

REFORMING WORKMEN'S COMPENSATION: RECOMMENDATIONS FOR MASSACHUSETTS

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Introduction

From the effective date of the Massachusetts workmen's compensation law on July 1, 1912, numerous and varied amendments have been enacted in nearly every session of the state legislature in an effort to make the law more responsive to changing needs. Although the law, in general, compares favorably today with the provisions of other state workmen's compensation laws,¹ it suffers, nevertheless, from a number of major gaps and weaknesses that cause profound dissatisfaction with its administration.²

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¹ Massachusetts appears to have complied with seventeen of the twenty-three recommended standards of the International Association of Industrial Accident Boards and Commissions (IAIABC), ranking ninth among the jurisdictions. See IAIABC, PROCEEDINGS, 1968 CONVENTION 132-33 (1969). For a listing of the suggested administrative reforms that would enable the Industrial Accident Board in Massachusetts to overcome the huge backlog and to keep pace with the case load, see LABOR-MANAGEMENT ADVISORY COUNCIL TO THE GOVERNOR, SUMMARY OF REPORT (1970).

² The U.S. Bureau of Labor Standards, Department of Labor, has published numerous bulletins in the field of workmen's compensation. BULLETIN No. 161, STATE WORKMEN'S COMPENSATION LAWS, revised periodically, is frequently referred to and is regarded as the best source of basic provisions of the laws in each jurisdiction. Included among the Bureau of Labor Standards' studies cited in this article are BULLETIN No. 190, SECOND INJURY FUNDS (1957); BULLETIN No. 234, WORKMEN'S COMPENSATION AND THE PHYSICALLY HANDICAPPED WORKER (1961); BULLETIN No. 244, MEDICAL CARE UNDER WORKMEN'S COMPENSATION (1962); BULLETIN No. 279, WORKMEN'S COMPENSATION: THE ADMINISTRATIVE ORGANIZATION AND COST OF ADMINISTRATION (1966); and BULLETIN No. 310, THE PROCESSING OF WORKMEN'S COMPENSATION CASES (1967). The *Proceedings* of the annual conventions of the IAIABC were published from 1916 to 1932 by the U.S. Bureau of Labor Statistics; in 1933 and from 1939 to 1948 by the U.S. Division (or Bureau) of Labor Standards; from 1949 to 1963 by the U.S. Bureau of Labor Standards; and from 1964 by the IAIABC. A subject index of the *Proceedings* for the period 1914-1964 is available from the IAIABC. The text and commentary of the Council of State Governments' draft Workmen's Compensation and Rehabilitation Law, reprinted from SUGGESTED STATE LEGISLATION FOR 1965, is available from the Council of State Governments.

The purpose of this article is to recommend these measures to improve the standards and to strengthen the administration of the law:

- Eliminate the numerical exemption.
- Reduce the waiting period.
- Adjust benefits to a flexible maximum.
- Provide prompt payments.
- Assure supervision of medical care.
- Broaden the second-injury fund and eliminate waivers.
- Modernize the organizational structure.
- Change the method of financing workmen's compensation.
- Improve hearing procedures in contested cases.
- Limit reporting of work injuries.
- Expand statistical and research programs.
- Improve management practices.

I. ELIMINATE THE NUMERICAL EXEMPTION

In 1943, the Massachusetts workmen's compensation law was changed from an elective-type with no numerical exemption to a compulsory-type with an exemption for employers with six or less employees. In 1945, compulsory coverage was extended to employers with more than three employees and coverage was made elective as to employers of three or less employees.³ It is estimated that of the 2.2 million workers in nonagricultural employment in Massachusetts, about 1.7 million are covered under the workmen's compensation law.⁴ A significant bulk of the 500,000 uncovered workers are employed in small firms with three or less employees, which today are exempt under the law unless their workers are employed as farm laborers or in occupations determined to be hazardous.⁵

The policy of exempting small firms from coverage may have been justified in past years by the alleged difficulties of administrative agencies in reaching them. In addition, some insurance

The author is deeply indebted to Donald L. Ream, Chief, Division of Workmen's Compensation Standards, and Lloyd W. Larson, Workmen's Compensation Specialist, of the United States Department of Labor, for their very helpful comments and suggestions.

³ MASS. GEN. LAWS ANN. ch. 152, § 1(4) (1958).

⁴ SOCIAL SECURITY BULLETIN, Oct., 1970, at 7.

⁵ MASS. GEN. LAWS ANN. ch. 152, § 1(4).

carriers were reluctant to underwrite the small employer — generally regarded as an “undesirable risk.”⁶ Providing workmen’s compensation to employees of small firms, however, would help the employers as well as the employees by safeguarding against lawsuits for work related injuries. The increased sophistication necessary to carry on a small business plus this economic fact may allay the fears of carriers. Extending coverage would also provide a bonus to the public insofar as it diminished the tendency of uncompensated workers to rely on public assistance provided by the taxpayer. Finally, whatever the administrative problems are associated with extended coverage, they have evidently not been considered insuperable by the thirty jurisdictions⁷ which do not exempt firms having a small number of employees. From 1961 through 1968, eight states reduced their exemptions for small sized firms, with four states, including Connecticut⁸ and New Hampshire⁹ in the New England area, joining twenty-six other jurisdictions in eliminating numerical exemptions entirely.

Numerous groups and authorities active in the workmen’s compensation field have long maintained that the workmen’s compensation system should be made compulsory for all occupations. Over fifty years ago, in 1919, the International Association of Industrial Accident Boards and Commissions (IAIABC) recommended comprehensive coverage of all industries and all employees.¹⁰ This position was reiterated by the Liberty Mutual Insurance Company honorary chairman in 1964,¹¹ and more recently, the National Association of Manufacturers Workmen’s

6 H. SOMERS & A. SOMERS, *WORKMEN'S COMPENSATION: PREVENTION, INSURANCE AND REHABILITATION OF OCCUPATIONAL DISABILITY* 47 (1954).

7 U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 161, *STATE WORKMEN'S COMPENSATION LAWS* 15 (rev. ed. 1969) [hereinafter cited as BULL. NO. 161] and BULL. NO. 212, *STATE WORKMEN'S COMPENSATION LAWS: A COMPARISON OF MAJOR PROVISIONS WITH THE RECOMMENDED STANDARDS* 4 (rev. ed. 1967) [hereinafter cited as BULL. NO. 212]. The thirty jurisdictions are Alaska, California, Connecticut, District of Columbia, Hawaii, Idaho, Illinois, Indiana, Iowa, Louisiana, Maryland, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Oregon, Pennsylvania, Puerto Rico, South Dakota, Utah, Washington, West Virginia, Wisconsin, Wyoming, and United States (federal employees and longshoremen).

8 CONN. GEN. STAT. ANN. § 31-223 (Supp. 1971).

9 N.H. REV. STAT. ANN. § 281:21 (Supp. 1970).

10 IAIABC, *IAIABC HANDBOOK* 33 (1956).

11 Address of S. Bruce Black, Sept. 1, 1964, IAIABC, *PROCEEDINGS, 1964 CONVENTION* 91 (1965).

Compensation Subcommittee recommended the extension of coverage in all states to one or more workers in non-farm jobs.¹² Organized labor has also long urged compulsory coverage with no exemptions for small firms.¹³ The workmen's compensation law should therefore follow a standard similar to the Massachusetts unemployment insurance law, which covers employers with one or more employees.

II. REDUCE THE WAITING PERIOD

Waiting period is the time following an injury during which payment of compensation indemnity benefits is not required. Most of the laws provide that if the disability continues for a certain period of time, ranging from five days to six weeks or more, the payment of benefits is retroactive to the date of injury. It does not apply to payments for medical or hospital care, which are provided from the time of injury, but it does apply to all other types of indemnity payments. All jurisdictions have a waiting period ranging from a minimum of two days to a maximum of seven days. In some states this waiting period applies only to temporary disability.¹⁴

It is generally recognized that a prolonged waiting period arbitrarily limits the coverage of injuries and compels the injured worker to absorb an increasing proportion of the cost of the accident. Accordingly, the waiting period should be kept to a minimum. One of the major standards adopted in 1919 by the IAIABC was that the waiting period should not exceed three days, and that if the disability continues for more than two weeks, compensation should be paid from the date of disability.¹⁵ Prior to 1969, only eight jurisdictions — Connecticut,¹⁶ Delaware,¹⁷ Ha-

12 Address of William K. Zinke, Sept. 18, 1967, IAIABC, PROCEEDINGS, 1967 CONVENTION 27 (1968).

13 DEPARTMENT OF SOCIAL SECURITY, AFL-CIO, PUB. NO. 145, SECURITY IN TIME OF NEED 18 (March, 1969); AFL-CIO, *Toward A Model Law — the AFL-CIO Program*, AMERICAN FEDERATIONIST 24 (Feb., 1970).

14 BULL. NO. 161 at 24-26.

15 BULL. NO. 212 at 26.

16 CONN. GEN. STAT. ANN. § 31-295 (Supp. 1971).

17 DEL. CODE ANN. tit. 19, § 2321 (Supp. 1970).

waii,¹⁸ Oregon,¹⁹ Puerto Rico,²⁰ Rhode Island,²¹ Wisconsin,²² and Wyoming²³ — met this standard. In 1969, Minnesota reduced its waiting period to three days, with retroactive benefits payable after ten days of disability instead of three weeks.²⁴ The Massachusetts law provides for a five-day waiting period, although compensation is made retroactive from date of injury if the disability continues for a period of six days or more.²⁵ To provide more effective protection to injured workers and their dependents, the Massachusetts law should be amended to limit the waiting period between the time of injury and the payment of benefits to three days or less.

III. ADJUST BENEFITS TO FLEXIBLE MAXIMUM

Most workmen's compensation laws provide for replacement of from three-fifths to two-thirds of a disabled worker's lost wages. However, because of ceilings on the amount and duration of benefits and the waiting periods required before benefits begin, the proportion of wage loss actually compensated is much less. Nationally, maximum weekly benefits averaged only forty-eight percent of average weekly wages in 1966.²⁶ The impact of these rigid statutory dollar limitations on maximum payments causes severe hardship to most workers earning the average wage in the state; and the gap between the ideal of restoring to injured workers two-thirds of the wages lost and the reality of the cash benefits actually received is recognized as one of the most serious deficiencies of our present workmen's compensation system.²⁷

18 HAWAII REV. STAT. § 386-31 (1968).

19 ORE. REV. STAT. § 656.210(4) (1959).

20 P.R. LAWS ANN. tit. 11, § 3(2) (1962).

21 R.I. GEN. LAWS ANN. § 28-33-4 (1969).

22 WIS. STAT. ANN. § 102.43 (1957).

23 WYO. STAT. ANN. § 27-79 (1957).

24 MINN. STAT. ANN. § 176.111 (Supp. 1971).

25 MASS. GEN. LAWS ANN. ch. 152, § 29 (Supp. 1971).

26 OFFICE OF THE PRESIDENT, MANPOWER REPORT OF THE PRESIDENT 43-44 (1968).

27 WITTE, *The Future of Social Security in Health Care*, in SOCIAL SECURITY PERSPECTIVES 383 (R. Lampman ed. 1962). As stated by Arthur Larson, *Compensation Reform in the United States*, in E. CHEIT & M. GORDON, OCCUPATIONAL DISABILITY AND PUBLIC POLICY 16 (1963): "In some areas a considerable fraction of compensation recipients are driven to seek public assistance to bring their benefits up to a

As pointed out by Professor Arthur Larson in his commentary on the Council of State Governments' model State Workmen's Compensation and Rehabilitation Law, one reason that the fixed weekly maximum is too low in all but a handful of states is that, although the wage level and the cost of living have been going up steadily for many years, the fixed dollar minimum can be raised only by a specific legislative amendment.²⁸ As a result, every time the question comes up in a legislative session, there must take place the usual political struggle, out of which some increase may or may not emerge. In any event, if and when the increase appears, it is apt to be behind the times. Since we are living in an era in which a gradual upward movement in wages and cost of living seems to be a virtual certainty, the obvious solution for this entire problem is to eliminate this legislative battle and to

subsistence level. In one of our largest cities half the compensation recipients have also been getting public assistance." Donald L. Ream, of the U.S. Bureau of Labor Standards, stated in IAIABC, PROCEEDINGS, 1966 CONVENTION 204-05:

Another serious shortcoming is a lack of provisions whereby benefits in old cases are adjusted periodically to meet the rising cost of living. This lack has caused untold hardship on those workers who are totally disabled or upon the dependents of deceased workers. We say this is social legislation—yet only Michigan, Nevada, Ohio, Washington, Oregon, and the Federal Employees' Compensation Act have amended the acts to give some relief to these beneficiaries now on the books. When the subject is raised, the problem seems to be that the insurance carriers have not provided for this increase in the premium rate structure. If the carriers can't find a way to overcome this problem, then I think we should look to other proposals such as the establishment of a special fund to which all employers or taxpayers contribute.

See also Herrick & Quinn, *The Working Conditions Survey as a Source of Social Indicators*, MONTHLY LABOR REVIEW, Apr., 1971, at 23:

[A]mong the workers who reported an occupational disability of 2 weeks or more, 68 percent had problems in making ends meet during disability. About 20 percent of American workers fall outside the scope of workmen's compensation laws and, of those who are covered, few receive payments as high in proportion to income as their fathers and grandfathers received. . . . Because disabled workers cannot effectively represent their own interests, our workmen's compensation system (of lack of it) has been an easy problem to dismiss. The time has come to face this issue.

See also THE PRESIDENT'S COMMISSION ON INCOME MAINTENANCE PROGRAMS, BACKGROUND PAPERS 197-98 (1970).

28 LARSON, *Commentary, Workmen's Compensation and Rehabilitation Law*, COUNCIL OF STATE GOVERNMENTS, SUGGESTED STATE LEGISLATION, 1965, vol. XXIV, at 120 (1965) [hereinafter cited as DRAFT STATUTE].

adopt a fixed formula which will automatically adjust the maximum to changes in the general wage level in the state.

Connecticut was the first state to adopt this principle by enacting a "flexible maximum" provision in 1959.²⁹ As of January 1971, ten additional states³⁰ including Maine,³¹ Rhode Island³² and Vermont,³³ enacted similar provisions whereby weekly benefits can be adjusted annually without further legislative action. The calculation consists of taking one-half to two-thirds (or some variation of this percentage formula) of the average state-wide wage. For this purpose, the wages reported under the state's unemployment compensation insurance act are used. A calculation is made by the workmen's compensation director generally before June 1 of each year, and takes effect for the calendar year on the following January 1.³⁴

The enactment of this flexible maximum principle in Massachusetts would have the effect of increasing the maximum weekly benefit for a single person. However, a family of four would receive no increase in the maximum weekly benefits payable until the average statewide wage reaches about \$135 per week.³⁵ On balance, the flexible maximum should be adopted, even though it might actually cause a reduction in the maximum payable for some groups, since it would end the yearly legislative battle over increasing the maximum, and it would provide an automatic, definite method for increases in light of generally rising wages and inflation.

IV. PROVIDE PROMPT PAYMENTS

A major objective of workmen's compensation is to provide prompt payments to workers. Any delay in making the first pay-

²⁹ CONN. GEN. STAT. ANN. § 31-162a (1960).

³⁰ BULL. NO. 161 at 24.

³¹ ME. REV. STAT. ANN. tit. 31, § 54 (Supp. 1970).

³² R.I. GEN. LAWS ANN. § 28-33-17 (Supp. 1970).

³³ VT. STAT. ANN. tit. 21, §§ 601(16), 1338 (Supp. 1971).

³⁴ BULL. NO. 161 at 24.

³⁵ Present statutory maximums are \$70 per worker, with an additional \$6 for spouse and each other dependent. MASS. GEN. LAWS ANN. ch. 152, §§ 34, 35, 35A (Supp. 1971).

ment is of critical importance to workmen accustomed to the regular receipt of wages every one or two weeks. Immediately following a disabling injury, most workers are fearful not only about their health, but also about the welfare of their families. In these circumstances, it is essential that they be dealt with fairly and promptly.³⁶

In the handling of claims, many states, including Massachusetts, follow the "agreement method," whereby a settlement is proposed by the employer or insurance carrier. If the injured worker accepts, he signs an agreement. Thereupon payments begin, either immediately or after the routine approval of the commission. Unless the case is contested, the commission makes no investigation and does not intervene.³⁷ The abuses inherent in such a system due to the unequal bargaining position of the parties became apparent at an early date. Often the injured worker would sign simply because he needed the payments to cover expenses. Investigations have revealed the weaknesses of the agreement method, particularly with regard to consistent under-payments. A New York investigation in 1919 led to abandonment of the practice in that state.³⁸ Michigan abandoned it in 1943 in favor of the "direct payment" method.³⁹

Under the direct payment method, developed in Wisconsin, employers or insurance carriers are required to commence payments to the injured worker on their own initiative.⁴⁰ The injured worker is not asked to sign any papers other than receipts for the payments nor does he have to agree to anything. He is not required to file a "claim" with the state agency, since his right to compensation is presumed to be established by the fact of injury. Payments are to start automatically, within eleven days after disability. The commission requires the employer or insurance carrier to file reports showing that payments have begun or explaining why they have not begun, and indicating the termination

36 E. CHEIT, *INJURY AND RECOVERY IN THE COURSE OF EMPLOYMENT* 261 (1961).

37 M. DAWSON, *THE DEVELOPMENT OF WORKMEN'S COMPENSATION CLAIMS ADMINISTRATION IN THE UNITED STATES AND CANADA* 21-29 (1951).

38 SOMERS & SOMERS, *supra* note 6 at 151.

39 *Id.*

40 STATE OF CALIFORNIA, *REPORT OF THE WORKMEN'S COMPENSATION STUDY COMMISSION* 161-66 (1965).

and final amount of payment. Under the Wisconsin workmen's compensation system, reputed to be an outstanding example of the direct payment approach, first payments are made within fifteen days after disablement in about eighty-seven percent of all cases.⁴¹

The authority supporting the direct payment system is stronger than that upholding the agreement system in Massachusetts. As stated by J.L. Hill, former chairman of the Michigan Workmen's Compensation Commission which tried both the agreement and direct payment methods: "I can say without reservation that no one, labor, employers, insurance carriers, or the Workmen's Compensation Commission, could possibly consider returning to the old agreement system."⁴² It is significant that the Council of State Governments' suggested *Workmen's Compensation and Rehabilitation Law* provides for a penalty to motivate prompt payment of compensation under the direct payment method. If the employer neither controverts nor pays within fourteen days after the first payment is due, a ten percent penalty is added to the unpaid compensation.⁴³ Massachusetts should take immediate steps to adopt the direct payment method, thus allowing the injured worker to receive immediate payments without sacrificing part of his claim.

V. ASSURE SUPERVISION OF MEDICAL CARE

Providing prompt, competent, and adequate medical care to injured workers is of crucial importance to all parties concerned: to workers because the speed and degree of their recovery and restoration to earning capacity depends on it; to employers and insurance carriers because they pay the bills; and to administrators because their responsibility is to make certain that injured workers receive proper medical attention.

The medical committee of the IAIABC has recommended that the direction of medical aid should be placed with the compen-

41 *Id.* 161. For a full discussion of the operation of direct payment, see IAIABC, PROCEEDINGS, 1965 CONVENTION 175-81 (1966).

42 M. DAWSON, *supra* note 37, at 30; for a recent discussion of the subject see IAIABC, PROCEEDINGS, 1967 CONVENTION 183-89 (1968).

43 DRAFT STATUTE § 27(a).

sation authority by statute.⁴⁴ Organized labor has long advocated that the workmen's compensation agency should have the authority to supervise and control medical care.⁴⁵ The Council of State Governments, in its draft language for the guidance of states, suggests placing in the director of the workmen's compensation agency the authority and responsibility to determine the quantity and quality of medical services.⁴⁶

Significant progress has been made in recent years by many states in the extent and quality of medical care provided injured workers; however, a serious gap exists with regard to supervision of medical care. At present, there are some thirty jurisdictions,⁴⁷ including Connecticut,⁴⁸ which specifically authorize the workmen's compensation agencies to supervise medical care. However, the degree of supervision exercised varies widely among the states. Effective supervision would include the duties of ascertaining whether the injured worker is receiving adequate medical care; checking on the speed and fullness of the reports required from attending physicians; regulating charges for medical services; and evaluating medical reports and testimony regarding the cause and extent of disability. Compensation officials have emphasized the importance of having recognized medical organizations determine the competence of the physician, surgeon, or specialist treating the injury sustained.⁴⁹ Inexpert medical care frequently proves both injurious and expensive. In some instances, the choice of physician who treats the injured worker is determined not by his competence as a doctor, but by his skill as a medical witness. Proper supervision can eliminate such practices.

Massachusetts, which passed the first law dealing with rehabilitation over fifty years ago, still lacks a statutory provision in its workmen's compensation law providing for the supervision of

44 U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 254, PROCEEDINGS OF THE IAIABC, 1962 CONVENTION 99 (1963).

45 Address of Clinton Fair, Ass't Dir., AFL-CIO, Dep't of Social Security, before 1960 IAIABC Convention, Aug. 24, 1960, at Washington, D.C. in U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 229, WORKMEN'S COMPENSATION PROBLEMS 134, 139 (1961) [hereinafter cited as BULL. NO. 229].

46 DRAFT STATUTE § 12.

47 IAIABC, *Report of the Legislative Committee*, PROCEEDINGS, 1968 CONVENTION 133-35, Ex. III (1969).

48 CONN. GEN. STAT. ANN. § 31-157 (1960).

49 H. SOMERS & A. SOMERS, *supra* note 6 at 166-174.

medical care. A statute should be passed authorizing the administrative agency to supervise medical care in order to insure the accuracy of diagnosis at the outset and continued supervision of the case in consultation with appropriate medical advisory bodies. This will contribute measurably to achieve the objective of maximum restoration of the injured worker with a minimum of delay.

VI. BROADEN THE SECOND-INJURY FUND AND ELIMINATE WAIVERS

Second-injury funds, which were set up to prevent discrimination in the hiring of handicapped workers, insure that an employer who hires a handicapped worker will not, in the event of subsequent injury on the job, be responsible for a greater disability than actually occurred while the worker was in his employment. The last employer meets only the costs of the last injury. The remainder of the award is paid from the fund, thereby assuring full protection to the injured worker for the total disability resulting from the combined injuries. In New York, for example, the last employer is liable for the first 104 weeks of disability and the special fund is liable for the excess.⁵⁰ In Massachusetts, the employer is charged for one-half the amount due for total disability or death plus any amount due for scheduled injuries; the second-injury fund pays the rest.⁵¹

Second-injury funds have now been established in forty-six states, the District of Columbia, Puerto Rico, and under the longshoremen's act.⁵² Originally these second-injury funds specified that if a worker with one arm, hand, foot, leg, or eye lost a second such member or organ in a work accident, his employer would be liable only for the second loss, and any remaining compensation due for the combined injury would be paid from a special fund. The trend in second-injury fund legislation has been to

50 U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 190, SECOND INJURY FUNDS 3, 37 (1957); U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 234, WORKMEN'S COMPENSATION AND THE PHYSICALLY HANDICAPPED WORKER, 50-64 (1961).

51 MASS. GEN. LAWS ANN. ch. 152, § 37 (1958).

52 BULL. NO. 161, at 62-63. The four states without a second-injury fund are Georgia, Louisiana, Nevada, and Virginia.

broaden the coverage rather than to limit the application of the provision to workers who have lost a member of the body or the use of it. The two federal laws and the laws of eighteen jurisdictions, including Connecticut⁵³ among the New England states, have been extended to apply to any previous permanent disability, such as polio, arthritis, heart disease, or epilepsy.⁵⁴

Although Massachusetts has progressed somewhat, it still does not have what could be termed a "broad coverage" law. Its basic second-injury fund⁵⁵ is limited to cases involving the loss of a hand, arm, foot, leg, or eye; broader coverage is provided, however, for disabled veterans in order to widen their employment opportunities. Massachusetts should further enlarge its laws to cover any previous permanent disability.

Very early in the history of workmen's compensation, a number of states enacted provisions permitting handicapped workers to "waive" their rights to benefits for any injury caused or aggravated by a previous disability. This was to compensate for the reluctance of employers to hire or keep an employee whose physical condition created an extra insurance risk. The development of the second-injury fund system went part of the way towards rendering the waiver provisions obsolete. The funds accomplish what waivers were intended to achieve (i.e., protection of employers who hire handicapped workers), while avoiding diminution of the worker's benefit rights. In more than half the states,⁵⁶ including Rhode Island,⁵⁷ waivers are not permitted. In Massachusetts, waivers are permitted with the written permission of the Division of Industrial Accidents. However, veterans disabled by military or naval service may not waive their rights under the law.⁵⁸ In authorizing waivers by non-veterans of their right to compensation in the event of a subsequent injury, Massachusetts compensation law narrows its coverage and forces many workmen and their dependents to suffer losses they can ill afford to bear.

53 CONN. GEN. STAT. ANN. §§ 31-216 to -221(a) (1960).

54 BULL. NO. 161, at 62-63.

55 MASS. GEN. LAWS ANN. ch. 152, §§ 37-37A (1958).

56 BULL. NO. 161, at 63-64.

57 R.I. GEN. LAWS ANN. § 28-33-26 (1969).

58 MASS. GEN. LAWS ANN. ch. 152, § 46 (1958).

Massachusetts should follow the prevailing practice of other jurisdictions and prohibit the use of all waivers.

