in sales thoughout the range of potential copying rates, therefore the music industry does not suffer. The distribution of the recording is not limited, therefore there is no violation of the waste prohibition and more potential consumers are exposed to the artists and genre. A strong fair use stance allowing for the copying of CDs by individuals for their private use and limited free distribution to friends would benefit both the recording industry and the consumer, creating a win-win situation.

LIMITATIONS AND FUTURE RESEARCH

Our simulation used entirely theoretic distributions on the aggregate level. Empirical research to draw the distributions is the obvious next step for our research. Such empirical research would need to be done with consideration of the consumer heterogeneity with regards to their purchasing behavior, as well as categories of CDs. Another direction would be an extension of a one-period model to a dynamic multi-period model. Historical data on sales of CDs by categories will help simulate the actual distributions. A survey aimed at evaluating the empirical distributions and validating the model would need to include questions regarding past music purchasing behavior, behavioral intentions, familiarity with technologies and access to copying, as well as musical preferences. Elaboration of the model to include various antecedents of copying-related behavior will then be possible. Once relationships and distributions are established, the recording industry can examine use the dynamics and develop promotional and distribution strategies that maximize artist exposure, CD sales and concert attendance while still allowing consumers to copy CDs.

REFERENCES

(available on request)

ETHICS COUNT: RESULTS OF A PRELIMINARY ETHICS CASE STUDY ON STUDENTS' ETHICAL BEHAVIOR

Donna J. Phillips, Texas A&M University—Commerce
donnaphillips@online.tamu-commerce.edu
Warren B. Idsal, AKB Associates
widsal@yahoo.com

ABSTRACT

In the wake of corporate scandals, the demand for ethical behavior in business is coming from all sides and will undoubtedly affect today's college students throughout their careers. Ethical behavior can directly affect the profitability of companies in many ways, especially when one considers potential litigation costs and penalties for unethical behavior and illegal activities. Students in an MBA class were given a quiz included in Appendix A of this paper which allowed each student to determine his/her own "ethical quotient." They were instructed to answer the quiz questions as honestly as possible and then to tally the results for a personal analysis of their propensity to behave ethically!

An analysis of strengths and weaknesses of the students identified in four major ethical areas are presented in this study which included human resource issues, conflicts of interest, customer confidence issues, use of corporate resources, and whistle blowing. Findings indicate that students would benefit from further education in several of these areas.

EMPLOYMENT-AT-WILL: WHAT DIRECTION WILL IT TAKE

Edgar Sentell, Mississippi College
sentell@mc.edu
Randall Robbins, Mississippi College
rrobbins@mc.edu

ABSTRACT

The doctrine of employment-at-will emerged as the predominant rule in wrongful discharge cases in America during the latter part of the 19th century. This doctrine states that the business should have the freedom to discharge or retain employees at will for good cause, for no cause, or even for bad cause, without thereby being guilty of an unlawful act. It is a right which an employee may exercise in the same way, to the same extent, for the same cause or want of cause as the employer. In essence, the doctrine recognizes that the wage owner is the full owner of his labor services, and the business the full owner of his capital. Each is free to exchange on whatever terms they see fit.

Thus, the doctrine of employment-at-will is well established in the American legal system. In recent years, however, this doctrine has been eroding. Many employers now find that the legal environment relative to the right to fire is confusing and ripe with potential liability.

In essence, employment-at-will - - - a term that is music in the ears of most employers - - - is under attack. This paper seeks to address the solvency of the employment-at-will doctrine in the state of Mississippi. Recent court cases and rulings will be addressed to determine and suggest the direction of this doctrine.

LEGAL ISSUES IN COMPUTER FORENSICS

Jerry Wegman, University of Idaho
wegman@uidaho.edu

ABSTRACT

Computers and the Internet have become a pervasive element in modern life. Those who engage in misconduct also use this technology. This includes criminals ranging from embezzlers to international terrorists. Corporate espionage, sexual harassment and even divorce cases have used evidence derived from computers and the Internet.

Computer forensic investigations usually are focused on a legal objective: convicting a criminal or winning a civil lawsuit. In a criminal investigation evidence obtained must survive an admissibility test if it is to help convict the defendant. In a civil matter evidence must be properly authenticated and privacy rights respected. Failure to do so could result in liability for wrongful discharge or invasion of privacy. It is therefore vital in both criminal and civil investigations that computer forensic investigators understand and respect the legal environment in which they work.

This paper will provide an introduction to the most prominent area of computer forensics: admissibility of evidence in criminal cases. Searches and seizures of computers and computer files will be discussed. Post-seizure examination of computers, and accessing files located on networks, including the Internet, will be assessed. Forensic techniques will be examined for compliance with the Fourth Amendment search warrant requirement. Public policy in the form of federal legislation will be described. Finally, ethical concerns will be considered.