VII. MODERNIZE THE ORGANIZATIONAL STRUCTURE

The Massachusetts workmen's compensation law is administered by the Division of Industrial Accidents, which is under the supervision and control of the Chairman of the Industrial Accident Board. The Board consists of twelve members who individually conduct hearings on contested claims. Appeals are taken from the decision of the individual Board member to a reviewing board — a body selected by the chairman of the Board. The law provides that Board members shall devote their full time to the work of the Board and shall not engage in any profession, practice, or business. Furthermore, not more than six members of the Board can be from the same political party. There are no deputy Board members, referees, or hearing examiners.⁵⁹

In recent years, the Board has been overwhelmed by a steady increase in the volume of requests for hearings in controverted cases, ranging from 5,923 in 1960; 6,312 in 1965; and 6,359 in 1966. A pretrial system, established as a regular procedure in 1963, has helped to stem the flow; in 1966, for example, 2,911 cases were assigned for pretrial and 1,223, or 42 percent of the cases were settled or adjusted.⁶⁰ There were 18,064 case assignments by the Board in 1969.⁶¹ If the case is not resolved at the pretrial con-

⁵⁹ Board members in Massachusetts are appointed by the governor and Legislative Council for twelve year terms, except for the chairman whose term is limited to five years at an annual salary of \$18,200. The other eleven board members receive \$17,100 annually. The appropriation for 1970 totalled \$1,650,000 with a staff of 192 positions. An additional appropriation totalling \$1,720,000 covers the administration of the workmen's compensation program for state employees. E. MARINER, *THIS IS YOUR MASSACHUSETTS GOVERNMENT* 163-64 (1970). In addition to the chairman, Board members, advisory committees, a supervisor of rehabilitation, an attorney, a director of self-insurance, secretary, assistant secretary, and chief administrative clerk, the organizational structure comprises seven sections—compensation benefits, agreement, hearing, decisions, investigation, medical, and statistical. U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 279, *WORKMEN'S COMPENSATION: THE ADMINISTRATIVE ORGANIZATION AND COST OF ADMINISTRATION* 151 (1966).

⁶⁰ COMMONWEALTH OF MASSACHUSETTS, *THIRD ANNUAL REPORT TO THE GOVERNOR AND THE GENERAL COURT, TOWARD MORE JUSTICE AND STABILITY* 108-11 (1967).

⁶¹ Kelly, *Workmen's Compensation—Still a Vehicle for Social Justice*, 55 *MASS. L.Q.* 251, 252 (1970).

ference before a Commissioner, it is returned to the Hearing Section of the Board for assignment for a formal hearing at a later date. That assignment date may be anywhere from nine to eighteen months later, depending on the area of the state where the hearing is to be held.⁶² In early 1970, there were reports that the heavy volume of requests for hearings continued to increase; that a huge backlog of controverted cases awaited processing; and that there was a continuing, substantial delay between the time of hearing and the time of final decision.⁶³

A. *Vest Administrative Responsibility in a Director*

To reduce the backlog, numerous and varied proposals have been advanced — the scheduling of hearings within a prescribed period of time, a wider and more frequent use of prehearings and informal conferences, an increase in the number of board members together with supporting stenographic and clerical personnel, and the adoption of a more rigid policy with respect to granting requests for adjournments.⁶⁴ Although one or more of these measures, if adopted, may bring about some relief, the large number of backlog cases in all probability will continue unless a more fundamental approach is taken by the establishment of an administrative director. This officer would have responsibility for the general administration of the workmen's compensation act. The Board would be retained to hear appeals from the initial claims decisions.

From the standpoint of organization, provision of a single executive officer to supervise overall administrative functions is justified on the principle that executive authority can be exercised more effectively by a single individual than by a board.⁶⁵ This has become the trend of organization in recent state changes. Cali-

62 *Id.* 253.

63 Massachusetts State Labor Council, AFL-CIO, *Newsletter*, (Nov. 1970 and Jan. 1971); Claffey, *Workmen's Comp: There's Always a Backlog*, *Boston Globe*, May 31, 1970, § A at 17, col. 3.

64 COMMONWEALTH OF MASSACHUSETTS, THIRD ANNUAL REPORT, *supra* note 60 at 111; SUMMARY OF REPORT, *supra* note 1. See Kelly, *supra* note 61, for an evaluation of these proposals and a recital of the positive steps taken by the Industrial Accident Board to cope with the rising case load.

65 Cheit, *Can Injured Workers Recover?* in E. CHEIT & M. GORDON, *supra* note 27 at 68; Larson, *supra* note 27 at 24.

ifornia, Michigan, Ohio, and Rhode Island, among others, have changed in recent years from the commission type to a single-administrator form of agency with a separate appeals board or commission.⁶⁶ In 1954, a Workmen's Compensation Study Commission was established in Michigan,⁶⁷ comprising two representatives each of employers and labor, and three representatives of the general public, to determine the revisions necessary to make the administration of the workmen's compensation law more effective. The Commission recommended a general reorganization of the administrative setup, which was subsequently adopted by the legislature. Michigan now has all its administrative problems placed in the hands of an administrator; an independent appeals board handles cases on appeal from the initial decisions of referees.⁶⁸

The foundation of successful compensation administration lies in the competence of the director and his hearing officers. It is they who develop the facts, make the initial determinations, and dispose of many cases through informal procedures. As has often been observed, the most perfectly drawn legislation in the hands of poor administrators is doomed to failure. Experience and continuity in office are essential to assure proper handling of day-to-day problems of administration and management. The National Institute on Rehabilitation and Workmen's Compensation⁶⁹ and the Council of State Governments⁷⁰ have emphasized the need for adequate standards for selecting administrators of workmen's compensation laws. In Hawaii and the District of Columbia, the administrators are under civil service.⁷¹ In Wisconsin, an outstanding example of effective workmen's compensation administration, the Director of the Workmen's Compensation Department — a recognized authority with many years of distinguished service — is a civil-service career employee.⁷² Personnel on the staff of the

66 BULL. No. 279, at 9.

67 U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 186, PROCEEDINGS OF THE IAIABC, 1955 CONVENTION 117.

68 *Id.*

69 VOCATIONAL REHABILITATION ADMINISTRATION, U.S. DEP'T OF HEALTH, EDUCATION, AND WELFARE, REHABILITATING THE DISABLED WORKER 3 (1963).

70 DRAFT STATUTE § 57.

71 BULL. No. 279, at 16-20.

72 *Id.* 16.

Director should also be appointed on the basis of their technical and professional qualifications and should not be subject to arbitrary dismissal. In any event, the governor's appointment of a Director should be for a term longer than the usual tenure of a state governor. The practice of replacing officers of this kind in compensation administration whenever there is a change of state administration is to be deplored.

B. *Select Qualified Hearing Officers*

In states where a continuous, heavy flow of controverted cases is experienced year after year, as in Massachusetts, the use of referees or hearing examiners to conduct prehearings, informal conferences, and formal hearings is essential.⁷³ The issues presented in these contested cases are frequently complex. Did the accident arise out of and in the course of employment? Is the worker's injury a result of his work or work environment? Admitting liability, what is the extent of resultant disability, the percentage of wage-loss or loss of wage-earning capacity attributable to the injury?⁷⁴ The decisions in these difficult cases are made on the basis of medical and economic evidence as to the extent of residual permanent disability. There are no easy solutions to such intricate and controversial medico-legal questions, and their determination is ultimately a matter of statutory and case law interpretation, the development of facts, and the application of law to facts. These are techniques in which lawyers are specifically trained. An essential requirement, therefore, should be membership in the bar for persons seeking appointment as a referee or hearings examiner.⁷⁵ In several states, such as Iowa, Missouri, and Wisconsin, the agencies engage in direct recruiting in the law schools for possible appointment as hearing examiners.⁷⁶

C. *Establish an Independent Appeals Board*

The other major component in the administrative structure is the workmen's compensation appeals board, whose function is to

⁷³ W. DODD, *ADMINISTRATION OF WORKMEN'S COMPENSATION* 785 (1936).

⁷⁴ U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. NO. 310, *THE PROCESSING OF WORKMEN'S COMPENSATION CASES 91-92* (1967) [hereinafter cited as BULL. NO. 310].

⁷⁵ DRAFT STATUTE § 57(c).

⁷⁶ BULL. NO. 279, at 81.

determine appeals from the initial decisions by the director or his referees, as provided in the draft Workmen's Compensation and Rehabilitation Law recommended by the Council of State Governments. In Massachusetts, overall responsibility for the general administration of the act is vested in the Chairman of the Industrial Accident Board, which serves not only as the primary dispute-settling body but also as an appeals board.⁷⁷ The suggested separation of the appeals board from the director and his administrative organization makes for greater efficiency in operation. The appeals board is thus able to maintain the posture of a quasi-judicial body which can pass upon cases with judicial detachment because of non-involvement at earlier stages. The director and his staff, in turn, would have more freedom to discharge the nonadjudicatory tasks involved in achieving informal disposition of cases and to maintain constant supervision of recovery and rehabilitation. In line with this policy of preserving the independence of the two administrative branches, the chairman of the board, appointed by the governor, would be authorized to hire necessary employees, to assign the work of the appeals board to members, and to act as the board's administrative officer. The appeals board also must be empowered to adopt its own rules and regulations, and the chairman authorized to make such expenditures as may be necessary to perform the board's function under the act. Members of the appeals board should be lawyers, continued in office as long as efficiency is demonstrated. They should be paid a salary comparable to that of a judge of a state court of general jurisdiction. Such a salary level is justifiable in view of the volume, gravity, and binding force of the decisions of the board.⁷⁸

VIII. CHANGE THE METHOD OF FINANCING WORKMEN'S COMPENSATION

A recent study conducted by the U.S. Department of Labor concludes that the administration of workmen's compensation, in general, is under-financed.⁷⁹ It is manifestly unjust to the workmen's compensation agencies in many states to say that their

⁷⁷ MASS. GEN. LAWS ANN. ch. 23 §§ 14-17 (1966).

⁷⁸ DRAFT STATUTE § 57(c).

⁷⁹ BULL. No. 279, at 91; IAIABC, PROCEEDINGS, 1969 CONVENTION 194 (1970).

administration is "inefficient" when they are doing all that is possible within the limited funds budgeted for their disposal.⁸⁰ Many legislatures appear unaware of the elementary economic fact that weak administration is very expensive. As stated by Professor Arthur Larson:

If the high level of competence of personnel, standard of administrative service, supervision of medical and rehabilitative care, and general administration of the act are to be successfully achieved, there must be a reliable and adequate source of administrative funds. Here again, no matter how good the language of the statute and the operating structure may be, the whole process could be damaged badly by inadequacy, irregularity and unpredictability of funds for administration.⁸¹

Experience demonstrates that one way to improve administration is to change the method of financing from legislative support to self support, whereby the cost of administration is defrayed not by legislative appropriation, but by an assessment on insurance companies and self-insurers.⁸² More than half of the states have utilized some form of assessment, and the proportion of administrative costs met through assessment has been increasing. At present, it amounts to two-thirds of the total administrative costs of the agencies.⁸³

In most of these states a specific legislative appropriation or legislative approval is needed to permit actual use of the assessed funds by the workmen's compensation agency. Only Arizona, Kentucky, and Mississippi permit expenditures without such appropriation or approval. Rhode Island has an assessment that is earmarked for the cost of operating the rehabilitation facility maintained for workmen's compensation beneficiaries. The Florida experience is frequently cited as one of the best examples in the use of the assessment method. In 1962, Florida obtained \$1.6 million from an assessment of 2 percent on premiums to defray the cost of administration of its workmen's compensation, rehabilitation, and safety programs.⁸⁴

80 H. SOMERS & A. SOMERS, *supra* note 6 at 146-47; Marcus, *Advocating the Rights of the Injured* in E. CHEIT & M. GORDON, *supra* note 27, at 80.

81 A. Larson, *Commentary*, *supra* note 28 at 162-63.

82 H. SOMERS & A. SOMERS, *supra* note 6 at 146; see W. DODD, *supra* note 73 at 807.

83 BULL. No. 279, at 94.

84 *Id.*, 94-97.

Experience also shows that state commissions using the assessment method fare better financially. In 1964, in the states relying on legislative appropriations, there was allocated for administration the sum of \$1.57 for every \$100 of benefits paid; on the other hand, in the states relying on the assessment method the sum of \$3.07 per \$100 of benefits disbursed was received by the administrative agencies.⁸⁵

Massachusetts should adopt the assessment method to assure adequate administration. Employers paid nearly \$156 million in insurance premiums in Massachusetts for the year ending June 30, 1969⁸⁶ — a 2 percent assessment would have yielded \$3.1 million as compared to the 1970 appropriation in the amount of \$1.6 million to defray the cost of administering the Massachusetts program. Such a change, which is in line with the recommendation of the Council of State Governments⁸⁷ and most state administrators, removes at one stroke a tax item from the general appropriation list, makes the Board financially autonomous, and helps to remove workmen's compensation administration from the recurring political struggle for the means of survival.

IX. IMPROVE HEARING PROCEDURES IN CONTESTED CASES

When the parties are unable to reach an agreement which settles the compensation claim, the result is a contested case. Although the vast majority of cases are settled at the uncontested level, contested cases represent the more expensive claims involving the more serious injuries, and the decisions reached in these controverted cases establish important precedents for later disputes.⁸⁸

A. *Pretrial or Informal Conference*

In an effort to avoid time-consuming and expensive formal hearings, it has long been the practice for many states to conduct pretrial or informal conferences. Walter F. Dodd, in his monu-

⁸⁵ Skolnick, *Twenty-Five Years of Workmen's Compensation Statistics*, SOCIAL SECURITY BULLETIN 14-16 (reprint, Oct. 1966).

⁸⁶ Claffey, *supra* note 63, § A, at 17, col. 2.

⁸⁷ DRAFT STATUTE § 63.

⁸⁸ H. SOMERS & A. SOMERS, *supra* note 6 at 156.

mental study of workmen's compensation administration,⁸⁹ referred to the Massachusetts practice as one whereby one or both parties could apply for an informal hearing or conference prior to filing a request for a formal hearing. Although the act made no specific reference to such a practice, the procedure became a valuable illustration of the methods adopted by compensation authorities on their own initiative to facilitate the administration of the law. About 10,000 informal conferences were held yearly from 1926 to 1929 and it was estimated by the Massachusetts board that from one-half to two-thirds of these conferences resulted in settlements, thereby saving as many formal hearings by board members. This resulted in a substantial saving of time not only for the compensation officials but also for claimants and insurance representatives.⁹⁰

Many states, including Connecticut and Rhode Island in the New England area, currently follow the practice of "always" or "usually" holding pretrial or informal conferences prior to a formal hearing.⁹¹ The conferences may serve a number of the following purposes: to narrow the issue in dispute; to seek an agreement as to the number and type of witnesses; to allow each side to examine the evidence available to its opponent; to estimate the length of the formal hearing; to attempt to settle the case amicably; to allow the person conducting the conference to give the parties his notion of the proper resolution of the issue in dispute; and to allow each side an opportunity to stipulate as to facts. Some states always use such conferences for all these purposes. Massachusetts reported that it will use conferences for these purposes "sometimes" or "usually" but not "always." Conferences are "never" used for discovery in Massachusetts.⁹² In New Jersey, nearly all cases are scheduled initially for an informal hearing, which is separate from the pretrial procedure. In most instances, prior to a formal hearing, pretrial conferences are held in which the issues

89 W. DODD, *supra* note 73.

90 *Id.*, 260-69. For a recent discussion on the subject of pretrial conferences, see IAIABC, PROCEEDINGS, 1966 CONVENTION 262-76 (1966).

91 BULL. NO. 310, at 100. The information in notes 91 to 96 is drawn from a survey sent to all fifty jurisdictions on July 8, 1966 by the U.S. Bureau of Labor Standards and the Rutgers Bureau of Economic Research.

92 *Id.*

are discussed and an effort is made to reach some sort of an agreement. In Minnesota, a pretrial conference is scheduled approximately two months or so after a claim petition is received and processed. Michigan uses the pretrial conference fairly extensively. The hearing officers take stipulations, there is an exchange of medical information, and both parties are afforded an opportunity to look over the case.⁹³ The pretrial conference has thus proved quite useful in many states for a variety of purposes. Massachusetts should immediately begin using pretrial conferences to expedite the contested hearing process.

B. *Formal Hearing*

When the parties are unable to reach a settlement at the pre-hearing or informal conference, a formal hearing is held where the issues in dispute are heard; witnesses are presented and examined; evidence is weighed; and final decisions made. The jurisdictions, however, differ in their methods of conducting these hearings. Some states follow the administrative approach, where the referee or hearing examiner plays a fairly active role in fact-finding, and renders prompt decisions based upon his expertise in this highly technical field. Other states follow the traditional courtroom approach. Here formal rules of evidence apply and the hearing officer adopts a less participatory role and a more restrained, judicial posture.⁹⁴

Witnesses are usually questioned in Massachusetts. A number of states, including Connecticut, follow the practice of always questioning witnesses at the formal hearing. Two states — New York and New Hampshire — will order an independent medical examination of the worker, presumably useful in cases where there is a wide disparity in the testimony of the physicians retained by the employee and insurance carrier. The practice of urging the parties to settle their differences is only sometimes followed in Massachusetts, but always adhered to in New Jersey, Rhode Island, Vermont, and Connecticut. Depositions are accepted in lieu of personal appearances by physicians in many states, including Connecticut, New Hampshire and Rhode Island; in Massa-

⁹³ *Id.* 94-104.

⁹⁴ *Id.* 106.

chusetts, depositions are accepted only upon agreement of the parties.⁹⁵

It is inevitable that jurisdictions will follow different administrative procedures, however, several basic operating principles should be universally observed. Contested case procedures must be based upon positive administration at the uncontested level. If the job is done well at the uncontested level, there is much less left for dispute.⁹⁶ But even if the case moves to the contested level, a formal hearing should not be held until every informal procedure has been exhausted. The Summary of Report by the Labor-Management Advisory Council to the governor of Massachusetts recommended more frequent use of preliminary and pretrial conferences prior to formal hearings.⁹⁷ Pretrial and informal conferences work well in many jurisdictions. Massachusetts should take positive steps to utilize these informal procedures in order to relieve its compensation board of the present backlog of contested cases.

X. LIMIT REPORTING OF WORK INJURIES

Many states follow the practice of requiring employers to report all injuries. There are, however, seventeen jurisdictions,⁹⁸ including Connecticut,⁹⁹ Maine,¹⁰⁰ and Vermont¹⁰¹ in New England, which require employers to report work injuries only when they result in time lost beyond the shift or working day in which the injury occurred, or result in some permanent disability. Another group of nine states,¹⁰² including Rhode Island,¹⁰³ require employers to file reports only for those injuries which result either in

⁹⁵ *Id.* 107-21.

⁹⁶ *Id.* 137.

⁹⁷ SUMMARY OF REPORT, *supra* note 1.

⁹⁸ BULL. NO. 310 at 15-17. Those seventeen jurisdictions are Connecticut, Hawaii, Idaho, Indiana, Kansas, Kentucky, Maine, Minnesota, Mississippi, Montana, New Jersey, North Carolina, Pennsylvania, Texas, Utah, Vermont, and Virginia. For a comprehensive summary of work injury reporting requirements, see IAIABC, GUIDE TO WORK INJURY REPORTING IN THE UNITED STATES AND CANADA (1960).

⁹⁹ CONN. GEN. STAT. ANN. § 31-316 (Supp. 1971).

¹⁰⁰ ME. REV. STAT. ANN. tit. 39, § 106 (1965).

¹⁰¹ VT. STAT. ANN. tit. 21, § 701 (1967).

¹⁰² BULL. NO. 310 at 15, 17. The nine states are Alabama, Illinois, Iowa, Maryland, Ohio, Puerto Rico, Rhode Island, South Carolina, Wisconsin.

¹⁰³ R.I. GEN. LAWS ANN. § 28-32-1.

permanent disability or loss of time beyond the waiting period specified by the state. The suggested workmen's compensation and rehabilitation law of the Council of State Governments requires employers to file a report within fifteen days after receiving notice of a death or certain injuries. Only injuries resulting in a permanent impairment or rendering the injured employee unable to perform his job during the full period of his regular shift on any day after the date of injury are to be reported. In addition, the employer is required to keep a record of all other injuries which are reported to him, or of which he otherwise has knowledge. These records are to be made available for inspection, but the employer is not required to send such reports to the compensation agency.¹⁰⁴

It is generally recognized that employers should be required to keep a record of all injuries which should be made available for inspection. This data is an invaluable source of information for accident analysis and safety improvement. However, reporting to the compensation agencies should be limited to those injuries which cause absence from work of one day or more or which require medical treatment other than first aid.¹⁰⁵ To require reporting of "all injuries," as provided in the Massachusetts law,¹⁰⁶ would appear to be an onerous burden resulting in wasted administrative time. A provision similar to section 23 of the Council of State Governments' draft statute should be speedily adopted.

XI. EXPAND STATISTICAL AND RESEARCH PROGRAMS

The Massachusetts statistical program, which originated almost sixty years ago, is underfinanced and in recent years has been subject to reductions in operating funds. The annual statistical reports are limited, for the most part, to a series of comprehensive tabulations of accident statistics together with compilations showing payments made and outstanding.¹⁰⁷ What is lacking is an

104 DRAFT STATUTE § 23.

105 BULL. No. 310, at 30.

106 MASS. GEN. LAWS ANN. ch. 152, § 19 (1958).

107 COMMONWEALTH OF MASSACHUSETTS, EXECUTIVE OFFICE FOR ADMINISTRATION AND FINANCE, MASSACHUSETTS INVENTORY OF PUBLISHED STATISTICAL SERIES, 193-97 (1970).

appreciation of the importance of statistics as tools for measuring the effectiveness of administration and for providing data for budgetary planning.¹⁰⁸ There are several important elements in a good statistical program. For example, an effective program should include the collection and analysis of administrative and legal statistics¹⁰⁹ in addition to current safety figures.

Administrative statistics would include information showing the volume of work handled (cases pending at beginning of period, cases received during period, cases disposed of during period, and cases pending at end of period); time intervals between various steps in processing claims; contested cases (number of contested cases, number of cases appealed, time intervals between filing for a hearing and final decision, points at which delay occurs, issues involved, and amount of attorneys' fees awarded); appeals to the appeals board and courts; dispositions of all cases; rehabilitation referrals and placements; promptness of reporting accidents; appraisals of new and old procedures; and per capita cost of administration.

Legal statistics would include information showing coverage of the law (ratio between number covered and number potentially eligible for coverage); promptness of benefit payments (ranking of insurance carriers on the basis of promptness of payment); cost of medical care; benefit payments to injured workers (proportion of total loss actually compensated for and a comparison of the amount given under law with the amount actually received); fines and penalties; actions taken under the second-injury fund; and costs and benefits of proposed changes in the law. This kind of information is essential for research concerning the need and feasibility of reforms.

Where adequate records are kept they have amply demonstrated their usefulness and have more than paid for themselves. As part of their supervision of the claims process, Michigan, Wisconsin, New York, North Carolina, and Illinois compile statistics on promptness of payment.¹¹⁰ The publication of such data,

108 H. SOMERS & A. SOMERS, *supra* note 6 at 164-66; Kossoris, *Workmen's Compensation Insurance in the United States—An Appraisal*, MONTHLY LABOR REVIEW 361-62 (Apr. 1953).

109 E. CHEIT, *supra* note 36 at 252.

110 BULL. No. 279, at 70-77.

as in Michigan and Wisconsin, has been effective in speeding up payments.¹¹¹ In Illinois, routine checks of the accuracy of payments, made on the basis of reports filed by employers, insurance carriers, and physicians, have resulted in additional payments of many thousands of dollars.¹¹² The Statistical Division of the Wisconsin Department of Industry, Labor and Human Resources is noted for its extensive publication program in the field of workmen's compensation statistics. In that state, the Workmen's Compensation Department relies heavily upon the work of the Statistical Division in carrying out its administrative responsibilities.¹¹³ The ranking in California of insurance carriers and self-insurers on promptness of payments has reportedly produced improvements in speed of payments.¹¹⁴

The failure in Massachusetts to provide properly financed and staffed research and statistical services has made it virtually impossible for the Board to conduct a continuing evaluation of either the adequacy of their substantive program or the effectiveness of their administration. Workmen's compensation is big business today — too big to be operated on the basis of limited personal observation or informed guesses.¹¹⁵ Adequate records and statistics, coupled with on-going, meaningful research, are the only basis for providing the regular reports to the legislature and to the public which are essential if administration is to be held accountable. The general lack of detailed data regarding administrative experience is therefore a grave indictment. Without knowledge of past experience, inefficiency is almost inevitable and public accountability is forsaken.¹¹⁶ Massachusetts should adopt a full pro-

111 BULL. No. 310, at 43.

112 H. SOMERS & A. SOMERS, *supra* note 6, at 166.

113 BULL. No. 279, at 77-78.

114 Witt, *Book Review*, 58 CALIF. L. REV. 346, 352 (1970).

115 In 1968, Massachusetts ranked ninth among the states in terms of workmen's compensation disbursements totalling \$78.8 million for cash and medical benefits. This exceeds by a substantial margin the total combined disbursements of \$53.5 million by Connecticut, Maine, New Hampshire, Rhode Island and Vermont. U.S. DEP'T OF COMMERCE & BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES 296 (1970). In the fiscal year ended June 30, 1969, it was reported that employers paid nearly \$156 million in insurance premiums for workmen's compensation protection and that \$107 million was paid out in cash, medical, and lump sum payments to disabled workers and widows. Claffey, *supra* note 63, § A at 17, col. 2.

116 Clague, *The Need for Workmen's Compensation Statistics*, U.S. BUREAU OF

gram for collection and synthesis of both administrative statistics and statistics concerning the law.

XII. IMPROVE MANAGEMENT PRACTICES

Massachusetts can profit from the experience of other states which have effectively utilized sound management methods in administering their respective workmen's compensation laws.

A. *Improve Information Flow to Worker*

First is the matter of improving communication with injured workers. It is ironic that notwithstanding fifty to sixty years of administering workmen's compensation laws in many states, the payment of benefits remains shrouded in mystery to most injured workers and their families. To overcome this serious gap, there are some twenty-six jurisdictions which follow the practice of sending to the injured employee some form of communication once reports are received of a work injury. The Wisconsin system is based on the philosophy that it is the obligation of the state agency to see that the worker gets whatever rights are due him under the law. Soon after his injury, the worker receives a card from the agency inquiring as to whether he received his first payment, together with a one-page sheet setting forth basic information about the law. In addition, a pamphlet, *Facts About Wisconsin Workmen's Compensation Law* is sent to the worker advising him of his rights. The pamphlet covers a gamut of possible questions (eighty-seven in number) which might be asked by an employee. If the employee has any doubts as to his rights and duties, it is suggested that he submit his questions to the state agency or consult with the examiner at a particular address.¹¹⁷ In New York, in addition to sending the worker a notice describing his rights under the law, the agency also forwards a pamphlet, *On-the-job Injury, What Every Worker Should Know About Workmen's Compensation*.¹¹⁸ There are about twenty additional juris-

LABOR STANDARDS, DEP'T OF LABOR, BULL. No. 201, PROCEEDINGS OF THE IAIABC, 1958 CONVENTION 127-32 (1959).

117 BULL. No. 310, at 38.

118 *Id.* 39-40.

dictions over and above the twenty-six mentioned above which follow the practice of sending informational materials to workers on request.¹¹⁹ Massachusetts appears to be among the few states in the country which does not send any information to workers once reports are received, even on request. This deficiency should be remedied.

B. *Improve Public Information Program*

Secondly, there is room for improvement in Massachusetts concerning its public information program. Most states report some measure of public information activity, the agencies generally relying on the traditional methods of publication and speaking engagements to convey information to the public. A number of the agencies, including that of Massachusetts, make copies of their workmen's compensation laws available to the public even though they may not publish general informational booklets. It should be noted, however, that Massachusetts is one of the three states that charge for these copies. Approximately two-thirds of the agencies publish an annual report of their activities.¹²⁰ No such reports have been published in Massachusetts in recent years.

C. *Use Advisory Committees*

Thirdly, Massachusetts should make greater use of advisory committees and study commissions. In recent years, advisory committees have grown in popularity and can be found at all levels of government. Their roles include making recommendations concerning specific problem areas, resolving conflicts with groups outside the agency, improving public relations, and providing external support for the agency or program. Wisconsin has been the leader in the use of a Workmen's Compensation Advisory Committee.¹²¹ Such a committee attempts to obtain the cooperative assistance and advance agreement of all affected parties, and then appears before the legislature to sponsor its recommendations. The Advisory Council in Florida worked in cooperation with its industrial commission in regard to the 1955 legislative

¹¹⁹ *Id.* 37-38.

¹²⁰ BULL. No. 279, at 52-55.

¹²¹ U.S. BUREAU OF LABOR STANDARDS, DEP'T OF LABOR, BULL. No. 186, PROCEEDINGS OF THE IALABC, 1955 CONVENTION 117 (1955).

program and secured the enactment of constructive measures designed to strengthen and improve the Florida program.¹²² New York's Advisory Committee, established in 1946, has achieved notable improvements in its law, including the off-the-job disability benefits law, and second-injury provisions.¹²³ In Utah, the legislation agreed upon by its joint committee since 1945 has been adopted by the legislature without change.¹²⁴ In Michigan, the Committee's recommendation reorganizing the administrative setup was adopted by the legislature.¹²⁵ Missouri's Advisory Committee reached joint agreement on fourteen legislative bills; all of them were enacted by the legislature, excepting two, during the 1955 legislative session.¹²⁶ Generally, advisory committees speak with authority when they have acquired the respect of the legislature. In coordinating the many and frequently diverse proposals for amending the workmen's compensation act, the committee's recommendations, which represent in substantial measure the consensus of diverse interests, will deter the legislature from seriously considering any individual proposals that may be offered in floor debate. About half of the workmen's compensation agencies have some form of an advisory committee or advisory council; however, not all of these agencies are making effective use of their advisory groups.¹²⁷ To be fully effective, a committee must have the active support of the top officials of the workmen's compensation agency and it must be provided with adequate staff services. In the 1969 legislative sessions, several states, including Massachusetts, authorized studies of various aspects of their respective workmen's compensation laws. A good opportunity is thus afforded to explore the law and its administration in depth and to make recommendations for improvement in light of the new developments, techniques, and practical operating experience in other jurisdictions.

122 *Id.* 117-18.

123 *Id.* 118.

124 *Id.*

125 *Id.*

126 *Id.* 119.

127 IAIABC, PROCEEDINGS, 1966 CONVENTION 280-89 (1967). See also PUBLIC HEALTH SERVICE, U.S. DEP'T OF HEALTH, EDUCATION, AND WELFARE, A GUIDE TO THE USE OF ADVISORY COMMITTEES 1-16 (1959) BULL. No. 279, at 20-24, 102.

D. Periodically Review Forms and Manuals

The preparation of procedural or claims manuals and the periodic review of forms have been found useful in providing more effective service. Such states as Arizona, Oregon, New Jersey, and Wisconsin have claims manuals explaining what is done in the processing of reports and correspondence and in the conduct of other agency business.¹²⁸ Other states, including Minnesota, Missouri, South Dakota, and North Carolina, have summarized their claims procedures in writing.¹²⁹ These manuals are useful as handy reference guides and make it possible for employees, particularly those newly hired, to gain a better perspective of the overall activity of the agency. Procedural shortcomings can be more readily identified when procedures are in written form. As a result of a recent study of the forms in use in New York, a number of them were redesigned; the medical reporting forms, in particular, were substantially simplified.¹³⁰

E. Administrative Training Programs

Finally, high turnover in technical staff and low salaries combine to give the workmen's compensation agencies in many states their poor reputations. Given the inadequate budgetary allowances, it is not surprising that the ablest administrative and technical talent is not attracted to the field of workmen's compensation administration. This is regrettable, especially in view of the fact that an extraordinary range of technical competence is called for in this area.¹³¹ Adequate professional training programs are conspicuously lacking in many state agencies. An outstanding exception is the training program provided by the New York Workmen's Compensation Board, which includes the training of new and experienced employees in all positions; the holding of educational seminars for groups of professional employees; and the conducting of a management trainee program for potential executives and managers.¹³²

¹²⁸ BULL. No. 279, at 40.

¹²⁹ *Id.*

¹³⁰ *Id.* 41.

¹³¹ H. SOMERS & A. SOMERS, *supra* note 6 at 147-48.

¹³² BULL. No. 279, at 40-41. For a recent discussion see IAIABC, PROCEEDINGS, 1966 CONVENTION 121-25 (1967).

There is a growing awareness of the high cost of low personnel standards. Massachusetts, long regarded as one of the leaders in the field of workmen's compensation administration, has an opportunity to achieve a more efficient administration of its program through improved management practices. Talent costs money but pays rich dividends.

XIII. CONCLUSION

This article has attempted to identify certain major gaps and weaknesses in the Massachusetts workman's compensation law and its administration. Hopefully, it will stimulate further discussion by members of the bar and other interested organizations. Eventually this may result in an improved workmen's compensation program, drawing upon the experience of other states. There is, indeed, general agreement among investigating committees, study commissions, professional groups, and authorities on what constitutes a good program; the problem lies in translating the recommendations into reality.

Pioneers some sixty years ago, fighting for more effective protection of injured workers, founded workmen's compensation in Massachusetts to meet the needs of that day. Organizations and individuals in positions of leadership should accept the challenge today to create a better Massachusetts workmen's compensation law responsive to the needs of the 1970's.*

*This article is respectfully dedicated to the late Ben B. Seligman, Professor of Economics and Director of the Labor Relations and Research Center, University of Massachusetts, Amherst.

THOUGHTS ON CONSTITUTIONAL DRAFTING

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WAYNE W. WHALEN**

Introduction

Drafting a constitution is “different.” One does not call his secretary and start off, “Jane, take a constitution . . . ‘We, the people’ . . . No, strike that. . . .”

The image does not ring true. Many people are involved and it is people—their goals, fears and conceptions of their roles—that makes constitutional drafting interesting. There is also a notion of historical significance that adds a sense of importance and indeed, drama, to writing a constitution.

Our experience is in Illinois, as chairman of and counsel to the Committee on Style, Drafting and Submission (“SDS”) of the Sixth Illinois Constitutional Convention. After an unsuccessful Constitutional Convention in 1920, and decades of work trying to reform the Illinois Constitution of 1870,¹ the work product of the 1970 Illinois Constitutional Convention was approved by Illinois voters in a special election on December 15, 1970.² While we do not pretend that our experience in Illinois can be transposed without modification to other states, it may be of some use.

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1 J. CORNELIUS, A HISTORY OF CONSTITUTION MAKING IN ILLINOIS (1969); N. GARVEY, THE GOVERNMENT AND ADMINISTRATION OF ILLINOIS (1958).

2 Of course, the century-old Illinois Constitution of 1870 did not need revision solely because of outmoded language or style, though there was much that was outmoded. For example, suffrage was limited to male citizens. ILL. CONST. art. VII, § 1 (1870). The General Assembly was granted powers to tax “peddlers, auctioneers, brokers, hawkers, merchants, commission merchants, showmen, jugglers, inn-keepers, grocery-keepers, liquor-dealers, toll bridges, ferries, insurance, telegraph and express interests or business, . . .” ILL. CONST. art. IX, § 1 (1870). The need for reform of the state’s revenue system was a primary reason for constitutional revision. A state

I. SDS COMMITTEE ORGANIZATION

The Illinois Convention, composed of 116 delegates elected from 58 senatorial districts, was convened on December 8, 1969. By December 27, committee chairmen had been chosen and committee membership settled. The appointments were made by the president of the Convention and approved by the Convention.

Nine substantive committees were each charged with an area of substantive responsibility, generally one article of the constitution. Each delegate served on only one substantive committee. The committees held hearings, studied their substantive areas and made reports, including proposed constitutional language, to the Convention. The Convention considered the proposed language, revised it, and passed it to SDS. SDS revised the language and reported the article back to the Convention. The Convention re-

income tax had been found unconstitutional under the 1870 Constitution. *Bachrach v. Nelson*, 349 Ill. 579, 182 N.E. 909 (1932). (Ironically, the *Bachrach* decision was overruled by the Supreme Court of Illinois in *Thorpe v. Mahin*, 43 Ill. 2d 36, 250 N.E.2d, 633 (1969), thereby freeing the 1870 Constitution's article on revenue from the restrictions which were previously thought to exist. The *Thorpe* decision was delivered after the Convention call was approved and during the election of delegates to the 1970 Convention.) A homestead exemption for the elderly was also found unconstitutional. *Hoffman v. Lenhausen*, 48 Ill. 2d 323, 269 N.E.2d 465 (1971). These factors, in addition to a widespread belief that under the old constitution the state's 5 percent sales tax could not be removed from food, medicine or clothing, resulted in Illinois' having one of the most regressive tax systems in the nation. See also Lucas, *Legal Aspects of Revenue*, in *ISSUES FOR THE ILLINOIS CONSTITUTIONAL CONVENTION* (V. Ranney ed. 1970).

Additionally, there was strong pressure from the organized bar and other citizens' groups to change the system of selecting judges from the elective method to a merit appointment system. Cedarquist, *The Challenge for a Revised Judicial Article*, 51 CHICAGO B. RECORD 290 (1970). Many cities were seeking constitutional "Home Rule." Banovetz, *Urban Problems*, in *ISSUES FOR THE ILLINOIS CONSTITUTIONAL CONVENTION* (V. Ranney ed. 1970), and a scheme for reapportioning the General Assembly was needed to avoid a disastrous "at large" election which had occurred in the state in 1964. The state General Assembly redistricting plan in 1964 was not consistent with the one man-one vote rule. As a result 177 representatives were elected at large in the State. Each voter had 177 votes with which to favor 177 of the 236 candidates in the general election. See J. McDOWELL, *THE POLITICS OF REAPPORTIONMENT IN ILLINOIS* (1967).

Thus, the motives for calling a constitutional convention were different for the many interest groups and individuals who supported the call. In fact there was no agreement among the delegates to the 1970 Convention as to whether the old constitution should be totally revised or simply amended in a piecemeal fashion. (See discussion in section IV.) Nonetheless, the case for calling a constitutional convention was so compelling that when the issue of whether to call a convention was placed on the general election ballot in 1968, it received the largest plurality of votes of any issue in the state's history.

considered the article (second reading), and sent it back to SDS for final polishing. SDS then reported the finished product to the Convention for final approval (third reading).

SDS was composed of fifteen members — one representative from each of seven substantive committees, two representatives from two of the committees, the president, and the three Convention vice presidents. As in the case of substantive committees, members of SDS were appointed by the president of the Convention. Having the president and the three vice presidents (and in Illinois, Mayor Daley's son) on SDS gave the committee the influence and respectability necessary to perform its function. The commitment of the Convention president, Samuel W. Witwer, to producing a well-written constitution was a substantial aid to us.

The decision to have representatives of the substantive committees on SDS proved to be a sound one. The presence of a member from each substantive committee gave SDS a natural liaison with those committees. It also gave the substantive committees reassurance: someone from their committee was on SDS to present their point of view. SDS members usually represented the views of the majority in their substantive committee, even if they themselves had been among the minority in that committee. Although the amount of deference given by SDS members to each substantive committee member's views varied, SDS members generally looked to the substantive committee member to represent the "interest" and the "views" of that committee.

There was an initial fear and suspicion of SDS born largely of each substantive committee's possessive attitude toward its own area. Some delegates were doubtless aware of the important substantive role played by drafting committees in constitutional conventions, particularly the Federal Constitutional Convention, and viewed SDS as a dangerous committee. One SDS member, a Convention vice president, took the position that any change in language was a change in substance. "The Convention intended the words it voted on," he said. "To change the words alters the intent."

SDS had a wide range in the technical skill of its members; it was composed of a minister, two teachers, a banker, a businessman and ten lawyers. The number of lawyers proved to be an asset.

While some of the other SDS members occasionally objected to "legalistic" language and requested that a particular section be drafted in "everyday" words, the experienced legal draftsmen on SDS greatly expedited the drafting process.

After the formation of SDS, the next step was to obtain staff. Some conventions have selected committee staff largely on a patronage basis. SDS staff, however, was selected by the chairman on the basis of professional competence. The SDS counsel had no experience in politics. Though a political sense was necessary to the position, the chairman believed that a reputation of neutrality with respect to substantive issues was necessary.

The SDS drafting role developed in three phases: (1) informal consultation with substantive committees; (2) drafting each article separately and reporting it to the Convention; and (3) drafting the constitution and schedules with a proposed ballot, for submission to the voters.

II. INFORMAL CONSULTATION WITH SUBSTANTIVE COMMITTEES

During the early months of the Convention, substantive committees met two sessions a day, four days a week. The SDS counsel spent a good part of his time attending committee meetings in order to obtain an impression of each committee's work, its role, and its jurisdiction, and also to introduce himself to committee chairmen, vice chairmen and counsels.

The SDS chairman and counsel prepared style guidelines which were approved first by SDS and then by the Convention for use in drafting the new constitution.³ These standards proved helpful in a number of respects. They aided negotiations on drafting changes with substantive committees by allowing SDS to point to one or another of the standards as a reason for the change. They aided the drafting of committee reports for the same reason. Finally, formalized standards gave some assurance to the delegates that the constitution would be competently written — an important assurance, given the suspicion with which SDS was initially viewed.

The use of the style guidelines proved to be generally successful although they were occasionally rejected. The Revenue Commit-

³ The standards are set forth in Appendix A, I.

tee rejected guideline number 6 ("Enumerations should be used with caution because they may be interpreted as excluding all items not enumerated.")⁴ The Revenue Committee insisted on listing all "conceivable" agencies and departments of state government within the Governor's budgeting powers and the debt provisions to be "absolutely certain" they were included.⁵ Since there was political pressure to include within these sections certain state agencies which were not included in the comparable 1870 constitutional provisions, the style guideline was ignored.⁶

Another confrontation between substance and style involved Section 18 of the Bill of Rights.⁷ This provision prohibited discrimination by public entities on the basis of sex. The women delegates proposed it on the floor of the convention,⁸ saying that they would not permit any language changes. SDS proposed certain alterations in the section to make it consistent with the rest of the Illinois Constitution.⁹ Because of the change some

4 ILL. CONST. art. VIII, § 2; *id.* art. IX, § 9.

5 ILL. CONST. art. VIII, § 2 states:

The budget shall set forth the estimated balance of funds available for appropriation at the beginning of the fiscal year, the estimated receipts, and a plan for expenditures and obligations during the fiscal year of every department, authority, public corporation and quasi-public corporation of the State, every State college and university, and every other public agency created by the State, but not of units of local government or school districts.

Article IX, § 9(a) states:

For the purpose of this Section, 'State debt' means bonds or other evidence of indebtedness which are secured by the full faith and credit of the State or are required to be repaid, directly or indirectly, from tax revenue and which are incurred by the State, any department, authority, public corporation or quasi-public corporation of the State, any State college or university, or any other public agency created by the State, but not by units of local government, or school districts.

6 Agencies that were not covered by the debt provision were not subject to debt limitations. Under the old constitution much debt was created through agencies that were held not to be subject to the restrictive debt provision of that constitution.

7 ILL. CONST. art. I, § 18.

8 The section, as proposed, stated:

The equal protection of the laws shall not be denied or abridged on account of sex by the State of Illinois or any of its agents, agencies or subdivisions.

9 SDS proposed a revision which stated:

The equal protection of the laws shall not be denied or abridged on account of sex by the State or its units of local government and school districts.

This provision was adopted by the Convention and is consistent with the terminol-

women delegates refused to vote for the Bill of Rights on final reading, claiming that the "meaning" of the section had been altered.

The SDS chairman and counsel also established guidelines for use by substantive committees in writing their reports. The guidelines suggested that each committee set forth proposed constitutional language, explain its proposal and discuss the alternatives considered by the committee, including comparable 1870 Constitutional provisions. Minority reports were to take the same form.¹⁰ These reports were useful because they forced each committee to focus on its reasons for recommending particular constitutional language. Furthermore, they provided SDS with a document to refer to when trying to draft language to reflect the Convention's intent. Along with the debates of the Convention, the reports form the "legislative history" of the constitution.

The Convention rules prohibited SDS from formally assuming its drafting role until after first reading. However, SDS decided to participate informally at the earliest possible stage. This was a sound decision. Had SDS waited until after first reading, it would have been difficult to change language, particularly archaic language from the old constitution carried over in early drafts. Positions hardened once reports were put in final form and introduced onto the floor of the Convention.

Informal participation at this stage consisted of encouraging the substantive committees to provide the SDS chairman and counsel with early working drafts, with the assurance that these drafts would be kept confidential. There was some reluctance on the part of committees to release early drafts because of the possessiveness with which some guarded their work. They were also reluctant to part with imperfect drafts. Nevertheless, with assurances, we were able to obtain drafts from most committees. The SDS chairman and counsel reviewed the early drafts independently. The SDS member of the substantive committee whose work was under consideration was also encouraged to make style and drafting suggestions. At this stage of the drafting process,

ogy used throughout the Constitution when referring to the "political subdivisions" of the State and "agencies" of the State. See, *e.g.*, ILL. CONST. art. VII, § 1.

¹⁰ Appendix A, II at 2-4.

however, the SDS member was usually much more concerned with the substantive decisions of the committee and, consequently, few drafting suggestions were made. When a substantive committee was within a few days of preparing its final report, the SDS chairman and counsel reviewed the latest draft and then met informally with the representative of the substantive committee on SDS and usually with the chairman of the substantive committee to propose possible revisions in the committee's draft.

Occasionally, a proposed change would be taken by the members of the substantive committee as a "substantive" change. Sometimes they were right — we had inadvertently made a substantive change. More often, however, the reason for the alleged "substantive" change lay in the failure of the original language to express accurately the draftsman's intent. When this was the case, we helped revise the language to express the intent more clearly.

For example, the report of the Legislative Committee failed to distinguish between actions that were to be taken by the General Assembly by rule or resolution and actions that were to be taken by law. The choice of phrase here was significant because when the General Assembly acts by resolution or by rule, none of the safeguards of the law-making process apply, such as the requirement of three readings and printed bills. The Legislative Committee's initial drafts did not accurately draw this distinction and simply said the "General Assembly shall. . . ." The distinction was extremely important in the legislative reapportionment provisions where an early draft called for the General Assembly to reapportion itself. A later draft added "by law." This addition gave the Governor veto power over any map agreed upon by a majority of the General Assembly — the actual "intent" — and also assured use of the constitutional procedures for passing a reapportionment law.¹¹

After reviewing our proposed changes in an informal manner with the SDS members and chairmen of each committee, it was requested that the SDS members of the substantive committee present the changes to their committees. Often the SDS members

¹¹ ILL. CONST. art. IV, § 3(b). We frequently changed committee references to action to be taken "by the General Assembly" to "by law." In virtually every instance the substantive committees intended to require that the General Assembly act by law rather than by resolution.

requested that SDS counsel attend their meeting to explain proposed drafting changes. By the time a substantive committee was ready to prepare its final report, any change in language proposed by members, or even the substantive committee counsel, was suspect since many provisions had been arrived at only after considerable controversy. Changes proposed by the SDS counsel were more easily accepted because he was viewed as someone who was interested in the form and clarity of the language rather than the substantive content.

The approach of SDS counsel and chairman in the substantive committee meeting was, as before, low-key since according to the Convention rules SDS had no formal role at this point. SDS counsel and chairman were merely making suggestions which the committee was free to accept or reject. Most delegates were able to see that this process saved time on the floor of the Convention and made their committee look better. It was pointed out to the substantive committees that the actions of SDS counsel and chairman were strictly informal at this point and any hint of speaking for SDS was expressly disclaimed.

The SDS chairman and counsel were fortunate to have a large percentage of their suggested changes accepted on this informal level. As outsiders to the substantive committee's deliberations problems could be seen which were not apparent to the committee or its counsel who had been so deeply immersed in the discussions and arguments that led to the provision. It impressed a member of a substantive committee when someone could point out that a given provision of his article was likely to conflict with either the language or substance of another article being considered by another substantive committee.

In some instances SDS arranged informal meetings between committee chairmen and interested delegates to resolve potentially conflicting substantive provisions. These meetings resulted in varying degrees of success. For example, conflicts between the Executive and Legislative Committees were resolved over the veto powers of the governor.¹² However, in several cases jurisdictional conflicts persisted either because of the personalities involved or because some delegates realized that a different result would be

¹² See ILL. CONST. art. IV, § 9.

reached depending upon which committee had responsibility for the subject matter. Thus, both the Bill of Rights Committee and the General Government Committee reported out provisions concerning sovereign immunity,¹³ and both the Executive Committee and the Revenue and Finance Committee reported out provisions relating to the governor's power to reduce or veto appropriations.¹⁴ Also, we were never able to obtain a meeting of the minds between the Local Government and the Revenue Committee over the revenue powers of units of local government.¹⁵

Possibly some of these conflicts could have been resolved if we had isolated them earlier in the substantive committees' deliberations. By the time a committee had heard evidence, debated and prepared proposed constitutional language, it was unwilling to abandon its work product simply because of a conflict with another committee. Nevertheless, the failure to resolve these conflicts produced serious ambiguities in the final draft.¹⁶

III. DRAFTING ARTICLE BY ARTICLE

By early June, SDS had added three more staff members—a consultant and a recent law school graduate to help with research work. George D. Braden, who had advised the legislative committee of the New York Constitutional Convention, was the consultant. Mr. Braden had co-authored a book with Ruben G. Cohn (counsel to the Judiciary Committee) on the 1870 Illinois Constitution.¹⁷ This book, which included historical material, compara-

¹³ See ILL. CONST. art. XIII, § 4.

¹⁴ See ILL. CONST. art. IV, § 9.

¹⁵ See ILL. CONST. art. VII, § 6.

¹⁶ For example, Article VII, § 6(e) states:

A home rule unit shall have only the power that the General Assembly may provide by law. . . to license for revenue or impose taxes upon or measured by income or earnings or upon occupations.

Article IX, § 3(a) states, in part:

A tax on or measured by income shall be at a non-graduated rate.

The extent to which the provisions in the local government article concerning the revenue raising powers of units of local government are limited by the specific limitations placed upon the state's revenue raising powers in the revenue article was never resolved.

¹⁷ G. BRADEN & R. COHN, *THE ILLINOIS CONSTITUTION: AN ANNOTATED AND COMPARATIVE ANALYSIS* (1969).

tive materials and case interpretations of the old constitution, proved to be of great use to the Convention. In addition to his knowledge of state constitutional law, and Illinois law in particular, Mr. Braden added his drafting skills at a time when SDS' work load was increasing rapidly.

By June, the Convention was over half completed and working patterns were set. Though fortunately the chairman, counsel, and consultant came to work quite well together, initial adjustments might have been facilitated if we had requested the consultant to join the staff earlier.

In order to give SDS members perspective on the SDS' role, we invited Professor Frank Grad of the Columbia Law School to speak. Professor Grad had advised the Rhode Island, New York and Pennsylvania conventions. SDS, he said, should not consider itself a group of draftsmen but rather a sounding board for proposed changes in language. The actual drafting should be done by the counsel, the chairman and perhaps one or two others. They might then present the committee with the proposed language for its approval or disapproval. We tried to follow this procedure.