INTRODUCTION

Critical evidence needed to convict criminals and win civil lawsuits may be located on computers, networks and the Internet. This evidence is often difficult to obtain. It may have been deleted, overwritten, encrypted or hidden in a vast database. Nevertheless, cyber-detectives have developed techniques to salvage such information. A new investigative specialty has thus emerged: "Computer Forensics". This term, first used in 1991, refers to the identification, extraction, preservation and documentation of computer evidence.

However, a legal challenge faces investigators: not only must they discover incriminating evidence, they must also do it in a lawful manner. If not, the evidence will not be admissible in court. As Marcella and Greenfield point out in their book, *Cyber Forensics,* an investigator "should always conduct the investigation as if you are going to trial, just in case you have to."

Investigators must have a working knowledge of legal issues involved in their work. They must know what constitutes a legal search of a stand-alone computer as opposed to a network; what laws govern obtaining evidence and securing it so that the chain of evidence is not compromised; what telecommunications may lawfully be intercepted or examined after they have been received; what legally protected privacy rights employees and other individuals possess.

Because computer forensics is such a new field, investigative and legal norms are just now emerging. Very little has been written about the legal requirements for admissibility of computer forensic evidence. Almost nothing has been written about ethical and regulatory issues related to this new field.

First we will examine the admissibility of evidence in a criminal prosecution, both with and without a search warrant. Next, public policy in the form of federal legislation will be considered. Finally, ethical implications will be considered.

SEARCHES WITH A WARRANT

The balance between the individual's right of privacy from government intrusion and the government's scope of action in law enforcement is defined by the Fourth Amendment to the U.S. Constitution. This amendment, part of the Bill of Rights, was adopted in response to British soldiers breaking into colonists' homes in search of pamphlets or other evidence supporting independence. The Fourth Amendment is in frequent use in law enforcement, as police searches and seizures must comply with its requirements. The Amendment reads:

> The right of the people to be secure in their persons, houses, papers and effects against unreasonable searches and seizures shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched and the persons or things to be seized.

The Amendment interposes a magistrate as an impartial arbiter between the defendant and the police. The magistrate may issue a search warrant if he/she is convinced that probable cause exists to support a believe that evidence of a crime is located at a premises. The officer must prepare an affidavit that describes the basis for probable cause, and the affidavit must limit the area to be searched and evidence searched for. The warrant thus gives the police only a limited right to violate a citizen's privacy. If the police exceed that limited right, or if a warrant is required but the police have not obtained one, then any evidence seized must be suppressed. Suppression denies the use of such evidence against the defendant. In many case the criminal charges will be dismissed, even though the guilt of the defendant is clear. However, if other, untainted evidence exists supporting conviction, the defendant may be convicted on the strength of that evidence. Criminal trials are often preceded by a suppression hearing, at which the admissibility or suppression of evidence is determined. Often a guilt plea is obtained following the suppression hearing. Thus the issue of suppression, driven by a determination of whether the Fourth Amendment has been complied with by the police, is often the determining factor in criminal cases.

As noted above, a search warrant gives limited authority to the police to search. The search should be no more extensive than necessary, as justified by probable cause. Thus, if the probable cause indicates that the contraband is located in a computer file on a CD, this would not justify seizing every computer and server on the premises. The extent of the search is tailored to the extent of the probable cause. If the police wish to seize a computer and analyze it at a later time, the probable cause statement should demonstrate the impracticality or danger of examining the computer on the premises, therefore the need to confiscate it and analyze it off-site.

SEARCHES WITHOUT A WARRANT

In the Unites State Supreme Court case of Illinois v. Andreas, 463 U.S. 765 (1983), the Court held that a search warrant is not needed if the target does not have a "reasonable expectation of privacy" in the area searched. In U.S. v. Barth, 26 F. Supp. 2d 929 (1998) a U.S. District Court held that the owner of a computer has a reasonable expectation of privacy in the information stored on that computer. However, if the computer owner transfers possession of the computer to a third party, for example for repair, that expectation of privacy may be lost, because numerous repair personnel would then have access to the computer and its stored contents.

Earlier non-computer cases suggest that when information is divulged to third parties the expectation of privacy may be lost. In U.S. v. Miller, 425 U.S. 435 (1976) the Supreme Court held that the expectation of privacy is lost when bank account information is divulged to the bank. In Couch v. U.S., 409 U.S. 322 (1973) the Supreme Court held that a client had no reasonable expectation of privacy in information divulged to his accountant.

The loss of a reasonable expectation of privacy, and therefore the loss of Fourth Amendment protection upon transfer of information to a third party is extremely important because much information is transmitted to networks and the Internet. If the circumstances suggest a loss of reasonable expectation of privacy, as for example related to a posting on a bulletin board or chat room, then no warrant is required by the police in order to obtain that information.