After first reading of an article, the SDS staff prepared, from the journal of the Convention, a collated draft of the article as approved by the Convention. These drafts were promptly distributed to certain outside lawyers, all SDS members, and to the chairman of the appropriate substantive committee. The chairman was asked to verify that the collated draft conformed with his notes concerning the Convention's action on first reading. As a general policy we requested SDS members to review the draft and prepare comments. Fortunately the SDS members did not often make specific comments unless expressly requested on an individual basis to do so. Had each member assumed a more active role, reaching a consensus would have been much more difficult.

The SDS counsel or the consultant took primary responsibility for an article and prepared proposed revisions. The SDS chairman reviewed each article independently and compiled suggested changes. The chairman, counsel, and consultant then met and reviewed the draft. Another draft was prepared and the SDS member on the substantive committee whose article was being reviewed, the chairman of the substantive committee, and any

person who had successfully proposed an amendment to that article on the floor of the Convention on first reading were consulted. (At this point in the proceedings, successful amenders had as much standing as the substantive committee, whose functions were theoretically complete once they made their final report.) After this meeting, still another draft was prepared and distributed to all SDS members.

At the formal SDS meeting, either the counsel or the consultant, whoever had primary responsibility for the article, explained, section by section, sentence by sentence, and often word by word, proposed changes from the draft as approved by the Convention. SDS then either approved or disapproved each change.

When SDS members raised objections to proposed changes, we did not attempt to draft around the objections in the meeting. The section was "passed over." Later, an informal meeting was held with the chairman, counsel, the consultant and the interested member to arrive at an acceptable draft. The revised draft was presented at the next meeting.

The few times drafting was attempted at the full SDS meeting the results were unsatisfactory, in terms of both the time spent and the quality of the product. For example there had been established an informal style rule, after some discussion, not to use the "serial comma." One SDS member demanded that a serial comma be used in one particular section. A forty-five minute debate followed and there is now one serial comma in the 1970 Illinois Constitution.¹⁸

SDS meetings were open for anyone to attend. Based on the few instances in which outsiders did attend, it was fortunate that these occasions were rare. Since the Convention was meeting in both the morning and afternoon and often the substantive committees were meeting at night, SDS met during the lunch hour or at 7:30 a.m. The relatively small amount of time for meetings made it essential that time be used effectively. SDS covered a substantial

¹⁸ The comma appears in Article VI, § 7(b). The member who insisted on the serial comma had been involved in a very heated substantive conflict over a provision in the judicial article which he lost in the debate on the floor of the Convention. His position was given widespread coverage by the news media. The members of SDS, rather than become involved in still another confrontation, voted for the comma.

amount of proposed constitutional language in each meeting since the members had been accustomed to the procedures and developed confidence in the explanations of counsel and the consultant. However, non-SDS delegates attending SDS meetings usually wanted to draft in the SDS meeting, to make a substantive argument, or redraft a provision to achieve substantive results not obtained in the substantive committee proceedings or on the Convention floor. In these cases, SDS usually referred the delegate to SDS counsel or the consultant and passed over the section in question. Where the non-member was seeking to "protect" a provision against "any change, whatsoever," the problem was more serious.

At one SDS meeting, the entire Education Committee descended. The result was interesting. SDS members deferred to almost every suggestion of the substantive committee, whether or not it was well taken. One of the changes SDS had proposed was designed to clarify the functions, duties and powers of a state board of education. The original language had been approved by the Education Committee without a dissenting vote and then had been approved by the Convention. At the SDS meeting, however, several members of the Education Committee objected that the changes we proposed were "substantive." We polled the members of the Education Committee at the SDS meeting and it became clear that there were two factions within that committee with diametrically opposed views of what the language they had reported out had actually meant. The ambiguity was resolved by having the chairman of the Education Committee propose an amendment on the Convention floor during second reading.¹⁹

This was symptomatic of one of the most difficult problems

¹⁹ The Education Committee proposed the creation of a State Board of Education. Its suggested language concerning the duties and powers of the Board stated:

The Board shall establish goals, determine policies, provide for planning and evaluating education programs, recommend financing and have such jurisdiction, powers and duties as provided by law.

The substantive issue not resolved by the proposed language was whether the Board had powers subject to limitation by the General Assembly or whether the Board had powers only if specifically granted them by the General Assembly. The amendment submitted by the chairman of the Education Committee and ultimately adopted by the Convention in Article X, § 2(a) read:

The Board, except as limited by law, may establish goals, determine policies, provide for planning and evaluating education programs and recommend financing. The Board shall have such other duties and powers as provided by law.

SDS faced. Often within a substantive committee or on the Convention floor opposing points of view were compromised through agreement on ambiguous language. SDS felt it was its duty to clarify that language. Whenever SDS believed the substantive intent of the Convention was clear and attempted to resolve an ambiguity, it took pains to point out in its report the potential substantive nature of the proposed clarification. Too often, however, the Convention, even when confronted with vague or imprecise provisions, refused to address the issue of clarification because hammering out a solution caused unpleasantness or simply was not politically feasible.

For example, in the first phrase of Article II, section 6 of the 1870 Constitution, persons were guaranteed the right to be free from unreasonable searches and seizures.²⁰ The second phrase said that no warrant shall issue without probable cause describing the place to be searched and the persons or things to be seized. The 1970 Convention added to the first sentence guarantees against "invasions of privacy or interceptions of communications by eavesdropping devices or other means."²¹ However, the Bill of Rights Committee and the Convention were divided on whether to permit judicially-ordered wiretapping. Language was suggested for the second sentence of section 6 which would have made the sentence read:

No warrant *or other writ* shall issue without probable cause, supported by affidavit particularly describing the place to be searched and the persons or things to be seized *or the communication to be intercepted.*²²

This was rejected by a majority of the members of the Bill of

20 ILL. CONST. art. II, § 6 (1870) states:

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 warrant shall issue without probable cause, supported by affidavit, particularly describing the place to be searched, and the persons or things to be seized.

21 ILL. CONST. art. I, § 6 states:

The people shall have the right to be secure in their persons, houses, papers and other possessions against unreasonable searches, seizures, invasions of privacy or interceptions of communications by eavesdropping devices or other means. No warrant shall issue without probable cause, supported by affidavit particularly describing the place to be searched and the persons or things to be seized.

22 Proposal No. 1, Bill of Rights Committee, Sixth Illinois Constitutional Convention, § 6 (1970) (emphasis added).

Rights Committee. Rather than directly address the issue of whether to permit or prohibit in the constitution judicially ordered wiretapping, the second sentence was left unchanged; and, it is fair to say, there are few constitutional guidelines for resolution of the issue by the courts.

A similar issue was raised when the Convention divided closely on whether the state personal property tax should be abolished by constitution. The proponents of abolition introduced a successful amendment which on first reading stated: "On January 1, 1979, the General Assembly shall abolish all ad valorem personal property taxes. . . ." The intent of the proponents was clear. The ad valorem personal property tax would be unconstitutional and, therefore, uncollectible after 1979 no matter what the legislature did. SDS recommended changing the language to read, "No ad valorem tax on personal property shall be levied after December 31, 1978." This alteration was strongly opposed by the opponents of abolition on the grounds that the former language was "clear on its face." In order not to reopen the debate on the revenue article, and possibly jeopardize other compromises included in it, those favoring abolishing the tax agreed not to change the language, stating that their intent (that the tax would be constitutionally abolished on January 1, 1979 without legislative action) was clear from the original language.²³

The form in which a revised draft was prepared for the Convention on second reading was tailored to convey as much information to the delegates as possible concerning SDS drafting changes. Any language deleted from the draft passed by the Convention was indicated by striking through the deleted words and added language was shown by underlining.²⁴ This enabled anyone looking at the proposed draft to see at a glance what was old language and what was new.

Counsel or the consultant then prepared an SDS committee report consisting of the article as revised, the article indicating deletions and additions, and a brief section explaining our proposed changes. We did not explain every change—the reasons for some were obvious.

²³ ILL. CONST. art. IX, § 5(c).

²⁴ See Appendix B, language changes suggested by SDS to local government article.

All of the reports on second reading were presented by SDS, not by the substantive committee. The chairman of SDS presented each report on the Convention floor, explained briefly the changes made, answered questions and sought approval of the proposed language changes. Since SDS changes had been cleared with the chairman of the substantive committee and the representative of that committee on SDS, there was little trouble obtaining Convention approval on second reading. Once the "form" was approved, the report was open to "substantive" amendments in the Convention.

Toward the end of second reading SDS got into an interesting political problem. Not all of the articles reported out by SDS for second reading were in the order they came in to SDS after first reading. Because certain articles were interrelated, SDS did not follow the "first in — first out" rule. SDS felt, for example, that the executive article should not be reported out for second reading until after the legislative article was approved on first reading. Similarly, the revenue article should not be reported out before SDS had a chance to examine the local government article. Many members of the Convention, however, saw an advantage in having an article reported out at a given time. They discerned fluctuations in the strength of various positions; Convention members wanted articles reported out at a time when they thought support for their position was at its peak. Timing was also thought to be important because the juxtaposition of one article with another article just considered or about to be considered might present an opportunity for a compromise. There probably was no right way to approach the problem of reporting out provisions.²⁵ Following the "first in — first out" rule had merit simply because it was a clear rule; however ease of drafting would create exceptions.

The relationship between the Convention and SDS had been something of a love feast for the first two readings. By the end of second reading, though, work was piling up rapidly and tension heightening. Charts were prepared showing the progress of the

²⁵ SDS came under considerable criticism for reporting out the judiciary article before the revenue article. The problem was greatly magnified because the chairman of SDS was one of the chief proponents of certain changes in the judicial article and many delegates saw an attempt to gain political advantage in the reporting sequence.

various articles through the Convention and SDS. The Convention was on a limited budget and an eight-month timetable. First reading was not completed until July, the eighth month, and there was considerable concern among the press and the Convention president that the Convention would be unable to complete its work. Ultimately the Convention went over one full month. Delegates served without pay and the Convention staff was drastically reduced.

The squeeze at the end of the Convention was due to several factors. Probably most important was the unwillingness of the Convention to address many of the serious problems until the last minute. Fortunately the preparation during the informal stage of the drafting process permitted SDS to maintain a smooth flow of work for the Convention even though second and third readings were compressed into a little more than a month.

Much of the last minute difficulty, from our drafting point of view, centered around the local government article. A final committee report was not filed until July 10. The Local Government Committee was one of the most politicized within the Convention and two factions developed early. The Local Government Committee failed to draft language for six months and when it did, it appeared not to have been fully discussed and thought through. The informal consultation and drafting sessions, which had been so successful in preparing other articles, were never held. Indeed the Local Government Committee chairman, head of one faction, and the vice chairman, head of the other faction, seemed to resist worthwhile consultation about drafting. Because the important political decisions were not being made, and therefore time was so short, counsel to the Local Government Committee, an able lawyer and law professor at the University of Illinois, was unable to provide direction in the preparation of early working drafts. The result was a final report which proposed constitutional language that violated many of the formal drafting guidelines and was generally incompatible with the other thirteen articles of the constitution. The report called for a local government article, complete with unnecessary definitions and a preamble, which looked more like an indenture than an article of a constitution.²⁰

²⁰ See Appendix B, a portion of the local government article as reported by the Local Government Committee, with additions and deletions suggested by SDS.

Since the report was drafted primarily by the committee chairman, many members of his faction were unaware of much of the substantive content of the article. Moreover, because of the complexity of the local government provisions, particularly a detailed grant of home rule powers, analysis of the report informally by the delegates and on the Convention floor was difficult. Many delegates were concerned that there was insufficient time to reflect on the proposed article. Some said they wanted to consult with knowledgeable people before they voted.

The Convention's decisions on the local government article on first reading were made on the basis of partisan political factors rather than the deliberative process which had generally characterized consideration of other articles of the constitution. The result was that on August 1, SDS was faced with a local government article, approved on first reading, which was incompatible with the rest of the constitution and, most important from our standpoint, little understood by a large majority of the delegates, including many members of the Local Government Committee.

SDS counsel spent full time redrafting and rearranging the article. The article's special preamble had been removed on first reading. Counsel eliminated the special "definitions section" and reduced the numerous cross references. Sections were redrafted to make them compatible with other articles of the constitution, to place only one subject matter in a section, and to put all provisions concerning a particular topic in a single section. This involved considerable technical work as well as consultation with numerous delegates. A series of lengthy, and sometimes emotional, meetings were held with the SDS chairman, counsel, the consultant and members of the Local Government Committee.

Fortunately, SDS supported the redrafting and it reported out a revised local government article thirteen days after it had been approved on first reading. Several changes were resisted by the Local Government Committee chairman and vice chairman and some of the original language was again inserted on second reading.

Because of the confusion on first reading, many delegates were surprised, when presented with the revised draft of the local government article, to discover what had passed on first reading. This resulted in accusations that the proposed draft made important

substantive changes. These charges were usually answerable by pointing out that although the person raising the objection might have intended something different, the language of the article as it came out of first reading was in large measure the same as our draft and that if a different result was intended it would necessitate an amendment on the floor on second reading.²⁷ The re-drafted article, with minor changes, was approved on second and third readings.

IV. SUBMITTING THE CONSTITUTION

By the end of second reading the president of the Convention had appointed a committee to recommend a schedule that would allow a smooth transition from the old to the new constitution. This was an area that the SDS chairman and counsel viewed as being within the purview of SDS. In discussions with the president and executive director of the Convention we resisted appointment of the committee (we were prey to the same possessive regard for our committee's work that others were). Eventually a compromise was worked out—the schedule committee would address itself only to the problems of what legislation would be necessary to implement the new constitution and what time should be allowed the legislature to implement it before effectiveness. The schedule committee would make recommendations to SDS which would consider them and then report out to the floor. SDS would retain sole jurisdiction over the schedule provisions that explained what would happen if the Convention's recommendations were approved by the voters.

Considerable pressure, both in terms of time and effort, was brought to bear on SDS because of its responsibility for proposing a method of submitting the constitution to the people. At the beginning of the Convention there were virtually limitless ways in which the document could be submitted to the voters. Considerable discussion about this took place but the only decision made by the Convention was that its work product would not be submitted to the electorate as a single package on a take it or leave it basis. This still left limitless possibilities.

²⁷ Compare Appendix B, § 3 at 13-15 with ILL. CONST. art. 7, § 3.

The submission question was further complicated by the differing views delegates had of their roles. Some delegates viewed their job as the limited one of looking at the present constitution, finding specific areas needing change and proposing those changes. Others were clear from the beginning that they had come to write a new constitution. Even a new constitution, however, could theoretically be presented in any number of possible combinations and permutations—article by article, several articles together, or as a whole. Interest groups could obviously gain considerable political advantage depending on the groupings of the separately submitted questions.

By the time the submission question came up again in July, virtually all of the theoretical possibilities had dissolved. The Convention had used consistent language throughout the new constitution, but this language was not consistent with that used in the old constitution. Provisions that had been found in one article of the old constitution had been moved freely to other articles of the new constitution. In short, if the proposed constitution were submitted article by article or in several parts, there was no way to guarantee an internally consistent constitution without several months of additional work.

The controversy then centered on who was to make the recommendations for submission. With a committee called "Style Drafting and Submission," the answer to that question was arguably a foregone conclusion. However, everyone recognized the extreme importance of the submission issue and many attempts were made to wrest that power from SDS. First a distinction was made between positive and negative recommendations of committees. For instance, the old constitution had a provision prohibiting lotteries which the General Government Committee recommended deleting. It was argued that SDS did not have the power to recommend separate submission of the question: "Should the provision prohibiting lotteries be deleted?" The argument ran that somehow the decision of a committee to delete a section was a "substantive decision" and separate submission of such a provision would be a "substantive change" by SDS, whereas recommendation of separate submission of a provision that had been passed on by the Convention was somehow not a substantive

decision. Eventually SDS agreed not to recommend separate submission of any of these negatives since it was a minor point which did not warrant prolonged argument. Other attempts were made to take the responsibility of recommending a method of submission away from SDS entirely. These did not succeed.

SDS issued a separate report setting forth guidelines for separate submission. These recommended that the method be as simple and straightforward as possible. Separately submitted questions would amend the body of the new constitution — not the old. While this might mean that a separate question could be approved and still not take effect because the new constitution failed, it was felt that on balance the simpler the method for submitting the new constitution the better.

The method of submission eventually used was to submit a document as a proposed new constitution and in addition to separate out four of the most controversial issues to be voted upon individually. This turned out to be a wise decision since the final votes on the separate questions indicated that had they been included in the main package, the main package most likely would have been defeated.²⁸ Furthermore, separate submission of these questions served as a good technique to educate voters and to heighten interest in the constitutional referendum.

²⁸ The Illinois Constitution was adopted in Convention, September 3, 1970; ratified by the people, December 15, 1970; and became effective July 1, 1971. The election results were as follows:

Total number of electors voting at the election:	2,017,717
Approve of the proposed 1970 Constitution	
Yes	1,122,425
No	838,168
1A. Favor election of members to the House of Representatives from multi-member districts	1,031,241
1B. Favor election of members to the House of Representatives from single-member districts	749,909
2A. Favor the election of judges nominated in primary elections or by petition	1,013,559
2B. Favor the appointment of judges by the governor from nominees submitted by judicial nominating commissions	867,230
Favor abolishing the death penalty	
Yes	676,302
No	1,218,791
Favor lowering the voting age to 18	
Yes	869,816
No	1,052,924

The backlog of work and the limits on Convention time became the most important factors by the end of August. Appropriations were nearly depleted. The lease on the Convention hall had run out. Convention sessions lasted up to 18 hours a day and the Convention was meeting seven days a week. SDS was charged with maintaining a constant flow of work for the Convention. Still, we had to explain in a rational manner the basis for drafting changes rather than letting the Convention slip into approving a sloppy final product. In the final days of the Convention, sometimes at 2 and 3 a.m., we were still making minor drafting corrections in the interests of clarity and consistency.

Three days before the formal closing of the Convention, on September 3, it was discovered that the administrative staff of the Convention had decided to use a non-union printer for printing the official document. This so incensed some delegates that, with only two days remaining, they insisted the Convention switch to a union printer. Finding a printer who would do the job in less than two days, on no notice, meant that the final document was still being read by the counsel and consultant of SDS as it came off the press at 4:30 a.m. on the day of the closing ceremony of the Convention. SDS counsel and consultant flew from Chicago to Springfield with the final document, arriving at about 9 a.m., with the closing ceremony scheduled for noon. Final copies of the proposed constitution were rushed to the delegates and assembled dignitaries at the crowded ceremony which was being covered live on state-wide television. The chairman of the Style, Drafting and Submission Committee asked the delegates for formal approval to make the final drafting change of the 1970 Convention. Approval was granted and a pen and ink change was made on the official printed document to spell correctly the word "Constitution" on page twenty-three.

APPENDIX A

Report No. 1 of the Committee on
Style, Drafting and Submission

I. Drafting Guidelines for Constitutional Provisions

The recommendations of this Constitutional Convention should be concise, clear and readable. Obsolete language should be modernized unless there is some substantive reason in the opinion of the Committee for not changing the language. A few general principles may be helpful to attain these ends but no principle should be applied so rigidly that it obscures effectiveness or meaning.

1. Each article and section should have a title or heading. The meaning of provisions should not depend upon headings or titles because neither has legal force.

2. Individual articles should not have preambles.

3. All provisions governing a single subject or issue should be in one section. The arrangement of a section is usually logical when its meaning is clear from the reading of each sentence in sequence. Meaning is obscure if it is dependent on looking elsewhere in the Constitution or even in later sections of the same article.

4. Cross references and incorporation of provisions from other articles and sections should be avoided.

5. Incidental allusions to departments, agencies, political parties and officers give them constitutional status and should therefore be avoided.

6. Enumerations should be used with caution because they may be interpreted as excluding all items not enumerated.

7. Short sentences are preferable to long or complicated ones. Everyday words should be used when possible. Structure sentences so that meaning is not dependent upon internal punctuation.

8. In general, use the active voice which is more forceful than the passive.

9. The present tense is often the clearest and most certain in vesting powers or obligations.

10. Remember that "shall" and "will" are mandatory and that "may" is permissive.

11. Superfluous or repetitious words add to difficulty in interpretation rather than to clarity.

12. Avoid use of "and/or," "the said," "the same," "aforesaid," and "hereinafter" for the sake of readability and for assurance that later re-arrangement or amendment will not change the meaning.

The Committee on Style, Drafting and Submission will apply standard capitalization, enumeration, spelling and punctuation.

II. Committee Reports

The Committee on Style, Drafting and Submission recommends the following outline for committee reports:

1. Committee Proposal

2. Explanation

A. Statement and rationale of committee's goal and of how the proposed language accomplishes this goal.

B. Alternatives, including 1870 Constitution, considered by the committee and reasons for rejection.

C. Member proposals considered by number.

3. Minority Report

The objective of a committee report is to give the Committee of the Whole the benefit, in capsule form, of the substantive committee's hearings and deliberations. The report will also aid in interpreting the committee's proposed constitutional language.

The report should set forth clearly and concisely the goals which the committee sought to achieve through its proposed constitutional provision. Goals should be general. Setting forth the committee's goals will allow delegates to determine whether the proposed constitutional language accomplishes the goals.

The report should next discuss the alternatives considered by the committee. Such discussion should evaluate the merits of the alternatives and state the reasons for rejection. This discussion will allow delegates to consider the merit of the alternatives and will also avoid unnecessary discussion in the Committee of the Whole by showing delegates that a given alternative was considered.

Where a committee proposes retention of an existing section or article of the 1870 Constitution, such a proposal should be treated in the same manner as suggested new constitutional language.

Where a committee proposes elimination of an existing section or article of the 1870 Constitution, it should prepare a report in the same manner as reports accompanying committee proposals.

An appropriate reference should be made to all member proposals considered in arriving at the committee's report. This will inform members that their proposed changes were evaluated in preparing the report.

Where there is disagreement among members of a committee, there may be one or more minority reports. At least three members are necessary to offer a minority report. Minority reports should follow the form of the majority report in setting forth proposed constitutional language, the goals of the minority report and an evaluation of alternatives. The evaluation of alternatives in the minority report should deal specifically and primarily with the majority report. This means that although the minority should have its report substantially finished by the time the majority report is complete, the minority should be given sufficient time to revise its report so as to deal specifically with the majority report.

It is important to keep in mind that the report is a *capsule* and is designed to allow delegates to familiarize themselves with substantive matters before discussion by the Committee of the Whole. If reports are too lengthy, delegates will not find time to read them before discussion by the Committee of the Whole and their value will be greatly diminished. Thoroughness, then, must be balanced against brevity.

A committee may issue as many reports as are necessary to present the various substantive areas considered by the committee. Only one report, and accompanying minority reports, if any, should be issued on a separate substantive issue.

Committee proposals should be numbered in sequence commencing with one.

APPENDIX B

A Portion of the Changes Suggested by SDS to the
Local Government Article1 *Section 6-3. County Boards*2 ~~6.1~~ (a) A county board shall be elected in each county.3 ~~6.2~~ (b) The number of members of the county board shall be fixed
4 by ordinance in each county within limitations provided by general law.
5 *The number of members of the county board in a county which elects*
6 *three members at large may be changed only as approved by county-*
7 *wide referendum.*8 ~~6.3~~ (c) The General Assembly by law shall provide ~~plans~~ *methods*
9 *available to all counties* for the election of county board members,
10 ~~which may include election at large or by districts. Any plan of election~~
11 ~~shall be available to all counties, but plans of election shall not be~~
12 ~~changed unless~~ *No county, other than Cook County, may change its*
13 *method of electing board members except as approved by county-wide*
14 *referendum.*15 ~~6.4~~ (a) (d) Members of the ~~county board of Cook County Board~~
16 ~~shall continue to be elected from two districts, one district being the~~
17 ~~City of Chicago and the other that part of Cook County outside the~~
18 ~~city, until Chicago, unless (1) a new different plan method of election~~
19 ~~is submitted to referendum and approved by a majority of votes cast~~
20 ~~in each district in a county-wide referendum, or (2) the Cook County~~
21 ~~Board may by ordinance divide the county into single member dis-~~
22 ~~tricts from which members of the County Board resident in each dis-~~
23 ~~trict shall be are elected. The President of the Cook County Board shall~~
24 ~~be the chief executive officer of the County. When~~ *If authorized by*
25 *county ordinance, he may also be elected a person seeking election as*
26 *President of the Cook County Board may also seek election as a member*
27 *of the Board.*

THE NEGATIVE INCOME TAX: AN ALTERNATIVE SOLUTION

WILLIAM D. POPKIN*

Introduction

Professors Asimow and Klein have recently described and analyzed the accounting procedures used in several negative income tax (NIT) experiments funded by the Office of Economic Opportunity.¹ They propose that these techniques be adopted in a nationwide welfare program.² This comment will raise a number of questions about the assumptions underlying their proposed solution.

At the heart of the suggested accounting procedures is a decision to use a family's past income to determine current welfare payments.³ The period chosen is the income for the "prior month."⁴ However, two techniques are used to minimize the effect of fluctuating income on the amount of benefits. First, the income of the "prior month" is derived by averaging the income of the prior three months.⁵ High income in January can, therefore, prevent welfare payments in April because the income in March is based on the average of income for January, February, and March. Similarly, high income in March might not prevent April welfare payments since the income for March will be averaged with January and February earnings. Thus, this technique reduces the difference between welfare recipients with steady income and those with either rising or falling income.

Second, a carry forward of income is provided for twelve months whenever monthly income exceeds the amount of earnings at which welfare ceases.⁶ If monthly income of \$500 is the point at

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1 Asimow & Klein, *The Negative Income Tax: Accounting Problems and a Proposed Solution*, 8 HARV. J. LEGIS. 1 (1970) [hereinafter cited as *Proposed Solution*].

2 *Id.* 3-4, 31.

3 *Id.* 4-6.

4 *Id.* 21 (Rule 2).

5 *Id.* 21 (Rule 4).

6 *See id.* 21 (Rule 7), 24 (Rule 9), 26 (Rule 10).

which welfare ceases, for example, monthly income of \$600 in January, February, and March would reduce possible welfare payments for eleven months after March because the \$300 excess is carried forward. A carry back provision is not proposed. Thus, the carryover reduces the difference between welfare claimants with steady income and those with declining income, but not between those with steady income and those with rising income.

Welfare recipients are required to report income monthly,⁷ or every four weeks if more convenient.⁸ Businessmen, on the other hand, are allowed to report net income annually rather than monthly. In this case the income of the prior year is presumed to have been available in twelve equal installments over the twelve months beginning with the month in which the calculation is made.⁹

There are a number of difficulties with these accounting procedures which relate primarily to the treatment of declining income, the retrospective determination of income, and monthly reporting. After discussing these procedures I will comment briefly on a few of the problems posed by an alternative proposal, suggested in an earlier article,¹⁰ which utilizes a system of withholding from wages.

I. TREATMENT OF DECLINING INCOME

The decision to carry forward income rests on the assumption that it would be unfair to differentiate between welfare recipients with declining income and those with steady income.¹¹ This assumption seems questionable. A great many poor people are likely to have declining income.¹² The decline could have serious con-

⁷ *Id.* 21 (Rule 3).

⁸ *Id.* 9, n.11, 21, (Rule 2, comment).

⁹ *Id.* 21 (Rule 5), 21-22 (comment), 22-23, (Rule 6), 23, (comment).

¹⁰ Popkin, *Administration of a Negative Income Tax*, 78 *YALE L.J.* 388 (1969).

¹¹ *Cf. Proposed Solution* 10-11.

¹² I do not know how many. The image of the unemployed urban worker whose income declines because he is thrown out of a job is probably a distortion of the national picture. The majority of the poor are probably rural southerners with stable low income, rather than urban workers beset by an uncertain labor market. See generally S. MILLER & F. REISMAN, *SOCIAL CLASS & SOCIAL POLICY* 38-42 (1968). Nonetheless, the rural southerner will appear to have fluctuating income under the Proposed Solution if he is a farmer, because cash accounting is used and high receipts in one month are carried forward to later months.

sequences in that it might result, for example, in default on installment purchase contracts. Certainly it is unreasonable to expect budgeting of the earlier income for future needs at the low income levels with which we are concerned.¹³ Moreover, unemployment insurance is not an adequate solution for declining income.¹⁴ Unemployment insurance does not cover many classes of employees, including farm labor and the self-employed. Furthermore, benefits depend upon prior work history, which might be spotty for low income employees.¹⁵

The shifting three-month average device does not increase welfare benefits when there is declining income. Its moderating influence actually operates to the detriment of declining incomes: high income in the early months of the three-month period will increase the average monthly income, thereby decreasing benefits.

II. RETROSPECTIVE DETERMINATION OF INCOME

The proposed solution of Professors Asimow and Klein includes the retrospective determination of income. The purpose here is to avoid a reconciliation of welfare payments with actual income at the end of an accounting period.¹⁶ One justification for avoiding reconciliation is that a needy family is unlikely to have funds available at the end of the period when a reconciliation would be required.¹⁷ Further, even if the welfare recipient does have the surplus funds available and even if he must make a refund only

¹³ *Contra, Proposed Solution 25* (discussing unreality of carryover budgeting assumption).

¹⁴ *Contra, id.* 13.

¹⁵ Brief descriptions of unemployment insurance and the amendments made by the Employment Security Amendments of 1970, Pub. L. No. 91-373 (codified in scattered sections of 5, 15, 26, 42 U.S.C.) appear in THE PRESIDENT'S COMMISSION ON INCOME MAINTENANCE, BACKGROUND PAPERS 178 (1970) and in *Notes and Brief Reports*, EMPLOYMENT SECURITY AMENDMENTS OF 1970, 33 SOCIAL SECURITY BULL. 29 (1970). In 1966, 16.3 million wage earners and 8.7 million self-employed were not covered. *Id.* 178. Of those receiving unemployment compensation in 1961, 16 percent remained poor after receipt of benefits. THE PRESIDENT'S COMMISSION ON INCOME MAINTENANCE, BACKGROUND PAPERS 189 (1970). The 1970 amendments are expected to cover 4.75 million more workers by 1972, 33 SOCIAL SECURITY BULL. 29 (1970), although the effect on their poverty status will depend on their prior work experience and the levels of state benefits.

¹⁶ *See Proposed Solution 5.*

¹⁷ *Cf. id.*

where his income projection was not made in good faith,¹⁸ he would have to deal with a hostile administrator in proving his state of mind.

I agree that a poor family is not likely to have money available at the end of an accounting period. The very inability of the poor to save works, as I have suggested, to defeat the carry forward system. It is not quite fair, however, to say that retrospective determination of income avoids the problem of reconciliation. It does so only by disregarding it. The carry forward is, in effect, a limited and automatic reconciliation of earlier high income with subsequent low income over a twelve month period. The issue really becomes how much reconciliation is desirable and whether an administrator can be trusted to determine whether the recipients have acted in good faith when they predict their income to become eligible for welfare.

If income is low during an accounting period, the needs generated during that period should be met regardless of whether higher income was earned during earlier months. A short accounting period of one month, modified by a shifting three-month average, is not responsive enough to declining income. On the other hand, if income is higher than expected, the family should account for overpayments if it is able to do so. I suspect that a major reason for the retrospective determination of income is the opportunity it affords to pretend that overpayments do not exist. Overpayments after all are unpopular with the taxpayers. One wonders, however, whether retrospectivity will conceal this problem when the underlying facts are brought out.

The question remains, however, whether administrators will deal with overpayments in a responsible manner. The issue of a recipient's bad faith is currently relevant, for example, in federal financial assistance programs¹⁹ and in Old Age, Survivors, and Dis-

¹⁸ See *id.*

¹⁹ 45 C.F.R. § 233.20(a)(3)(ii)(d) (1971):

Where there is evidence which clearly establishes that a recipient willfully withheld information about his income or resources, such income or resources may be considered in determination of need to reduce the amount of the assistance payment in current or future periods;

This provision regulates OAA, AFDC, AB, APTD, and AABD.

ability Insurance²⁰ (OASDI). The former programs are administered by the states and OASDI by the Social Security Administration of the federal government. I suspect that the federal government is reasonable in its administration of OASDI, although I lack data to prove it. The prospective withholding system that I have suggested, however, would minimize the opportunity for bad faith. Under such a system a welfare claimant would predict whether his income would be low enough during the following year to entitle him to welfare. If his prediction renders him eligible, he receives welfare and his wages are subject to withholding at negative income tax rates. If overpayments occur, they are likely to arise from defects in the withholding system rather than from bad faith. While an overpayment might still result from bad faith if the employee does not tell his employer to withhold at NIT rates or if the employee misrepresents his wages, the proposed solution of Professors Asimow and Klein likewise presents an opportunity for bad faith: the monthly reporting system, discussed below, requires the administrator to determine whether the claimant is accurately reporting his income each month.

When the income is in the form of business profits rather than wages, problems result from the fact that it cannot be withheld, but must be predicted. The proposed solution lessens the risk of inaccurate prediction, however, by using the preceding year's income to determine the income for the year for which welfare is claimed.²¹ This considerably lessens the claimant's ability to avoid the problem of reconciliation. Furthermore, administrators under the proposed solution might still question the candor of the business applicant in reporting the preceding year's income.

III. MONTHLY REPORTING

A third element in the proposed solution of Professors Asimow and Klein is the monthly reporting requirement.²² Is it desirable to compel such frequent contact with the bureaucracy? Will an

²⁰ See 42 U.S.C. § 404(b) (1968). See, e.g., 20 C.F.R. §§ 404.506-.507, .510, .510a, .511 (1971).

²¹ See note 9 *supra*.

²² See note 7 *supra*.

employee who is paid on a daily basis lose a day's pay or perhaps his job as a result of taking time to contact the agency? The report of the recent NIT experiment in New Jersey suggests that the primary goal was to determine the effect of graduated income maintenance payments on work effort.²³ It is unclear whether there was a real evaluation of potential problems relating to administration — problems created by absence from work, by reluctance to contact the administration, and by unsympathetic exercises of discretion.²⁴ I suspect that the administrative problems which a nation-wide NIT would encounter were not dealt with in the experiment and have not received adequate testing.

A reporting system as short as a month was probably adopted to make the system responsive to changes in income, since any period longer than a month would mean unacceptable delay before the adjustment of payments at the period's end. A withholding system based on a prospective estimate of annual income would, however, be responsive without requiring monthly contact between administrators and recipients. Under such a system the full amount of welfare would be paid every month. If an employee did not have income in a particular month, there would be no withholding and hence no reduction in the level of benefits.

IV. WITHHOLDING SYSTEM

I am not suggesting that the withholding system is without difficulty. Several problems deserve consideration. First, employers might not be able to handle two different sets of withholding tables. This is especially serious in view of the kinds of employers, including homeowners with domestic help, likely to employ the poor. Second, employers might not withhold at all or might refuse to hire those who create such bookkeeping problems. There has been expansion, however, in the definition of covered employers in the closely related area of unemployment insurance to include some employers previously omitted for administrative

²³ OFFICE OF ECONOMIC OPPORTUNITY, PRELIMINARY RESULTS OF THE NEW JERSEY GRADUATED WORK INCENTIVE EXPERIMENT, 1, 26 (1970).

²⁴ See *id.* 3, 23, 26.

reasons.²⁵ Third, a large amount withheld from wages might have more disincentive effects than an equivalent reduction in welfare accompanied by higher take home pay.

Nonetheless, a withholding system deserves to be tried since it minimizes the opportunity for bad faith, allows a quick response to declining income, permits reconciliation, and limits contact with the bureaucracy. The proposed solution of Professors Asimow and Klein on the other hand, responds inadequately (either immediately or through reconciliation to the problem of declining income), presents the same potential as the withholding system for administrators to question the good faith of recipients, and requires too frequent contact with the administration.

²⁵ Employment Security Amendments of 1970, Pub. L. No. 91-373 (Aug. 10, 1970; effective after Dec. 31, 1971) §101 (a), *amending* INT. REV. CODE of 1954, § 3306(a). Generally speaking, an employer was covered only if he had four employees on a regular basis during the year. Under the new law, he is covered if he has one employee on a regular basis or if he pays \$1500 wages during a calendar quarter.

A REJOINDER TO PROFESSOR POPKIN

WILLIAM A. KLEIN*

The thrust of Professor Popkin's paper seems to be that for purposes of a negative income tax a prospective accounting system is better than a retrospective system. The arguments pro and con on that issue are, in my view, adequately considered in the article to which Professor Popkin has responded and need not be repeated here.¹ Without denying the appeal of the argument for a prospective approach, Professor Asimow and I concluded in that article that a retrospective approach was more consistent with some of the important objectives of negative income tax proposals and therefore, on balance, was to be preferred.² Professor Popkin's argument bearing on this issue requires only a few additional comments.

First, he asserts that "it is unreasonable to expect budgeting of . . . earlier income for future needs at the low income levels with which we are concerned."³ I simply do not agree. There are many poor people whose income fluctuates from month to month in fairly predictable, recurring patterns because of seasonal employment. It scarcely seems unreasonable to expect budgeting by such people. Indeed, a contrary expectation seems to me to be paternalistic, elitist, and, indeed self-proving. To some extent the same can be said in the case of people with declining incomes, at least where the decline could have been anticipated. We did admit in our article that the case of a person with a sudden and unexpected decline in income was a cause for concern under our

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¹ Asimow & Klein, *The Negative Income Tax: Accounting Problems and a Proposed Solution*, 8 HARV. J. LEGIS. 1, 4-6 (1970) (hereafter cited as *Proposed Solution*).

² The prospective approach is a characteristic of traditional welfare programs. The latest version of the Family Assistance Plan incorporates a rather curious and confusing amalgam of the two approaches, but the overall effect seems to be essentially retrospective. H.R. 1, 92d Cong., 1st Sess., § 2152(d) (1971). See H.R. REP. NO. 92-231, 92d Cong., 1st Sess., 179-81 (1971).

³ Popkin, *The Negative Income Tax: An Alternative Solution*, 9 HARV. J. LEGIS. 55, 57 (1971) (hereinafter cited by page number only).

proposal,⁴ but unlike Professor Popkin we did not think it proper to focus primarily on that case.⁵

Second, I agree with Professor Popkin that withholding at the negative income tax rate would tend to reduce problems of overpayment that can be anticipated under a prospective system. It should be noted, however, that income for purposes of any negative income tax will be a far broader concept than income for purposes of the positive tax and, *a fortiori*, far broader than "wages" for purposes of the present withholding provision.⁶ Withholding will therefore fall far short of the goal of eliminating overpayments. Professor Popkin attempts to diminish the problem of overpayment by suggesting that the administering agency can generously ignore overpayments not made in bad faith. Such generosity may eliminate hardship, to be sure, but only at the expense of equity: the person who files estimates of income that prove too low will receive higher payments than the one who makes no such error. Moreover, assuming limited budgets, generosity toward one class of people will inevitably mean lower benefits for others.⁷

One statement by Professor Popkin reflects a misunderstanding of how our proposal works. He says that "two techniques are used [in our proposed solution] to minimize the effect of fluctuating income on the amount of benefits."⁸ He then goes on to state that the two techniques are the three-month moving average and the carryover concept. In fact, we make quite clear that the carryover concept alone would eliminate all differences due to fluctuating income, with either a one month or a three-month moving-average calculation period.⁹ The purpose of adopting the

⁴ *Proposed Solution 13*.

⁵ Professor Popkin erroneously accuses us of having done so. Thus, he says, "The decision [in our proposed solution] to carry forward income rests on the assumption that it would be unfair to differentiate between welfare recipients with declining income and those with steady income." (P. 56.) In fact, we made it abundantly clear that we considered the most serious problem to be that of fluctuating income and that this was the principal problem that the carryover concept was designed to cope with. *Proposed Solution 7*, 12-16.

⁶ INT. REV. CODE OF 1954, §§ 3402(a), 3401.

⁷ See Klein, *Some Basic Problems of Negative Income Taxation*, 1966 Wis. L. REV. 776, 782.

⁸ P. 55.

⁹ *Proposed Solution 12*.

three-month moving average is to produce slower changes in benefits, primarily for the sake of increasing financial incentives to take and to keep a job.

Professor Popkin is critical of our requirement of monthly reporting. This issue of frequency of reporting can be considered independently of the rest of the system and arises as much under Professor Popkin's proposal as under ours. A quarterly reporting system would be compatible with our basic structure, but we considered that monthly reporting would make the system more responsive (which should appeal to Professor Popkin). Where Professor Popkin goes wrong, in my view, is in his assumption about the onerousness of monthly reporting. He suggests that every month a worker will be exposed to the serious danger of losing a day's pay, or even his job, because of the reporting requirement. To me this suggestion seems absurd. It has been my assumption that reporting would be by mail. A postcard would do, and only *changes* in circumstances need be reported. True, problems requiring face-to-face attention during working hours might arise. But I fail to understand why such problems should arise more frequently with monthly reporting than with less frequent reporting. Even less can I understand how a prospective system with annual reporting would, as Professor Popkin claims, "be responsive without requiring monthly contact with recipients."¹⁰ If, for example, a woman estimates in December that she will receive substantial alimony and support payments from her ex-husband for the entire forthcoming year, and if it turns out that her ex-husband dies penniless on January 1st so that in fact she receives nothing, then under Professor Popkin's proposal it will be a full year before she will receive the benefit payments that she will both need and be entitled to. That is hardly a responsive system. And, of course, the same problem can arise from errors as to estimates of income from wages and other sources.

10 P. 60.

STATUTE

A MODEL ORDINANCE TO CONTROL NOISE THROUGH BUILDING CODE PERFORMANCE STANDARDS

Introduction

Urban man's activities — work, learning, rest, and recreation — are increasingly concentrated in the buildings he inhabits; and so, too, is the noise which these activities produce. In a world of increased communication, mobility, living densities, and use of machines, the need for private and quiet has increased. Though less tangible than problems of fire and faulty plumbing, the task of providing an acoustically acceptable environment has become a problem for the architect, builder, user, and draftsman of building codes deserving close attention.

The aim of this model building code article is to designate minimum construction requirements for control of noise generated and transmitted within buildings. As with traditional building code provisions, this article seeks to “insure public safety, health and welfare”¹ through enactment of standards governing design, construction, and inspection of building environments. The control of acoustical environment, however, is a new area of American building code concern.² The following comments, by way of introduction to this new field, will discuss the problems of intrabuilding noise, the needs and tolerances of different activities, and several of the potential techniques for setting and testing acoustical standards in building codes.

¹ BUILDING OFFICIALS CONFERENCE OF AMERICA, THE BOCA BASIC BUILDING CODE 1970 § 100.3 (5th ed. 1969) [hereinafter cited as BOCA BASIC BUILDING CODE].

² To date, only one American jurisdiction has enacted noise control provisions as part of its building code. NEW YORK CITY, N.Y., BUILDING CODE, § C26-1208.1 *et seq.* (1969). In addition, the Federal Housing Administration has adopted certain noise standards as part of the guidelines governing the FHA loan program. FEDERAL HOUSING ADMINISTRATION (FHA), BULL. No. 260 MINIMUM PROPERTY STANDARDS FOR MULTIFAMILY HOUSING (1963). For a discussion of the European codes containing noise provisions, see text *infra* at notes 14 to 42.

I. NOISE AND BUILDINGS

The acoustical environment of all buildings is comprised of three basic classes of sound: airborne sound from exterior sources, airborne sound from interior sources, and structure-borne sound.

Airborne sound from exterior sources, such as traffic, aircraft, industrial, and commercial operations, enters the building through exterior walls and windows. The outdoor levels from these sources may exceed one hundred decibels in many urban areas.³ The noise that reaches the interior of the building, whether it be an apartment or office, is largely controlled by the sound attenuation capability of the "weakest link" — windows.⁴ Unless expensive, permanently sealed double windows are used,⁵ the best sound insulation from exterior noise which can be expected is 30 decibels (dB).⁶ As it is extremely difficult to set meaningful insulation standards for exterior walls within these parameters,⁷ a more practical approach to this problem concentrates on control of the noise source itself and siting of various uses to avoid conflict between sources and sensitive recipients.⁸ Thus, this building code provi-

3 L. BERANEK, NOISE AND VIBRATION CONTROL 576 (1971) [hereinafter cited as NOISE AND VIBRATION CONTROL]; M. BRANCH, OUTDOOR NOISE AND THE METROPOLITAN ENVIRONMENT: CASE STUDY OF LOS ANGELES WITH SPECIAL EMPHASIS TO AIRCRAFT 2 (1970); see L. Beranek, *Noise*, SCIENTIFIC AMERICAN vol. 215, no. 6, at 66, 73 (1966); Comment, *Port Noise Complaint*, 6 HARV. CIV. RIGHTS-CIV. LIB. L. REV. 61, 69-74 (1970).

4 See P. PARKIN & H. HUMPHREYS, ACOUSTICS, NOISE AND BUILDINGS 216-18 (1958) [hereinafter cited as PARKIN & HUMPHREYS]. Assuming that the exterior wall has an insulation at least 15 dB greater than the window, a rough guide to the overall insulation is as follows: 10 dB more than the window if the window area is not more than one-tenth of the total area of the wall plus window; 5 dB more than the window if the window area is not more than one-third the total area. *Id.* 218.

5 Double windows of 26 or 32 ounce plate glass, spaced with an eight inch gap and tightly sealed with absorbent material in the reveals provide about 40 dB of insulation. With four inch gaps, this drops to approximately 35 dB. By contrast, a single 26 or 32 ounce sealed pane provides only 25 dB attenuation. *Id.* 217. Sealing windows as a sound insulation strategy of course also requires provision for alternate ventilation and air conditioning systems, which may result in considerable expense.

6 See BOLT BERANEK & NEWMAN, INC., A STUDY—INSULATING HOUSES FROM AIRCRAFT NOISE (prepared for the Department of Housing and Urban Development) 33 (1966); PARKIN & HUMPHREYS at 216-18.

7 Walls with open windows provide 10 to 20 decibels insulation; closing windows increases this to about 20 to 30 dB. BOLT BERANEK & NEWMAN, INC., *supra* note 6, at 33.

8 See Statute, *A Model Ordinance to Control Urban Noise Through Zoning Performance Standards*, 8 HARV. J. LEGIS. 608 (1971). Existing measures include noise

sion does not attempt to reach the problem of exterior noise sources.

Airborne and structure-borne noise from sources inside the building includes sound from activities within the building — for example, conversation, television, radio or hi-fi, walking, household appliances, office equipment — and mechanical equipment used for building services, such as ventilation, heating, and air-conditioning units, plumbing, and elevators. The intensity of noise from these sources may vary considerably. An average conversation may produce sound of about 50-60 dB,⁹ a loud phonograph upwards of 80 dB,¹⁰ and a kitchen full of electrical appliances can top 85 dB.¹¹ Mechanical noise from gears, fans, transformers, reciprocating engines, and water- and air-flow through pipes and ducts is usually of low frequency, but may generate significant and irritating pure tones in higher frequencies.¹²

The process by which sound is transmitted from one room to another is complicated. Sound travels not only along the primary path — through the partition between two rooms — but also by a number of other paths,¹³ some of which may be just as significant as the primary path or even more so. Thus, one of the most difficult problems in specifying workable building code standards is to account for all the complicated, and often unpredictable paths through which noise might travel.

pollution standards for automobiles, CAL. VEHICLE CODE, §§ 23130, 27160 (West 1971); aircraft, FEDERAL AVIATION ADMINISTRATION, NOISE TYPE CERTIFICATION STANDARDS AND PROCEDURES, 14 C.F.R. §§ 36.1 *et seq.* (1971); and residential development siting, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD), POLICY CIRCULAR 1390.2, NOISE ABATEMENT AND CONTROL: DEPARTMENT POLICY IMPLEMENTATION, RESPONSIBILITIES AND STANDARDS (1971).

9 P. CLOSE, SOUND CONTROL AND THERMAL INSULATION OF BUILDINGS 25 (1966) [hereinafter cited as CLOSE].

10 *Id.* 25.

11 See NOISE AND VIBRATION CONTROL 576.

12 See A. LAWRENCE, ARCHITECTURAL ACOUSTICS 43-46 (1970) [hereinafter cited as LAWRENCE].

13 See PARKIN & HUMPHREYS 178, 182; R. BERENDT, G. WINZER & C. BORROUGHS, A GUIDE TO AIRBORNE, IMPACT, AND STRUCTURE-BORNE NOISE-CONTROL IN MULTIFAMILY DWELLINGS (prepared for the Federal Housing Administration) 4-1, 7-13, 7-14 (1963) [hereinafter cited as BERENDT]. Such indirect paths include cracks under doors, connecting ventilation ducts, improperly caulked "back-to-back" electrical outlets and cabinets, as well as flanking transmission through floors, ceilings, and other surfaces.

A. Rating Systems for Airborne Sound Transmission

Most existing building codes relating to noise specify sound insulation standards for the elements of buildings — partitions and floor-ceiling constructions. The standards require a certain amount of sound transmission loss across a particular construction (wall or floor).¹⁴ To determine this, sound is created in a room on one side of the construction and its space-averaged level (in decibels), for each of a number of frequency bands, is measured in the room where the source is located. Similar measurements are then made in the “receiving” room on the other side of the construction. The difference between these levels is the noise reduction¹⁵ (NR) — a direct measure of the isolation between the two rooms. This isolation, however, depends not only upon the insulation properties of the party wall, but also upon the area of the wall and the amount of sound absorbing material in the receiving room. Thus, corrections must be made for the latter two items to find the transmission loss of the *partition*, which is the focus of the codes adopted to date. These tests may be conducted on building materials in specially designed laboratories which eliminate flanking transmission and extraneous sound and vibration, allowing accurate determination of sound transmission loss for each element of the building *separately*.¹⁶ The values derived from these tests are published to show the transmission loss characteristics of commonly used materials and constructions.¹⁷ Field measurements of

14 See, e.g., BRITISH STANDARDS INSTITUTION, BRITISH STANDARD CODE OF PRACTICE CP3, CH. III: *Sound Insulation and Noise Reduction* (1960); NEW YORK CITY, N.Y., BUILDING CODE § C26-1280.1 *et seq.* (1969); INTERNATIONAL STANDARDS ORGANIZATION [ISO] RECOMMENDATION R-140, FIELD AND LABORATORY MEASUREMENTS OF AIRBORNE AND IMPACT SOUND TRANSMISSION (1960); AMERICAN SOCIETY FOR TESTING AND MATERIALS [ASTM], RECOMMENDED PRACTICE E 90-70, FOR LABORATORY MEASUREMENT OF AIRBORNE SOUND TRANSMISSION LOSS OF BUILDING PARTITIONS, 1970 ANNUAL BOOK ON ASTM STANDARDS, PART 14, 422 (1970) [hereinafter cited as ASTM RECOMMENDED PRACTICE E 90-70]; ASTM, CLASSIFICATION FOR DETERMINATION OF SOUND TRANSMISSION CLASS, DESIGNATION E 413-70T, 1970 ANNUAL BOOK OF ASTM STANDARDS, PART 14, 576 (1970) [hereinafter cited as ASTM DESIGNATION E 413-70T] (formerly issued as ASTM RM 14-2). See generally LAWRENCE 104-08, 111-15.