Moreover, when information is transmitted to a network, the information is then under the custody of a network administrator. If the network administrator consents to a search, then no warrant is necessary. However, a federal statute passed in 1984, the Electronic Communications Privacy Act (ECPA), 18 U.S.C. Sec. 2701-2712 regulates when and how a system administrator is to turn over client information. This important statute will be discussed below, in the section dealing with public policy. In many cases no warrant is required, although other forms of authorization must be obtained.

PUBLIC POLICY CONSIDERATIONS

Congress has responded to the changing technological landscape. The most important federal statutes affecting computer forensics are the Electonic Communications Privacy Act (ECPA), the Wiretap Statute, and the Pen/Trap Statute.

The Electronic Communications Privacy Act (ECPA)

ECPA created five categories of privacy sensitivity. The more sensitive the category, the greater the justification the government must show in order to obtain the information from a third party. The least sensitive category is basic subscriber, session and billing information. To obtain that information, the government needs only a subpoena. At the other extreme, the most sensitive information consists of unretrieved communications such as email that has resided in electronic storage for 180 days or less. A search warrant, which represents maximum government justification, is needed to access that information.

The Wiretap Statute (Title III)

While ECPA regulates government access to stored computer information in the hands of third parties, the Wiretap statute deals with direct surveillance or real-time interception of electronic communications by government agents. The Wiretap statute is commonly known as Title III, because it was first passed as Title III of the Omnibus Crime Control and Safe Streets Act of 1968, 18 United States Code Sec. 2510-2522. It was enacted in 1968 and amended in 1986. A government hacker who was accessing a target computer as messages were being sent would be subject to the Wiretap statute.

Before the government may wiretap, a court order must be obtained. Section 2518 of the Wiretap statute states that before a judge signs a wiretap order, the judge must be satisfied that the tap is justified and necessary.

The Pen/Trap Statute

The Pen/Trap statute, 18 United States Code Sec.3121-3127, provides for a less intrusive form of government surveillance than the Wiretap statute. This statute authorizes the installation of pen registers and trap and trace devices. A pen register records dialing, routing and addressing information regarding *outgoing* electronic communications. A trap and trace device records the same information regarding *incoming* electronic communications. The significant fact regarding both is that the content of communications is not recorded. Because these devices record less sensitive private information, the legal burden upon the government necessary to obtain permission to install such devices is significantly less than with a wiretap.

ETHICAL CONCERNS

An officer who wishes to search a suspect's computer must decide whether to apply for a conventional warrant, which requires prompt notice to the target, or whether to apply for a "sneak and peek" warrant with it's delayed notice feature. Effective investigation might be promoted if the target is unaware of the search or electronic surveillance. But the intrusion upon privacy and the "big brother" impact will be greater. Is the greater damage to privacy justified? Each law enforcement agent will have to have to perform a mental calculus, a calculus that might include personal ambition and recognition following a successful investigation.

A similar issue faces an agent applying for a pen/trap order. All that is needed is for the agent to certify a belief that the information to be gained is relevant to an ongoing investigation. How relevant must it be? Again there will be temptation to exaggerate the relevance in order to obtain the pen/trap order.

REFERENCES

Armstrong, I. (2000). Computer Forensics, SC Magazine, April 2000.

Brenner, S.W., Frederiksen B.A. (2001/2002) Computer Serches and Seizures: Some Unresolved Issues. *Michigan Telecommunications and Technology Law Review 8/39.*

Brenner, S.W. (2002) The Privacy Privilege: Law Enforcement, Technology, and the Constitution. *Journal of Technology Law and Policy, 7/123.*

Carter, B., Spafford, E.H. (2003) Getting Physical eith the Digital Investigation Process. *International Journal of Digital Evidence, 2/2.*

Goldberg, M. (2002) Watching the Detectives. CIO Magazine June 2002.

Nimsger, K.M. (2002) Same Game, New Rules. *Legal Times, March 11 2002.*

Nimsger, K.M. (2003) Digging for E-Data. *TRIAL, January 2003.*

Schultz, D.H., Keena, J.R. (2001) E-Trail Trek. *Verdicts and Settlements, July 18 2001.*

Strang, R. (2001). Recognizing and Meeting Title III Concerns in Computer Investigations. *USA Bulletin, U.S. Department of Justice March 2001.*

Skibell, R. (2003) Cybercrimes and Misdemeanors: A Reevaluation of the Computer Fraud and Abuse Act. *Berkely Technology Law Journal, 18/909.*

U.S. Department of Justice (2002) Searching and Seizing Computers and Obtaining Evidence in Criminal Investigations. Retrieved from http://www.usdoj.gov/criminal/cybercrime/A.

Authors' Index