15 See LAWRENCE 105.

16 *Id.* 104-06. The values derived from field tests are usually several decibels lower than the values that are measured in a laboratory for the same construction.

17 See, e.g., CLOSE, Tables 7-1, 7-2 and 7-3, at 146-53, and sources cited therein; LAWRENCE, Appendix 2 at 198-99; PARKIN & HUMPHREYS, Appendix C at 318-19;

sound transmission loss in actual buildings may later be carried out to check compliance with these specifications.¹⁸ However, in testing final constructions the existence of flanking transmission paths, as well as extraneous noise, (from exterior traffic, for example) may make it difficult to measure accurately each separate building construction element as it is designated in the specifications.¹⁹

In addition to this testing problem, there is some difficulty with the specifications themselves. Ideally, the sound transmission loss of each particular construction element should be specified in each frequency band in the required frequency range to suit its intended use. To set such a specification in each case would require a detailed knowledge of both the noise spectrum in the source room and the spectrum of acceptable noise levels in the receiving room.²⁰ In practice, however, there is subjective acceptance by occupants of certain deviations from the ideal sound transmission loss between rooms.²¹ Thus, it is necessary to derive a rating system which will not unduly penalize constructions that could well prove acceptable in actual use. There are three systems now in use which attempt to do this. The following examination of these systems will indicate that none of them is entirely satisfactory.

1. Arithmetical Average System

For years, a number of foreign countries, including Canada, Denmark, Germany, Great Britain, the Netherlands, Norway, and Sweden, have included noise standards in their national building codes.²² The earlier codes and reference standards utilized a single

ACOUSTICAL MATERIALS ASSN., ARCHITECTURAL ACOUSTICAL MATERIALS, BULL. NO. XXVI (A.I.A. No. 39-B) (1966).

18 LAWRENCE at 106-08.

19 *Id.* 106.

20 *Id.* 111.

21 *Id.*

22 See, e.g., Canada: NATIONAL BUILDING CODE OF CANADA, SUPP. NO. 5 (1960) [1941]; Denmark: MINISTRY OF HOUSING, BUILDING REGULATION FOR HOUSING IN TOWN AND COUNTRY, CH. 9 (1966); Germany: DEUTSCHER NORMENAUSSCHUSS DIN 4109, SCHALLSCHUTZ IN HOCHBAU (SOUND INSULATION IN BUILDINGS), BLATT 1-5 (1963) and DIN 52210, MESSUNGEN ZUR BESTIMMUNG DES LUFT-UND TRITTSCHALLSCHUTZES (MEASUREMENTS FOR THE DETERMINATION OF AIRBORNE AND IMPACT SOUND INSULATION) (1960) [1938]; Great Britain: BRITISH STANDARDS INSTITUTION, BRITISH STANDARD CODE OF PRACTICE CP 3, CH. III (1960) [1944]; the Netherlands: NEDERLANDS NORMALISATIE-INSTITUUT, NEN 1070, NATUURKUNDIGE GRONDSLAGEN VOOR BOUWVOORSCHRIFTEN

figure rating for airborne sound, consisting of the arithmetical average²³ of sound transmission loss measured in various bands over the frequency range of 100-3200 Hertz (Hz).²⁴ Most of these codes specified average transmission loss requirements for party walls and floors in dwellings, classrooms, and hospitals, usually ranging between 45 and 55 dB.²⁵ Some standards were graded according to different classes of dwellings,²⁶ or attached different specifications to walls which separated different types of rooms.²⁷

When the arithmetical averaging system was originally used it seemed reasonably satisfactory, since practically all buildings utilized masonry construction and the sound-insulating ability of traditional masonry construction increases with increasing frequency,²⁸ roughly corresponding to the increasing sensitivity of the human ear. Serious difficulties arise, however, in applying this system to newer light-weight constructions which often exhibit pronounced dips in insulation value at or near their resonant frequencies.²⁹ In many practical constructions, such as plywood, plaster, metal, and glass, these dips occur in the 1000 to 4000 Hz

(NOISE CONTROL AND SOUND INSULATION IN BUILDINGS), DEEL III, NGB III (1962); Norway: NORGES BYGGFORSKINGSINSTITUT RAPPORT 38 (PROPOSED NORWEGIAN BUILDING CODE FOR SOUND INSULATION) (1963) [1948]; Sweden: SWEDISH BUILDING CODE BABS, part entitled ANVISNINGAR TILL BYGGNADSTADGEN, KUNG 1 (1960) [1946]; U.S.S.R.: ADVISORY CODE FOR SOUND INSULATION IN HOUSING AND COMMUNITY BUILDINGS, CH39-58 (1959). Dates in brackets indicate the year in which noise standards were first included in the particular building code. Copies of foreign building codes are available from the American National Standards Institute. For a general discussion of the development of these codes, see Waterhouse, *Noise Control Requirements in Building Codes* in HANDBOOK OF NOISE CONTROL 40-1 to 40-12 (Harris ed. 1957) [hereinafter cited as WATERHOUSE].

23 LAWRENCE 115; WATERHOUSE 40-4 to 40-5, 40-7; CLOSE at 26-27.

24 LAWRENCE 115. Note: Hertz is a unit of frequency. One Hertz equals one cycle per second (cps). Generally, the average was taken "of the sound transmission losses at nine frequencies: 125, 175, 250, 350, 500, 700, 1000, 2000, and 4000 cps. In some instances, the losses at 1400 and 2800 were also included." CLOSE 26-27. See WATERHOUSE 40-3 to 40-7 for the various ranges used by the European and Canadian codes.

25 CLOSE 40. See WATERHOUSE 40-3 to 40-7. Unfortunately, it is not always clear whether compliance is to be determined by reference to results previously obtained on the same type construction in laboratory tests, or by performance tests in the completed building.

26 See, e.g., BRITISH STANDARDS INSTITUTION, *supra* note 22. The British code specifies two grades of multiple-family dwelling construction.

27 See WATERHOUSE 40-4 (discussing the pre-1960 British code, BRITISH STANDARDS INSTITUTION, CODE OF FUNCTIONAL REQUIREMENTS OF BUILDINGS ch. 3 (1948)).

28 LAWRENCE 115.

29 LAWRENCE 115, 70-73. This phenomenon is known as coincidence.

range³⁰ where the ear is very sensitive³¹ and speech sounds are prominent.³² Thus, a simple average may give a false impression of the effectiveness of modern constructions.

2. Effective Mass System

The Dutch code³³ takes a different approach. It establishes three grades of sound insulation, *a* (good), *ab* (medium), and *b* (fair). Corresponding sound insulation specifications are then expressed as arbitrary values (*P*) for each quality grade. This system is based on the "mass law" of sound insulation.³⁴ An "effective mass" for each construction is first calculated, which then determines the *P* number. For partitions with an effective mass of about 13 lb/ft², *P* equals 5; with each doubling of this mass, *P* is increased by 2.

The code gives *P* numbers for twenty-two standard wall and floor constructions, as well as the expected variation of *P* numbers which occur with certain structural details and combinations of these constructions. It is claimed that these *P* numbers give a more accurate test of noise reduction than the average transmission loss system,³⁵ while avoiding the complication of comparing transmission loss measurements in frequency bands to a standardized curve.³⁶ To be sure, the theoretical assignment of *P* values prescribed in the Dutch code is quicker to make than test measurements and thus represents a considerable convenience. It is

³⁰ LAWRENCE 73.

³¹ LAWRENCE 115.

³² *Id.* 73; Webster, *The Effects of Noise on Speech Intelligibility* in NOISE AS A PUBLIC HEALTH HAZARD 49 (American Speech and Hearing Ass'n Rep. No. 4, W. Ward & J. Fricke eds. 1969).

³³ NEDERLANDS NORMALISATIE-INSTITUUT, NEN 1070: NATUURKUNDIGE GRONDSLAGEN VOOR BOUWVOORSCHRIFTEN, Deel III, GELURDWERING IN WONINGEN (1951), discussed in WATERHOUSE 40-6.

³⁴ *Id.* The relationship between insulation and the mass of a partition is given by the formula

$$R = 20 \log_{10} (fM) + K$$

where *R* is the transmission loss (in dB); *f* is the frequency of the sound source (in Hz);

M is the surface density of the partition (in kg/m² or lb/ft²); and

K is a constant = -47 db, when *M* is in kg/m²
= -34 db, when *M* is in lb/ft².

LAWRENCE 71.

³⁵ See text *supra* notes 22 to 32.

³⁶ WATERHOUSE 40-6. For a discussion of the standardized curve method see text *infra* notes 38 to 49.

difficult, however, to predict accurately the effective mass for many kinds and combinations of partitions, and as a result the usefulness of this scheme is somewhat limited.³⁷

3. Sound Transmission Class and Other Standard Curve Systems

The American Society for Testing and Materials (ASTM) has developed a rating system, known as the Sound Transmission Class (STC),³⁸ which has been adopted by the New York City code.³⁹ STC is a single-figure rating, derived from comparison of test measurements on the construction in question to a standard shaped curve. The shape of the curve is designed to reflect the sensitivity of the human ear as a function of frequency. It was developed by considering the transmission loss required to reduce typical domestic noises (radios, speech, appliances, et cetera) to a specific loudness level⁴⁰ or to a Noise Criteria (NC) contour.⁴¹ In both cases the shape of the ASTM-derived curve was similar to the standard curve for sound insulation used in the German code.⁴² Since the German curve had also been used by other European countries, it was adopted by the Society for the STC contour.⁴³

The test construction is measured, either in the laboratory or field, in accordance with ASTM recommended practice.⁴⁴ Sound transmission losses are determined in 16 one-third octave bands, from 125 to 4000 Hz. These results are plotted on a graph and the Sound Transmission Class is found from a transparent overlay on which the STC standard contour is drawn. The standard contour

³⁷ WATERHOUSE 40-6.

³⁸ ASTM DESIGNATION E 413-70T.

³⁹ NEW YORK CITY, N.Y., BUILDING CODE §§ C26-1208.1 *et seq.* (1969).

⁴⁰ For a discussion of the Stevens Method for calculating loudness, which was used by ASTM in its development of the STC system, see LAWRENCE 26-28.

⁴¹ LAWRENCE 85-88; L. Beranek, *Revised Criteria for Noise in Buildings*, NOISE CONTROL, vol. 3, no. 1, at 19 (1957).

⁴² DEUTSCHER NORMENAUSSCHUSS DIN 4109, SCHALLSCHUTZ IM HOCHBAU, BLATT 1-5 (1963), as discussed in LAWRENCE 113.

⁴³ LAWRENCE 113. The ASTM-STC contour is also identical (except for an unimportant difference in frequency range) to the contour adopted by the International Standards Organization. See INTERNATIONAL STANDARDS ORGANIZATION, RECOMMENDATION R717, RATING OF SOUND INSULATION FOR DWELLINGS (1968).

⁴⁴ ASTM RECOMMENDED PRACTICE E 90-70. This practice is similar to the ISO procedure. INTERNATIONAL STANDARDS ORGANIZATION, RECOMMENDATION R140, FIELD AND LABORATORY MEASUREMENTS OF AIRBORNE AND IMPACT SOUND TRANSMISSION (1960). See also LAWRENCE 112-13 for a discussion of the British rating system.

is shifted vertically until the following conditions are fulfilled: the total adverse deviation (transmission loss below the standard line)⁴⁵ over the 16 bands is not greater than 32 dB, and the adverse deviation in any one band does not exceed 8 dB.⁴⁶ When these two conditions are fulfilled, the rating is designated as the sound transmission loss value corresponding to the intersection of the shifted STC standard contour and the 500 Hz ordinate.⁴⁷ [See Figure 1.]

There are several advantages to the STC rating system. It is flexible, allowing poor and good insulating constructions to be rated using the same method. Convenience in architectural design is added by the ready availability of published STC ratings for many common constructions.⁴⁸ A deficiency in a narrow frequency band, provided it does not exceed 8 dB, does not unduly penalize the construction when, in actuality, such narrow dips in sound insulation are not subjectively noticeable. However, it must be noted that the standard curve was derived essentially for domestic and some commercial noise spectra, particularly for use in speech and privacy calculations, and does not give effective results when low frequency components, such as traffic and some machinery noise, are prominent.⁴⁹

The STC rating system, like the other airborne noise rating systems used to date, relies upon separate measurement and specification for each construction element. Such methods do not account for the possibility of flanking transmission paths in completed buildings. Thus, the STC, arithmetical average, and effective mass rating systems are planning and engineering tools rather than effective performance standards for actual construction. If the goals of building code sound provisions — namely, assurance of acoustical privacy and protection from excess noise — are to be achieved, a simple and effective standard must be developed to measure performance of the building as a whole:⁵⁰ not the performance “of a partition,” but the isolation “between rooms.”

45 Deviations in the favorable sense, *i.e.*, above the standard curve, are ignored.

46 The latter condition provides a check on the problem of coincidence without unduly penalizing the construction. See text *supra* notes 29 to 31.

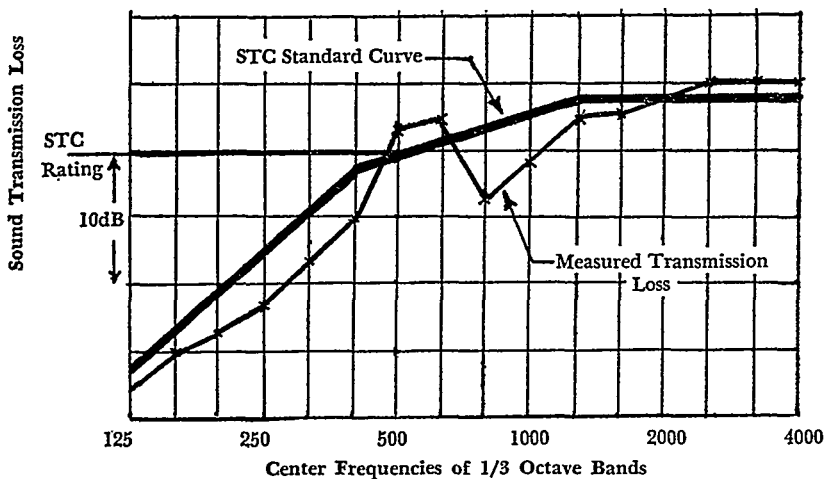
47 LAWRENCE 113-14.

48 See, *e.g.*, CLOSE 146-53; LAWRENCE 198-99.

49 LAWRENCE 114.

50 See text *infra* notes 78 to 79 for one attempt to design such a standard.

FIGURE 1
EXAMPLE OF STC RATING SYSTEM



B. Rating Systems for Impact Sound Transmission

As previously explained, sound transmission loss for airborne noise is measured by producing a steady sound on one side of a wall or floor and measuring the difference in sound levels between the two sides, correcting for the wall size and existing receiving room absorption. Unfortunately, this method does not work for the measurement of structure-borne noise — in particular, impact noise such as that created by footsteps and slammed doors. The airborne noise due to impacts in the source room (e.g. where the person is walking) bears little relationship to the impact noise transmitted through the building structure and radiated to rooms below.⁵¹ Thus the difference in airborne noise levels on the two sides of a floor, whether measured by the averaging, effective mass, or STC systems, is not a valid test of impact noise reduction.

The two rating systems commonly employed for impact sound rating of floors⁵² are based on measurement of airborne sound

⁵¹ CLOSE 154.

⁵² Although impact noise occasionally may result from collision of some mass (such as a door) with walls, the greatest impact noise problem is encountered with respect to floors, particularly from walking, moving furniture and similar activities in multi-story buildings. For this reason, impact noise rating systems have tended to concentrate exclusively on floor-ceiling constructions.

levels generated in the room below by a "standard tapping machine"⁵³ operated on the floor above. The measurement procedure yields impact sound pressure levels in sixteen one-third octave bands of frequency from 100 to 3150 Hz. The rating systems are aimed at reducing these sixteen measured values to a single-figure rating. The first system is similar to airborne sound rating systems in that the floor construction, as tested in the laboratory⁵⁴ or field,⁵⁵ is compared with a standard curve of impact sound transmission.⁵⁶ In the second method the test floor is compared to a standard floor and the difference in loudness is assessed in "phons."⁵⁷

In 1963 the Federal Housing Administration instituted a method for evaluating impact noise isolation of floors in multi-family dwellings based on a single-number Impact Noise Rating (INR) derived from the tapping machine test.⁵⁸ Measurements are made of the airborne sound levels in the room below the test floor in one-third octave bands from 100 to 3150 Hz. The curve derived from these measurements is then compared with a standard curve. The amount, in dB, that the measured curve must be shifted upwards or downwards in order to comply with the FHA

53 The standard tapping machine currently in use for all codes and standards was developed by the International Standards Organization (ISO). ISO, RECOMMENDATION R140, *supra* note 14. The ISO machine utilizes 5 drop hammers in a line, each weighing 500 grams, each dropping 4 cm twice per second, so that the overall impact repetition rate is 10 blows per second. The result is a steady and, thus, measurable airborne noise level in the room below.

54 LAWRENCE 108-10.

55 *Id.* 110-11.

56 *See, e.g.*, ISO, RECOMMENDATION R717, RATING OF SOUND INSULATION FOR DWELLINGS (1968); BRITISH STANDARDS INSTITUTION, BRITISH STANDARD PRACTICE CP3, Ch. III (1960); FHA BULL. No. 750, GUIDE TO IMPACT NOISE CONTROL IN MULTIFAMILY DWELLINGS (1963) (superseded by BERENDT, *supra* note 13).

57 LAWRENCE 118-19. In this system, floors are rated as being so many phons better or worse than a standard floor, which consists of 4.75 inch reinforced concrete. *Id.* One problem with this method is that the standard floor is itself not usually acceptable, and thus the amount of improvement required in phons for an acceptable floor is not readily determinable. LAWRENCE 119.

58 IMPACT NOISE MEASUREMENT IN MULTIFAMILY HOUSING, *supra* note 55; FHA BULL. No. 260, MINIMUM PROPERTY STANDARDS FOR MULTIFAMILY HOUSING, M405-2.4 (1963). More recently the FHA has developed an Impact Insulation Class rating system which is similar in design to the Noise Isolation Class and Sound Transmission Class ratings used for airborne noise. This rating system still relies, however, on the standard tapping machine test and the same comparison curve as was used with the INR system. *See* BERENDT 10-5 to 10-8.

requirements⁵⁹ is the INR of the construction. For example, a floor with a measured curve that may be shifted upwards by 5 dB in all frequencies and still comply with the FHA standard would have an INR rating of "plus 5." A floor with a test curve which must be shifted downwards by 3 dB for compliance would be rated at "minus 3." The greater the positive INR rating, the better is the impact sound reduction of the construction.⁶⁰

Although the INR system was developed by the Federal Housing Administration⁶¹ and adopted by the New York City code,⁶² use of this method, because of its reliance upon the ISO tapping machine, has been subject to serious criticism.⁶³ It is said, for example, that the method "cannot be shown to be capable of distinguishing with meaningful precision the relative merits of floor-ceiling systems with respect to their ability to suppress to a state of acceptability the transmitted sounds which arise from the kinds of impacts normally encountered in multi-family dwellings."⁶⁴ The ISO machine produces sound levels that are much higher than those caused by footsteps,⁶⁵ which is the major impact problem in most buildings.

⁵⁹ The measured curve complies with the FHA standard curve when (1) there is an average adverse deviation of no more than 2 dB over the 16 frequency bands, and (2) the adverse deviation in any band does not exceed 8 dB. LAWRENCE 117. The results are normalized to 0.5 seconds.

⁶⁰ This method, somewhat elaborated and updated, is given "for information only" in the new ASTM standards. AMERICAN SOCIETY FOR TESTING AND MATERIALS, RM14-4, PROPOSED METHOD OF LABORATORY MEASUREMENT OF IMPACT SOUND TRANSMISSION THROUGH FLOOR-CEILING ASSEMBLIES USING THE TAPPING MACHINE (1971). The floor rating system proposed by ASTM is called the Impact Isolation Class (IIC). The IIC numbers are, on the average, 51 units higher than the INR rating for the same floor. Thus, there are no negative IIC rating numbers (which, in fact, was the main reason for the change).

⁶¹ See references cited in note 57 *supra*.

⁶² NEW YORK CITY, N.Y., BUILDING CODE, § C26-1208.2b (1969).

⁶³ See, e.g., Mariner & Hehmann, *Impact-Noise Rating of Various Floors*, 41 J. ACOUST. SOC. AM. 206 (1967) and sources cited therein; Mariner & Spalding, *Comparison of Three Methods of Rating Floors for Impact Noise*, 42 J. ACOUST. SOC. AM. 1170 (1967); T. MARINER, REPORT IN OPPOSITION TO USE OF THE BOOK OF ASTM STANDARDS AS A VEHICLE FOR PROMULGATION OF THE TAPPING MACHINE METHOD OF IMPACT NOISE MEASUREMENT (Draft of Feb. 28, 1969) [hereinafter cited as ASTM OPPOSITION REPORT]. This criticism is equally applicable to all rating systems based on tapping machine test data.

⁶⁴ ASTM OPPOSITION REPORT 1. But see Olynyk & Northwood, *Assessment of Footstep Noise Transmission Through Wood-Joist and Concrete Floors*, 43 J. ACOUST. SOC. AM. 730 (1968).

⁶⁵ LAWRENCE 110. The discrepancy arises from the fact that the ISO machine is designed to produce levels in the receiving rooms that are sufficiently above back-

The problem is such that floors with the same rating by tapping machine test may differ by as much as 22 dB in the level of "masking noise"⁶⁶ required to reduce detectability of footfall to an acceptable level.⁶⁷ Conversely, two floors for which the subjective detectability of footfall is the same may differ by as much as 14 INR units.⁶⁸ This great potential for error, in the opinion of the author and many acoustical experts, makes the tapping machine method unacceptable for use in building code specifications.

As a matter of political reality, widespread adoption of this standard would, for a considerable period, "commit the building industry, and all those associated with it or dependent on it, to a test method which cannot adequately serve public needs."⁶⁹ Through reliance on INR (or IIC) specifications, some of the floors qualifying under the tapping machine test will be much better than actually required, thus making the building project more expensive than necessary. On the other hand, some floors will be much poorer than required, resulting in expensive post-installation improvement, reduced occupancy, or lower commercial value. At the present time, considerable effort is being expended to develop a more meaningful impact noise test.⁷⁰ Adoption of the INR or IIC system into a building code, even as a stop-gap measure, makes little economic, acoustical, or political sense.

C. Design Specifications and Performance Standards for Mechanical Equipment

Although a great deal is known about the sources and control of mechanical noise and vibration,⁷¹ few building code noise pro-

ground noise to give valid readings, even when the floor construction used has good impact sound reduction qualities. *Id.*

66 Background noise in the receiving room acts as a "mask" to sound intruding from outside the enclosure. By increasing the level of background noise in a room, other intruding sounds, such as speech from a neighboring room or footfalls from the floor above may be made less detectable to the human ear. LAWRENCE 92-98; CLOSE 201; PARKIN & HUMPHREYS, *supra* note 4, at 36, 302.

67 ASTM OPPOSITION REPORT 2. See note 61, *supra*.

68 ASTM OPPOSITION REPORT 2.

69 *Id.* 3.

70 See, e.g., INSULATION BOARD INSTITUTE, TENTATIVE METHOD OF TEST 1B1-1-I, STANDARD SPECIFICATION FOR IMPACT SOUND TRANSMISSION TEST BY FOOTFALL METHOD, and APPENDIX III OF REP. NO. 1B1-1-I (prepared by Geiger and Hamme Labs, Ann Arbor, Mich.) (1965); BOLT BERANEK & NEWMAN, INC., ACCEPTABILITY OF INTRUDING FOOTFALL SOUNDS, Rep. No. 1540 (1967); Mariner & Hehmann, *supra* note 63.

71 See generally CLOSE 177-87 (and sources cited therein); LAWRENCE 43-46;

visions have attempted to regulate this field.⁷² Essentially, the code draftsman has a choice of two not necessarily exclusive approaches: setting forth specific engineering requirements in terms of construction details, or utilizing performance standards applicable to the final structure — leaving all or most design details to the architect and engineer. The New York code adopts both of these approaches.⁷³ For example, it includes specifications for insulation devices and mountings used in boiler rooms, incinerator charging chutes, piping, fans, pumps, compressors, cooling towers, elevator machinery and other equipment,⁷⁴ as well as for maximum air velocity, lining, and attenuation devices in ventilation ducts.⁷⁵ In addition, the code designates the maximum sound power levels (in octave bands) of equipment located in mechanical spaces adjoining dwelling spaces,⁷⁶ and for exterior mechanical equipment adjoining buildings.⁷⁷

In many respects designation of specific engineering requirements for mechanical noise simplifies the problem of building code specification, as it places primary burden for checking compliance on review of the architectural plans prior to issuance of the building permit. If the review by the building department or other designated agency is sufficiently thorough, noncompliance can be detected and corrective measures taken before construction. But such a system requires engineers with acoustical training in order to review each plan in detail. More importantly, this approach tends to be less flexible, tying the code to a given state of construction technology without accounting for the possibility of both new noise sources and new insulation techniques. Finally, code specification of engineering requirements does not guarantee the integrity of the final installation; it provides no check against contractor error.

Performance standards, on the other hand, while less definitive than designating approved constructions, allow architects and

AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS, ASHRAE GUIDE AND DATE BOOK (1963) 227-234; HANDBOOK OF NOISE CONTROL chs. 23-28, 30 (Harris ed. 1957).

⁷² One notable exception is New York City. See NEW YORK CITY, N.Y., BUILDING CODE, § C26-1280.3 (1969).

⁷³ *Id.*

⁷⁴ *Id.* § C26-1280.3(b)(1)-(10).

⁷⁵ *Id.* §§ C26-1280.3(a)(3), C26-1280.3(c)(1).

⁷⁶ *Id.* § C26-1280.3(a)(2).

⁷⁷ *Id.* § C26-1280.3(a)(4).

builders greater flexibility in planning. If sufficiently detailed to give adequate notice of what is expected, these result-oriented standards can provide both a guide for design and a check on execution. Furthermore, the performance-standard method is more in line with the current trend in acoustical engineering to set specifications for the building as a whole rather than for each of its constituent elements separately. Thus, as in the case of airborne noise control, this model ordinance will adopt a performance-standard approach in the control of mechanical equipment noise.

II. THE MODEL BUILDING CODE—TESTS AND STANDARDS

A. *Insulation Requirements for Airborne Noise*

1. The Normalized Noise Isolation Class Test

In an effort to avoid some of the difficulties encountered to date in application of the sound transmission class and other standards to specification of airborne noise insulation requirements, this model code develops a new standard—the Normalized Noise Isolation Class (NNIC). The goal of the NNIC rating method is to define a workable test which adequately assures acoustical privacy and protection in the *actual use* of a structure. What matters is the overall acoustical isolation that is achieved between the rooms in question. It is not enough for a building code to specify, for example, the Sound Transmission Class of party walls. Such a specification will not account for many other possible noise paths and sources in the completed building.⁷⁸ Rather than provide STC ratings or similar requirements⁷⁹ for each separate construction element, the NNIC rating contemplates a single performance test for the entire completed construction. It is designed to account for both primary paths and flanking transmission. The NNIC rating is not concerned with *how* the sound reaches one room from another, but only the degree of acoustical isolation (privacy) between the rooms.

The Normalized Noise Isolation Class standard⁸⁰ is based on the

⁷⁸ See text *supra* at note 13.

⁷⁹ See text *supra* at note 50.

⁸⁰ This paragraph in the text is meant to serve only as an introduction to the terms of the NNIC method as they apply to the test procedure contemplated. More rigorous definitions and discussion are given *infra*. Cf. LAWRENCE 106-08.

Noise Reduction between two rooms. Noise Reduction (NR) is measured by establishing a sound field in one room (the "source room") of sufficient intensity that the sound transmitted into the other room (the "receiving room") predominates over the sound from all other noise sources. With the test source in operation, the Average Sound Pressure Levels (\bar{L}) in the two rooms are measured in the 16 one-third octave bands with center frequencies from 125 to 4000 Hz. For each frequency band, the difference between the level in the source room and the level in the receiving room ($\bar{L}_s - \bar{L}_r$) is the NR for that frequency band.

The amount of noise reduction depends to some extent on the amount of acoustically absorptive material in the receiving room; NR being greater for larger amounts of receiving room absorption. Indeed, one could bias the test to achieve an artificially high value of NR merely by placing many pillows or heavy drapes in the receiving room. Therefore, in order to evaluate the acoustical isolation of the two rooms in actual use, the NR value for each frequency band should be "normalized" to the value it would have if the receiving room contained the typical amount of absorption provided by furnishings and accessories,⁸¹ as measured in terms of reverberation time. The resulting value is called the Normalized Noise Reduction (NNR). The NNR values are plotted as a function of frequency, and the test curve thus derived is compared with a standard curve in a manner identical to that used in the Sound Transmission Class rating. The resultant single-figure rating is a measure of the total noise reduction of the entire construction over all frequencies, and is called the Normalized Noise Isolation Class, or NNIC value.

2. Preliminary Go-No-Go Testing

The NNIC system is an accurate and acoustically sophisticated method of measurement, and is the most appropriate rating for definition and designation of airborne noise standards in building codes. As a method of field testing for compliance, however, it may not always be necessary or desirable to conduct the complete

⁸¹ It is assumed that the field tests under this building code would be done prior to the installation of furniture, which would normally absorb some of the sound. In some cases, however, acoustical ceilings or carpeting would typically be installed in the "unfurnished" condition.

NNIC measurements, particularly since we can expect in many cases that the constructions will be designed and specified in terms of the code standards. Thus, it may be proper to provide for simpler preliminary "go-no-go" test standards. Should the building in question fail to comply with the go-no-go test, the more accurate NNIC measurements would then have to be made.⁸²

One possible go-no-go test would involve use of a standard sound source — which either electrically or mechanically produces a standard sound over a given frequency spectrum⁸³ — and a sound level meter with the standard A-weighting network.⁸⁴ A single A-level, rather than multiple frequency band measurements would then be taken at several points in the source and receiving rooms. The space-averaged A-levels for the two rooms could then be compared, and if the "A-weighted noise reduction," — that is, the difference between the two readings, — was sufficient, the construction would be presumed satisfactory.

Although a model test procedure along these lines, together with correlations between NNIC ratings and A-level standards, are not yet available, several groups of acoustical experts are exploring this approach. This building code chapter would allow later adoption of such a preliminary testing procedure, and relative A-level standards, when they become available.⁸⁵

82 The standards for passing the go-no-go test should be set slightly above the NNIC test standards to provide assurance that the latter are met. See comment following section XX04.1(b) of the model ordinance.

83 See Wells and Weiner, *On the Determination of the Acoustical Power of a Source of Sound in Semi-Reverberant Spaces*, NOISE CONTROL vol. 7, no. 1, at 21-29 (1961); Hardy, *Standard Mechanical Noise Sources*, NOISE CONTROL vol. 5, no. 3 at 22-25 (1959).

84 Because the human ear is more sensitive to certain frequencies than to other frequencies, in order to assess the subjective reaction to various sounds, electronic weighting networks have been developed for sound level meters. One of these networks, the A-Scale (measured in units denoted dBA), discriminates against low and very high frequencies, and is often used in assessing noise of the type commonly encountered in buildings and in the outdoor urban environment. One advantage to the use of the A-Scale is that small, hand-held battery operated instruments are available for which all acoustical and electrical characteristics are standardized. Furthermore, tests have shown that A-Scale measurements show a strong correlation with other noise measures, such as speech interference level, noise criteria, and loudness levels. NOISE AND VIBRATION CONTROL, *supra* note 3, at 557. See also LAWRENCE 23. For the specifications of such instruments, see INTERNATIONAL ELECTROTECHNICAL COMMISSION, SOUND LEVEL METERS, Publication 123 (1961); AMERICAN NATIONAL STANDARDS INSTITUTE [ANSI], SPECIFICATION FOR SOUND LEVEL METERS, ANSI S1.4-1971, ¶ 3.1 (1971).

85 See Section XX04.1(b), *infra*.

3. Selecting an Appropriate NNIC Standard

The Normalized Noise Isolation Class is a rating of the isolation between two rooms or spaces, whether or not they are adjacent. When setting the numerical specification of this isolation, one should consider (and, indeed, the choice will influence) both the insulation quality of construction elements (walls, floors, ceilings, doors, et cetera) and room design and placement within the building.

The two goals of acoustical standards should be kept in mind: protection and privacy. The person participating in a noise sensitive activity (for example, sleep, speech, or learning) requires protection from intruding sounds. On the other hand, the person making the sound, particularly in the case of speech, has an interest in acoustical isolation to insure his privacy.

In selecting the specific NNIC rating between any two rooms, a number of factors are important: (1) intrusive noise sources and continuous background sound levels likely to be present in either room; (2) acoustical privacy and acceptable sound levels required by expected activities in both rooms; (3) technical limits of sound insulation which can be achieved by presently available building materials; (4) cost of sound insulation techniques necessary to achieve the desired alternatives; and (5) design, location, and other noise control alternatives available.⁸⁶ By comparing the likely noise source levels and intrusive acceptable sound levels for activities the building will contain, in relation with the expected background noise levels,⁸⁷ the noise reduction required between the room containing the source and the room containing the activity can be determined. Technical limits or cost of insulation necessary to achieve such a reduction may preclude such a specifi-

⁸⁶ These factors will be discussed in more detail, giving specific examples, in the comments accompanying sections XX02.0—XX02.5, *infra*.

⁸⁷ The provision of acoustical privacy depends upon the proper combination of two equally important factors: (1) the attenuation provided by the partitions which separate the area where speech is taking place and the "receiving room," where the speech might be overheard; and (2) the continuous background noise existing in the receiving room. This background noise provides a crucial masking effect, even though it may be hardly noticeable to the inattentive ear. BOLT BERANEK & NEWMAN, INC., PLASTIC ROOM (PHASE III OF PATH STUDY), BBN REPORT NO. 1576, *Introduction (Unclassified)* [prepared for the Advanced Research Projects Agency, Department of Defense] (1968). The masking effect of background noise may be used to make intrusive sounds from neighboring spaces less noticeable, and thus provide an element of protection, as well as privacy.

cation, or may dictate that other alternatives, such as a non-adjacent placement of the rooms be used. The code need not specify NNIC standards for every possible room pairing. Its provisions may, as in the code proposed here, concentrate on situations presenting the most serious need for acoustical isolation and privacy, and may classify certain groups of spaces or rooms together for purposes of specification.

B. *Performance Standards for Mechanical Equipment*
Noise: Noise Criteria Levels

This model code utilizes a performance standard approach to mechanical noise control.⁸⁸ Specifically, Section XX03.0 designates six Maximum Noise Criteria Levels, each defining the maximum sound levels permissible for each of eight octave bands.⁸⁹ These standards would apply to mechanical equipment such as boilers, ventilators, pumps and elevator machinery used in building services, but would not include appliances and other machinery located in the building for domestic, commercial, or industrial purposes. The proposed test would cover all building service equipment as it would operate under actual conditions, rather than testing each piece of equipment separately. The Noise Criteria performance standards are result-oriented, *i.e.*, they are designed to measure the total impact of mechanical noise on the acoustic environment of a specified class of activities. Prior to or as part of the final building inspection, all equipment would be operated normally and test measurements would be made at appropriate locations using a standard sound level meter.⁹⁰ Measurements in the eight octave bands could then be compared with the maximum levels allowed for each room to determine compliance.

In addition to allowing field testing for compliance, the Noise Criteria specifications would enable the engineer and architect, working from known noise spectra of various machinery, to plan machine location and sound attenuation techniques during design stages.

⁸⁸ See text, *supra* following note 75.

⁸⁹ The derivation and significance of these levels will be explained in the comment to section XX03.1, *infra*.

⁹⁰ See INTERNATIONAL ELECTROTECHNICAL COMMISSION, SOUND LEVEL METERS, Publication 123 (1961); AMERICAN NATIONAL STANDARDS INSTITUTE, SPECIFICATION FOR SOUND LEVEL METERS, ANSI S1.4-1971 (1971).

One prevalent problem which may be encountered in tests using such performance standards is the possible existence of significant extraneous sound sources, such as exterior noise from vehicular traffic. For the test to be conducted with precision, the ambient noise levels from all sources not subject to the test should be at least 10 dB below the test levels at all frequencies.⁹¹ For example, if exterior traffic noise is above 80 dB⁹² at 500 Hz, and exterior walls with windows provide only 30 dB of insulation,⁹³ it would be impossible to determine compliance with the standards of this code, which require building equipment noise to be 54 dB or less.⁹⁴ The only solution is to select, if possible, test periods when such ambient noise is at a reasonable level. In locations where the extraneous noise level is always too high, the protection offered by the building code against internal mechanical noise would probably not make much difference in any event, and compliance would have to be waived. However, these untestable situations are expected to be rare,⁹⁵ since proper site planning for the types of activities to which Section XX03 is directed would avoid such consistently high noise areas.⁹⁶

A MODEL ORDINANCE TO CONTROL NOISE THROUGH BUILDING CODE PERFORMANCE STANDARDS

The Building Code of [name of municipality] is hereby amended by adding thereto the following Article.

COMMENT: This building code article is designed to be added to an existing building code. For the purposes of general format and

91 See LAWRENCE 106.

92 See Beranek, *Noise*, *supra* note 3, at 68, 73 (1966).

93 See text *supra* at note 6.

94 See Section XX03.1, Table 2, *infra*.

95 See MAYOR'S TASK FORCE ON NOISE CONTROL, NEW YORK CITY, TOWARD A QUIETER CITY 41, 51, 52 (1970).

96 See FHA, MINIMUM PROPERTY STANDARDS FOR MULTIFAMILY HOUSING, *supra* note 2; T. SCHULTZ & N. McMAHON, NOISE ASSESSMENT GUIDELINES, BOLT BERANEK & NEWMAN REPORT No. 2176 [prepared for the Department of Housing and Urban Development] (1971).

sectioning, it adopts the framework of the BOCA BASIC BUILDING CODE/1970.⁹⁷

Article XX NOISE CONTROL

Section XX00.0 *Scope*

The provisions of the Article shall control the design and construction of all buildings and structures and any addition or alteration thereto hereafter erected in order to insure control of and protection from noise within buildings and to provide a minimum acceptable acoustical environment.

COMMENT: These provisions are not designed to apply to existing buildings, or to govern use or maintenance, except with respect to additions and alterations (other than ordinary repairs).⁹⁸ Consideration of the costs of major structural modifications which would be required to bring older buildings up to noise isolation standards, the lack of a severe threat to health and safety presented by nonconformance to such noise requirements, and the difficulties of field testing to guarantee compliance with noise insulation specifications dictates the limit on retroactivity contemplated by this provision.⁹⁹

⁹⁷ BOCA BASIC BUILDING CODE. This model noise control provision may also be adapted to other standard formats. *See, e.g.*, INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS, UNIFORM BUILDING CODE (1961); AMERICAN INSURANCE ASSOCIATION, NATIONAL BUILDING CODE 1967 EDITION (1967) [hereinafter cited as NATIONAL BUILDING CODE]; MIDWEST CONFERENCE OF BUILDING OFFICIALS, MODERN STANDARD BUILDING CODE 1959 EDITION (1959) [hereinafter cited as MODERN STANDARD BUILDING CODE].

⁹⁸ *See* BOCA BASIC BUILDING CODE § 102.0; NATIONAL BUILDING CODE § 102.8. For an example of a code provision concerned with maintenance, see BOCA BASIC BUILDING CODE § 1100.0 (Heating Equipment and Appliances).

⁹⁹ Some codes provide that in the case of alterations or repairs in excess of fifty percent of the physical value of the building, a previously existing building is required to conform with the full code requirements; for those alterations and repairs of 25 to 50 percent of the building value, the building official [person charged with code enforcement] may determine to what degree the portions so altered or repaired must conform. *See, e.g.*, BOCA BASIC BUILDING CODE §§ 106.0 *et seq.*; INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS, UNIFORM BUILDING CODE-SHORT FORM § 104 (1961). For cases upholding the application of code regulations to repairs and alterations, see *City of Earle v. Shackleford*, 177 Ark. 291, 6 S.W.2d 294 (1928); *Delman, Inc. v. Connel*, 140 Misc. 675; 252 N.Y.S. 319 (Sup. Ct. 1931), *aff'd* 240 App. Div. 816, 266 N.Y.S. 968 (1st Dep't. 1933). For cases allowing code enforcement against preexisting structures, see *Adamec v. Post*, 273 N.Y. 250, 7 N.E.2d 120 (1937); *Coffin v. Blackwell*, 116 Wash. 281, 199 P. 239 (1921); *Seattle v. Hinckley*, 40 Wash. 468, 82 P. 747 (1905).

Section XX01.0 Definitions

Section XX01.1 Acoustical Terms

- (a) "Reference sound pressure (p_0)" equals 0.0002 microbars.
- (b) "Reference reverberation time (T_0)" equals 0.5 seconds.
- (c) "Average sound pressure level (\bar{L}) in a room" equals ten times the common logarithm of the ratio of the space-average mean-square sound pressure to the square of the reference sound pressure P_0 , where the space-average is taken over the entire room volume with the exception of those regions where the direct radiation of the sound source or the near field of boundaries (such as walls, furniture and floors) is of significant influence.
- (d) "Noise Reduction (NR)" is the difference in decibels between the average sound pressure level produced in an enclosed space or room containing a reference sound source or sources (source room), and the average sound pressure level in a room containing no such sound source (the receiving room).
- (e) "Reverberation time of an enclosure (T)" means the time that would be required for the mean square sound pressure level therein, originally in a steady state, to decrease 60 decibels after the source is stopped. For the purposes of this article, reverberation time shall be measured at the same frequencies as are the values of \bar{L} used to determine the noise reduction, NR.
- (f) "Normalized noise reduction (NNR)" means the value that the noise reduction, NR, would have if the receiving room for the test had the reference reverberation time, T_0 .
- (g) "Normalized noise isolation class (NNIC)" means a single number rating derived from measured values of normalized noise reduction, NNR, in the following manner:
- (1) The test data are compared with the rows of NNR values given in Table 1 and that row is chosen which has the highest value of NNR at 500 Hz while fulfilling the following conditions:
 - (A) the sum of all deficiencies, that is, deviations below the prescribed value for each test frequency, shall not exceed 32 decibels; and
 - (B) the deficiency for any single test frequency shall not exceed 8 decibels.
 - (2) The NNIC shall be the normalized noise reduction value at 500 Hz for the row of NNR values thus selected.

Table 1
Normalized Noise Reduction Versus Frequency for a Range of Normalized Noise Isolation Class Ratings

Frequency in Hz	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000
44	47	50	53	56	59	60	61	62	63	64	64	64	64	64	64	64
43	46	49	52	55	58	59	60	61	62	63	63	63	63	63	63	63
42	45	48	51	54	57	58	59	60	61	62	62	62	62	62	62	62
41	44	47	50	53	56	57	58	59	60	61	61	61	61	61	61	61
40	43	46	49	52	55	56	57	58	59	60	60	60	60	60	60	60
39	42	45	48	51	54	55	56	57	58	59	59	59	59	59	59	59
38	41	44	47	50	53	54	55	56	57	58	58	58	58	58	58	58
37	40	43	46	49	52	53	54	55	56	57	57	57	57	57	57	57
36	39	42	45	48	51	52	53	54	55	56	56	56	56	56	56	56
35	38	41	44	47	50	51	52	53	54	55	55	55	55	55	55	55
34	37	40	43	46	49	50	51	52	53	54	54	54	54	54	54	54
33	36	39	42	45	48	49	50	51	52	53	53	53	53	53	53	53
32	35	38	41	44	47	48	49	50	51	52	52	52	52	52	52	52
31	34	37	40	43	46	47	48	49	50	51	51	51	51	51	51	51
30	33	36	39	42	45	46	47	48	49	50	50	50	50	50	50	50
29	32	35	38	41	44	45	46	47	48	49	49	49	49	49	49	49
28	31	34	37	40	43	44	45	46	47	48	48	48	48	48	48	48
27	30	33	36	39	42	43	44	45	46	47	47	47	47	47	47	47
26	29	32	35	38	41	42	43	44	45	46	46	46	46	46	46	46
25	28	31	34	37	40	41	42	43	44	45	45	45	45	45	45	45
24	27	30	33	36	39	40	41	42	43	44	44	44	44	44	44	44
23	26	29	32	35	38	39	40	41	42	43	43	43	43	43	43	43
22	25	28	31	34	37	38	39	40	41	42	42	42	42	42	42	42
21	24	27	30	33	36	37	38	39	40	41	41	41	41	41	41	41
20	23	26	29	32	35	36	37	38	39	40	40	40	40	40	40	40
19	22	25	28	31	34	35	36	37	38	39	39	39	39	39	39	39
18	21	24	27	30	33	34	35	36	37	38	38	38	38	38	38	38
17	20	23	26	29	32	33	34	35	36	37	37	37	37	37	37	37
16	19	22	25	28	31	32	33	34	35	36	36	36	36	36	36	36
15	18	21	24	27	30	31	32	33	34	35	35	35	35	35	35	35
14	17	20	23	26	29	30	31	32	33	34	34	34	34	34	34	34

Normalized Noise Reduction Values
in dB

Note: this table may be extended upwards or downwards by adding or subtracting increments of one decibel.

COMMENT:

Subsection (a)

See comment to subsection (c).

Subsection (b)

See comment to subsection (f).

Subsection (c)

The sound pressure level, L , is defined as

$$10 \log \left(\frac{p^2}{p_0^2} \right)$$

where p is the rms pressure of the sound being measured and p_0 is the reference sound pressure. The reference pressure of .0002 microbars is approximately that of the weakest sound that can be heard by a person with excellent aural acuity. It represents the threshold of audibility and, for frequencies around 2000-3000 Hertz is equal to "zero decibels," the starting point of the dB scale of noise levels¹⁰⁰

The average sound pressure level, \bar{L} , is derived by taking several measurements in a room. \bar{L} is defined by the formula

$$\bar{L} = \frac{10 \log (p_1^2 + p_2^2 \dots + p_n^2)}{N p_0^2}$$

where p_0 is the reference pressure, N is the number of measurements, and p_1, p_2, \dots, p_n are the rms sound pressures at N different measurement positions.¹⁰¹ Each p_n^2 should represent the

100 CLOSE 19. For a discussion of these definitions see LAWRENCE 4-6; AMERICAN SOCIETY FOR TESTING AND MATERIALS, ASTM DESIGNATION C634-69, STANDARD DEFINITIONS OF TERMS RELATING TO ACOUSTICAL TESTS OF BUILDING CONSTRUCTIONS AND MATERIALS, 1970 ANNUAL BOOK OF ASTM STANDARDS, Part 14, 302, at ¶ 4.2 (1970) [hereinafter cited as ASTM DESIGNATION C634-69]; NOISE AND VIBRATION CONTROL 31.

101 AMERICAN SOCIETY FOR TESTING AND MATERIALS, ASTM RECOMMENDED PRACTICE E336, TENTATIVE RECOMMENDED PRACTICE FOR MEASUREMENT OF AIRBORNE SOUND INSULATION IN BUILDINGS, 1970 BOOK OF ASTM STANDARDS, Part 14, 549, at ¶ 4.1.1 (1970) [hereinafter cited as ASTM RECOMMENDED PRACTICE E336]; AMERICAN NATIONAL STANDARDS INSTITUTE [ANSI] (formerly United States of America Standards Institute and American Standards Association), STANDARD ACOUSTICAL TERMINOLOGY S1.1-1960 ¶ 2.6 (1960); ANSI, METHOD FOR THE PHYSICAL MEASUREMENT OF SOUND S1.2-1962 ¶ 3.5.9 (1962).

energy in approximately the same fraction of the total room volume.¹⁰² In this manner, the average sound pressure level may be calculated for any frequency desired.

Subsection (d)

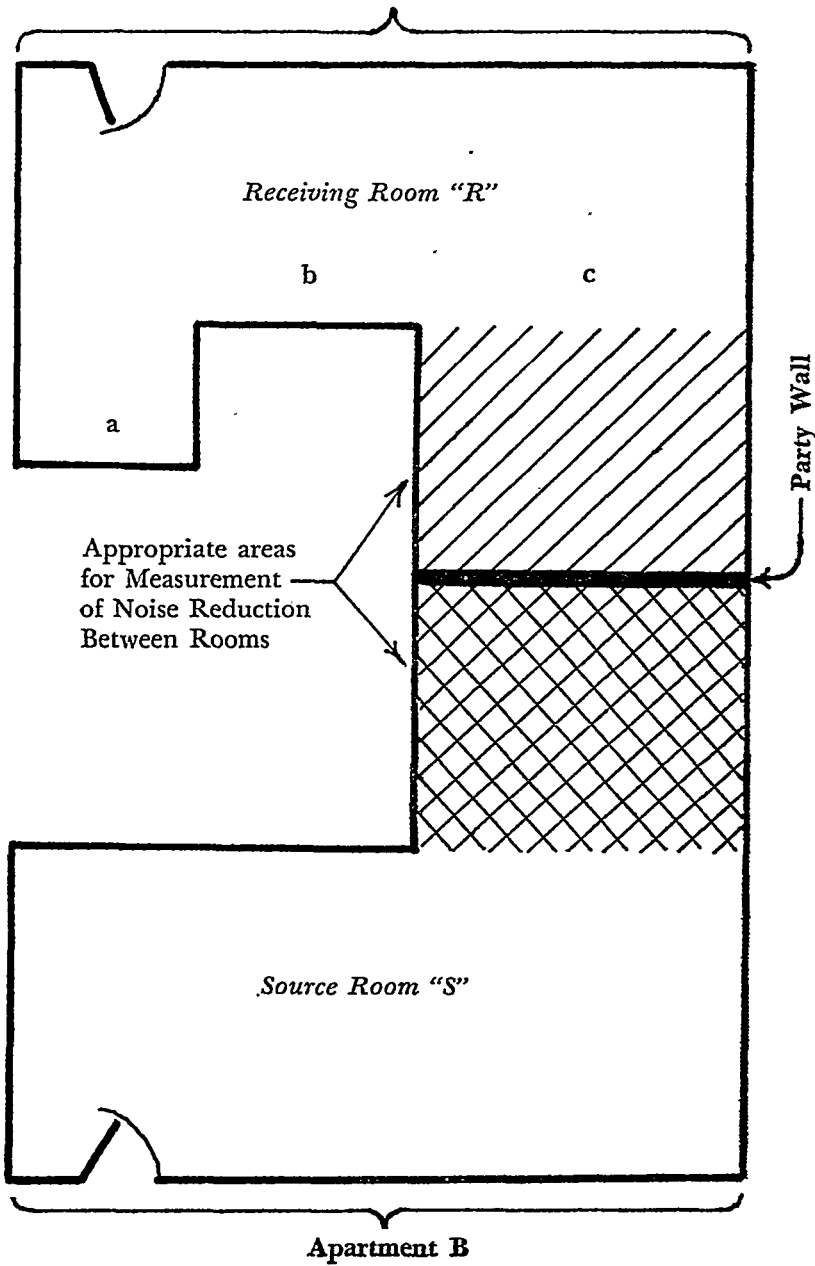
The noise reduction for each frequency tested is calculated as follows: $NR = \bar{L}_1 - \bar{L}_2$, where \bar{L}_1 is the average sound pressure level in the room containing a standard sound source or sources (the source room), and \bar{L}_2 is the average sound pressure level in the receiving room.¹⁰³ Noise reduction, like sound pressure level, is measured in decibels. Since the transmission of sound in a building is a linear process, once the noise reduction has been measured frequency-by-frequency for one type of sound (the test source), the derived NR values for each frequency will be valid for airborne sound of any source or intensity. Thus, noise reduction adequately expresses the acoustical isolation between rooms for all sounds.

Subsection (d) leaves open for further definition the important problem of designating appropriate spaces to be considered as source and receiving rooms. For example, Figure 2 illustrates the situation of two neighboring "L" shaped rooms, "S" and "R," which may contain areas for varied functions (*e.g.*, dining, living, and study space). If we are interested in the acoustical isolation between "S" and "R," it would make little sense to measure the average sound pressure level (\bar{L}) in the receiving room, "R," using positions "a," "b," or "c," as that would lead to a misleadingly low average level. Rather, the average sound pressure level should be measured in the closest functional area adjoining "s" (indicated by hatching) to get an accurate reading of the "practical" isolation between "S" and "R" afforded by the building structure. Similarly, the noise source should be placed in the closest functional area adjoining "R" (shown by cross-hatching), and the average sound pressure level for the source room should be measured in that

102 ASTM RECOMMENDED PRACTICE E336. Sound pressure close to walls and other boundaries will be greater than that corresponding to the average energy density in a room, due to direct radiation and reflection of sound. *Id.* 557; Waterhouse, *Interference Patterns in Reverberant Sound Fields*, 27 J. ACOUSTICAL SOC. AM. 247 (1955). Thus, for the purpose of measuring the average sound pressure level, microphones should be located preferably more than $\frac{1}{2}$ and no less than $\frac{1}{6}$ wave length from any boundary. ASTM RECOMMENDED PRACTICE E336 ¶ 6.4.

103 ASTM DESIGNATION C634-69 ¶ 4.6.

FIGURE 2
Apartment A



functional area. Definition in the code of the solutions for the possible source and receiving room configurations would be impossibly cumbersome and inflexible. Thus, while the problem is noted here, the actual designation of appropriate areas for measurement in the source and receiving rooms is left to test standards and regulations to be adopted by the administrators.¹⁰⁴

Subsection (e)

As the definition¹⁰⁵ suggests, the basic technique for calculating the reverberation time of a room consists of abruptly terminating a sound source in the room and measuring the time (in seconds) required for the sound pressure level in the room to decrease by 60 decibels, or to 10^{-6} of its original value.¹⁰⁶ Either an impulse source (pistol or balloon burst) or continuous source (audio-oscillator or noise generator with loudspeaker) may be used for such measurements. In any case, determination of reverberation time as a function of frequency should be measured in the same bandwidths used to measure sound pressure level differences in order to allow normalization of the NR values in terms of reverberation time.¹⁰⁷

Subsection (f)

In acoustical field testing, the noise reduction between two rooms is usually expressed as the normalized noise reduction (NNR), or normalized level difference.¹⁰⁸ This normalization allows for a correction based on the amount of absorption in the receiving room. The goal of the performance standards and testing contemplated by this code is to predict the reaction of occupants to a

¹⁰⁴ See Section XX04.1, *infra*.

¹⁰⁵ Subsection (e) is derived from the standard technical definitions of reverberation time. See AMERICAN NATIONAL STANDARDS INSTITUTE, AMERICAN STANDARD ACOUSTICAL TERMINOLOGY, S1.1-1960, ¶ 11.6 (1960); INTERNATIONAL STANDARDS ORGANIZATION, MEASUREMENT OF ABSORPTION COEFFICIENTS IN A REVERBERATION ROOM, R-354-1963 (1963).

¹⁰⁶ L. BERANEK, NOISE REDUCTION 155 (1960).

¹⁰⁷ See Section XX01.1 (f).

¹⁰⁸ LAWRENCE 106-07; PARKIN & HUMPHREYS 268. The International Standards Organization uses the term "normalized level difference" with symbol " D_n ", rather than "normalized noise reduction" and "NNR". INTERNATIONAL STANDARDS ORGANIZATION, RECOMMENDATION R-140, *supra* note 14. At the present time the ISO standard normalizes in terms of total absorption, rather than reverberation time. However, an amendment providing for normalization in terms of reverberation time is now being considered by the ISO.

building's acoustical properties as they will be experienced in actual use. Since it is likely that field testing pursuant to this code will be conducted prior to the occupancy and furnishing of the building, an adjustment must be made to account for the absorptive effects of normal fixtures and furnishings.

The amount of absorption in a room can be most easily accounted for in terms of reverberation time.¹⁰⁹ In order to calculate the normalized noise reduction, the receiving room reverberation time must be measured in the same one-third octave bandwidths as NR. The normalized noise reduction for each frequency is then found from the expression:¹¹⁰

$$\text{NNR} = \text{NR} + 10 \log \left(\frac{T}{T_0} \right)$$

where NR is the measured noise reduction, T is the measured reverberation time in the receiving room, and T₀ is the reference reverberation time of 0.5 seconds.¹¹¹

Subsection (g)

The purpose of the normalized noise isolation classification is to provide a single-figure rating that can be used for characterizing the total isolation afforded by a building construction. The NNIC rating is determined by comparing measured NNR in a series of 16 one-third octave test bands with standard sets of NNR values in exactly the same manner that the sound transmission class rating (STC) is determined from measured sound transmission loss data.¹¹² Rather than use the graphical method of definition,¹¹³

¹⁰⁹ The absorption of a room and its reverberation time are related in terms of the Sabine Equation:

$$T = \frac{0.049 V}{A}$$

where T is the reverberation time, in seconds; V is the volume of the room, in cubic feet; and A is the total absorption in the room, in sabins.

¹¹⁰ See LAWRENCE 107; B. DAY, R. FORD & P. LORD, *BUILDING ACOUSTICS* 52 (1969).

¹¹¹ For a wide variety of furnished dwellings it has been found that the reverberation time is usually about 0.5 seconds. If measured values of NR are corrected to a standard reverberation time of 0.5 seconds, the corrected (normalized) value will be close to the values existing in practice when the rooms are occupied and furnished. B. DAY, R. FORD & P. LORD, *supra* note 110.

¹¹² ASTM DESIGNATION C634-69, ¶ 7.5; ASTM RECOMMENDED PRACTICE E336, ¶ A1.1.3; ASTM DESIGNATION E413-70T.

¹¹³ ASTM DESIGNATION E413-70T ¶ 2.2, Graphical Determination of STC. See

Table I sets forth the equivalent numerical values of NNR for each NNIC rating from 30 to 60.¹¹⁴ This table may be extended upwards or downwards, to cover ratings above 60 and below 30, merely by adding or subtracting increments of 1 dB in each column.¹¹⁵ The rating is designed to correlate with subjective impressions of the sound insulation provided against the sounds of speech, radio, television, music, and similar sources of noise in offices and dwellings.¹¹⁶

text *supra* at notes 4 to 47. The NIC numbers may be obtained graphically in the same manner as the STC ratings are determined. See note 114 *infra*.

114 ASTM DESIGNATION E413-79T ¶ 2.3, Numerical Determination of STC. In practice, the graphical and numerical determination of NNIC (and STC) are equally acceptable. However, for the purpose of building code definition, the numerical tabular presentation is probably easier to use, and thus has been adopted here.

The NNIC rating for any given set of rooms is derived by comparing the normalized noise reduction test data with the rows of standard NNR values in Table 1, in order to determine the maximum row for which the specified conditions are met. For example, assume we have the following set of measured normalized noise reduction values for 2 rooms:

Hz	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000
NNR	44	46	45	43	46	48	49	54	54	57	58	62	63	64	61	61

[This hypothetical data supposes a well constructed building with solid walls composed of 13 1/2 inch brick separating the source and receiving rooms. See PARRIN & HUMPHREYS, *supra* note 4 at 318-19.] Comparing this to the row in Table 1 with a standard NNR of 55 at 500 Hz, we find a total of 29 dB deficiencies over the 16 one-third octave bands, and in the next higher row, a total of 38 dB in deficiencies. [The deficiencies for the NNIC 55 row are:

Hz	250	315	400	500	630	800	1000	1250
deficiency	5dB	5dB	6dB	6dB	2dB	3dB	1dB	1dB

The deficiencies for the NNIC 56 row are:

Hz	200	250	315	400	500	630	800	1000	1250
deficiency	1dB	6dB	6dB	7dB	7dB	3dB	4dB	2dB	2dB

Thus, the NNIC rating of the acoustical isolation between these two rooms is 55. However, if the NR test value for 400 Hz, for instance, had been 45 rather than 48, the NNIC rating would have been 54, in order to fulfill condition (B), that no single deficiency exceed 8 dB.

115 ASTM DESIGNATION E413-70T ¶ 2.3.

116 *Id.* ¶1.1. Where noise sources expected in a building have noise spectra that differ markedly from those described above, such as noise produced by most machinery, certain industrial processes, bowling alleys, and the like, it is preferable to use detailed sound transmission loss values in conjunction with actual spectra of intrusive noises in design specification. *Id.* ¶ 1.2. For the purposes of the NIC specifications in this code, such special sources are not of particular significance.

Section XX01.2 Definitions

(a) "Administrator" means the [Administrator of the Office of Noise Control].

(b) "Common hallway" means a common corridor or space separately enclosed which provides any of the following in one story:

- (1) common access to the required exitways of the building, or
- (2) common access for more than one tenant, or
- (3) common access for more than thirty persons.

(c) "Common stairway" means one or more common flights of stairs and the landings and platforms connecting them to form a continuous and uninterrupted passage from one floor to another which provides any of the following:

- (1) common access to the required exitways of the building, or
- (2) common access for more than one tenant, or
- (3) common access for more than thirty persons.

(d) "Dwelling unit" means one or more rooms arranged for the use of one or more individuals living together as a single housekeeping unit, with cooking, living, sanitary, and sleeping facilities.

(e) "Space or shaft containing mechanical equipment" means an enclosure containing mechanical equipment used for heating, ventilation, air-conditioning, water supply, waste disposal, or vertical transportation, including but not limited to boilers, pumps, fans, condensers, cooling towers, induction units, refrigeration equipment, elevators, dumbwaiters, moving stairs, and incinerator charging chutes. This definition shall not apply to appliances or mechanical equipment located *within* a dwelling unit, office, classroom, lecture hall, or room used for bed-patient care.

COMMENT: Subsection (a) contemplates inspections under this article by a specialized noise control office. Enacting jurisdictions may prefer to use existing enforcement agencies, but the technical nature of the article will require testing by trained acoustical technicians.

Subsections (b) through (d) adopt in substance the wording of BOCA Basic Building Code/1970 §§ 601.1 and 201.0.

Subsection (e) seeks to describe spaces containing building services machinery.¹¹⁷ The term "space or shaft containing mechanical equipment" will be used in this article when discussing normalized noise isolation class standards between machinery

¹¹⁷ See text *supra* at notes 88 to 90.

areas and rooms in dwellings, schools, et cetera; appliances which are installed and used in the rooms themselves are excluded.¹¹⁸

Section XX02.0 *Airborne Noise Isolation*

Section XX02.1 *Multiple Unit Dwellings*

For buildings containing two or more dwelling units, or one or more dwelling units and spaces used for commercial, industrial, professional or recreational purposes:

(a) between a room in one dwelling unit, and (1) a room in another dwelling unit, or (2) a space used for commercial, industrial, professional or recreational purposes, or (3) a common hallway, or (4) a common stairway, or (5) a space or shaft containing mechanical equipment there shall be a minimum normalized noise isolation class, NNIC, rating of [50];

(b) between a bedroom and all other rooms in the same dwelling unit, with doors closed, there shall be a minimum NNIC rating of [45];

(c) between a room, other than a bedroom, and all other rooms in the same dwelling unit, with doors closed, there shall be a minimum NNIC rating of [40].

COMMENT: This section applies to both apartment buildings and mixed dwelling-commercial structures. The ratings given in brackets are not intended to be applicable to all cities and acoustical conditions. A complete survey of the local noise situation is necessary to determine the proper standards for each jurisdiction.¹¹⁹

The activities within a dwelling unit vary in their tolerance of noise. Sleep is most sensitive to intrusive sound. A loudness level of 30-35 dBA¹²⁰ is considered the threshold for optimal sleeping conditions.¹²¹ On the other hand, for watching television and en-

118 The normalized noise isolation class rating applies to the separation between two rooms. Acoustical isolation standards are meaningless in a single room, and thus this code cannot attempt to control household and office appliances, such as room air conditioners, garbage disposals, typewriters, and refrigerators. Consumer product controls and buying habits may be the only sanctions against these noise sources.

119 See text *supra* at note 86.

120 See definition of A-Scale, *supra* note 82.

121 See ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT [OECD], URBAN TRAFFIC NOISE (Oct. 1969) 35; LAWRENCE 90. Interference with sleep may be created by levels as low as 40 dBA. At 50 dBA, falling asleep is a lengthy process, and intervals of deep sleep are fairly short. See generally Thiessen, *The Effects of Noise During Sleep*, in PHYSIOLOGICAL EFFECTS OF NOISE (B. Welch & A. Welch ed. 1970)

joying conversation, living room background levels of about 40 dBA would usually be satisfactory.¹²²

Noise sources within dwellings differ widely in intensity. Normal conversation generates levels from 50 to 60 dBA. Preferred listening levels¹²³ for television programs result in sound levels of about 84 dBA,¹²⁴ although quiet parts of the same program may drop to 40 dBA.¹²⁵ Levels over 70 dBA are quite common for washing machines, food mixers, grinders and other kitchen appliances.¹²⁶ In a mixed-use situation, building design must also take account of office noise (around 70 dBA)¹²⁷ and the possibility of exuberant recreants.¹²⁸

The problems of protection from intruding noise and preservation of privacy are most severe between different dwelling units. The 50 NNIC rating, like the New York Code's 50 STC rating requirement in such cases,¹²⁹ will essentially insulate a dwelling unit from the higher practical levels of noise occurring in other units.

Although noise within a dwelling unit is to some extent controllable by its occupants, acoustical isolation is still a necessity. The suggested NNIC rating of 45 between bedrooms and other rooms of the same dwelling unit reflects a concern both for the

271-76; Williams, *Auditory Stimulation, Sleep Loss and the EEG Stages of Sleep*, in *id.* 277-82.

122 LAWRENCE 90.

123 J. van den Eijk & J. van Ierland, *My Neighbor's Radio Continued*, CONGRÈS INTERNATIONAL D'ACOUSTIQUE, LIÈGE Paper No. F23 (1965).

124 LAWRENCE 90.

125 *Id.*

126 *Id.*; NATIONAL ASS'N OF HOMEBUILDERS, SOUND IN APARTMENTS, No. 315.02 at 26 (1965); NOISE AND VIBRATION CONTROL at 576.

127 LAWRENCE 91.

128 For example, the sound of shouting and group laughter can top 90 dBA in a reverberant room containing an indoor pool.

129 NEW YORK CITY, N.Y., BUILDING CODE, § C26-1208.7(a)(1) (for permits issued after January 1, 1972). For a criticism of the standards set in the New York Code, see R. BARON, *THE TYRANNY OF NOISE* 126-29 (1970). The FHA recommended criteria for insulation between dwelling units suggests three grades of housing. Grade I, applicable primarily to suburban and "luxury" buildings, would have STC ratings above 55. (Note the FHA used the approach of specifying the insulation of the party wall, rather than the isolation "between rooms.") For residential urban and suburban areas considered to have an average noise environment (40-45 dBA ambient noise levels at night), Grade II housing would have STC ratings in excess of 52. Grade III criteria for minimally acceptable "noisy" locations would allow STC rates down to 48 between apartments. BERENDT, *supra* note 13, at 10-8 to 10-9.

increased protection required for sleep and need for privacy demanded sometimes even among family members.¹³⁰ On the other hand, the needs of activities in living rooms, baths, kitchens, dens, and other dwelling rooms (including speech, music, and studying) require less isolation.¹³¹

Unfortunately, acoustical isolation will not be achieved without some increase in housing costs. A rough estimate, dependent on material prices and labor in various regions, indicates present costs of construction could be increased on the order of ten percent by these requirements.¹³² Advances in construction techniques, such as prefabrication of building elements, may allay this rise. In the final analysis, local housing needs, particularly in low and moderate income brackets, should be weighed against the acoustical needs. Adjustment of standards, or classification of different specifications for different qualities and price ranges of housing,¹³³ may be required after a thorough assessment of local conditions. This code may easily be adapted to such options.

130 See FHA, MINIMUM PROPERTY STANDARDS FOR MULTI-FAMILY DWELLINGS, *supra* note 57 at 89 which recommends an STC rating of from 45-50 between bedrooms and rooms within the same dwelling unit. BERENDT suggests the following criteria for airborne noise insulation within dwelling units:

	Grade I	Grade II	Grade III
Partition Function			
Between Rooms	STC	STC	STC
Bedroom to bedroom	48	44	40
Livingroom to bedroom	50	46	42
Bathroom to bedroom	52	48	45
Kitchen to bedroom	52	48	45
Bathroom to livingroom	52	48	45

BERENDT 10-14.

131 Except for STC criteria suggested for insulation between bathrooms and living rooms (Grade III=45), the FHA has not recommended standards for room combinations not involving bedrooms. These combinations are, however, contemplated by this code, although the standards set for insulation between rooms other than those used for sleep are less severe, reflecting an evaluation of lesser need for protection from intruding noise required by waking hour activities.

132 For a representative sample of constructions which should comply with these standards, see BERENDT W-1 to W-87 (walls), F-1 to F-61 (floors). It should be noted that the NNIC rating system allows use of a variety of isolation techniques other than just wall and floor structural insulation. For example, closets may be profitably used as "buffer" zones between rooms if unlouvered doors are used. *Id.* 10-14. Creative design may save costs by avoiding the use of overly expensive materials for isolation.

133 See, e.g., BERENDT 10-8 to 10-14.

Section XX02.2 *Single Unit Dwellings*

For buildings containing only one dwelling unit:

(a) between a bedroom, and all other rooms in the dwelling unit, with doors closed, there shall be a minimum NNIC rating of [45];

(b) between a room, other than a bedroom, and all other rooms in the dwelling unit, with doors closed, there shall be a minimum NNIC rating of [40].

COMMENT: By and large the problems encountered within single unit dwellings are analogous to those within dwelling units in multifamily structures.¹³⁴ However, the varying conditions of building location may demand some change in standards. In particular, since single family homes are often located in suburban and rural areas, with lower ambient background noise levels, sound sources within the home may be more intrusive. FHA gradings I and II¹³⁵ recognize this problem and recommend stricter standards for insulation within units located in neighborhoods with relatively low exterior noise.¹³⁶ Though this section's numerical NNIC ratings are identical to those suggested in Section XX02.1(b) and (c), some adjustment or graded regulation might be considered where local conditions require.

Section XX02.3 *Commercial, Industrial, and Professional Buildings*

For buildings containing spaces or rooms occupied by two or more commercial, industrial, or professional establishments, between a space or room occupied by one establishment, and (1) a space or room occupied by another establishment, or (2) a space or shaft containing mechanical equipment, there shall be a minimum NNIC rating of [50].

COMMENT: This section is concerned only with the transmission of sound into or between businesses occupying the same building. No attempt is made to control noise within integrated spaces, as that would require a detailed study of individual noise sources and needs in each particular business.

While it is difficult to generalize regarding actual noise levels in commercial buildings, office noise levels over 75 dBA are quite

¹³⁴ See text and notes *supra* at notes 130-31.

¹³⁵ See note 129, *supra*.

¹³⁶ See notes 129-30, *supra*.

common.¹³⁷ Industrial buildings, on the other hand, often contain machines generating continuous levels well over 100 dBA.¹³⁸ Comprehensive studies have been conducted of acceptable background noise levels in offices.¹³⁹ Recommended levels, based on the need for speech communication at different distances, are as follows:¹⁴⁰

Private office, large conference room	25-35 dBA
Medium office	40-45 dBA
Drafting room, typing pool, accounting areas	55-60 dBA

In industrial spaces, however, acceptable noise levels are (unfortunately) more often governed by hearing damage-risk criteria,¹⁴¹ rather than by the possibility of achieving reasonable speech communication¹⁴² or comfortable working conditions.

Since multiple industrial and mixed commercial-industrial occupancy in a single building is rare, the NNIC rating suggested here is designed with adjacent office use primarily in mind. This rating will reduce the maximum average noise of a large office to tolerable levels in private office or conference rooms located in a neighboring establishment. Though such adjacent room combinations may not be contemplated by the original tenants of a structure, this inter-office isolation would provide continuing protection

137 See LAWRENCE 91. Increasing use of data-processing machines, card sorters, computers, typewriters, calculators and telephones can create serious problems, particularly in larger offices. Typewriters themselves are fairly noisy. An office with 10 typewriters operating would have a noise level of about 70 dBA. The spectra of data processing machines, on the other hand, tends to be rather flat, generating nearly as much sound energy in higher frequencies, where the ear is especially sensitive, as in lower frequencies—making such machines particularly annoying. Clerical work, even without the use of machines, often involves conversation, either intra-office or by telephone. In semi-reverberant office spaces, levels from this source alone often exceed 60 dBA.

138 Noise in industrial buildings, however, is now at least partially limited by the noise standards of the Walsh-Healey Act, 41 U.S.C. § 35(e) (1970); Dep't of Labor, Occupational Noise Exposure, 41 C.F.R. § 50-204.10 (1971).

139 Beranek, *Revised Criteria for Noise in Buildings*, NOISE CONTROL vol. 3 no. 1 19-27 (1957).

140 LAWRENCE 91. See also CLOSE 190 [Conference rooms—40-45 dBA; private offices 40-45 dBA].

141 Eldridge & Miller, *Acceptable Noise Exposures—Damage Risk Criteria in NOISE AS A PUBLIC HEALTH HAZARD*, *supra* note 31, at 110-20 and sources cited therein; NOISE AND VIBRATION CONTROL 537-53.

142 See Pickett, *Message Constraints, a Neglected Factor in Predicting Industrial Speech Communication in NOISE AS A PUBLIC HEALTH HAZARD*, *supra*, 121-28. Such disregard for speech continues even though a shouted warning, unheard because of excessive background noise levels, has serious safety implications.

for later tenants, or rearrangement of internal office uses. In addition, a 50 NNIC rating should be sufficient to provide the speech privacy demanded by business and confidential professions, such as law and medicine.

Section XX02.4 *Schools*

For buildings used primarily for the purposes of educational instruction, between a classroom, lecture hall or library, and (1) any other classroom or lecture hall, or (2) an office, or (3) a gymnasium, cafeteria, or auditorium, or (4) a hallway, or (5) a stairway, or (6) a space or shaft containing mechanical equipment, there shall be a minimum NNIC rating of [45].

COMMENT: Intrusive noise produces two significant problems with respect to the educational process: interference with audibility of speech¹⁴³ and disruption of concentration.¹⁴⁴ Sound levels produced in classrooms may well exceed 65 dBA, and noise from auditoriums, cafeterias, and gymnasiums can top 80 dBA.¹⁴⁵ The recommended maximum background sound level for classrooms and lecture halls (which do not use amplification equipment) is 35 to 40 dBA, and for libraries is 40 to 45 dBA.¹⁴⁶ Thus, an NNIC rating of 40-45 assures acceptable isolation of classrooms and library spaces from intrusive noise originating in neighboring parts of the school plant.

Section XX02.5 *Hospitals*

For buildings containing spaces used for the purposes of in-patient health care, including but not limited to hospitals, sanitariums, infirmaries, clinics, and health centers:

(a) between a ward, semiward, or private room used for bed-patient

143 See Barnett & Erickson, *The Sonic Environment and its Effects on Man* in SCHOOL ENVIRONMENTS RESEARCH SER 2: ENVIRONMENTAL EVALUATIONS 137-55 (Larson ed. 1965).

144 See Cohen, *Effects of Noise on Psychological State* in NOISE AS A PUBLIC HEALTH HAZARD, *supra* note 31, at 74, 77 (and sources cited therein); Broadbent, *Effects of Noise on Behavior*, ch. 10 of HANDBOOK OF NOISE CONTROL (Harris ed. 1957) (and sources cited therein); Woodhead, *The Effects of Brief Loud Noise on Decision Making*, 31 J. ACOUST. SOC. AM. 1329 (1959); Boggs and Simon, *Differential Effect of Noise on Tasks of Varying Complexity*, 52 J. APPLIED PSYCHOLOGY 148 (1968).

145 LAWRENCE 100.

146 See LAWRENCE 99-100; Barnett & Erickson, *supra* note 137, at 146; L. BERANEK, NOISE REDUCTION 523 (1960).

care, and any other ward, semiward, or private room there shall be a minimum NNIC rating of [45].

(b) between a ward, semiward, or private room, and (1) surgery and preparation room, or (2) pharmacy, or (3) office, or (4) hallway, corridor, or stairway, or (5) space used for diagnosis and treatment, or (6) kitchen or pantry, or (7) bathroom, or (8) space or shaft containing mechanical equipment, there shall be a minimum NNIC rating of [50].

COMMENT: A patient in a hospital, sanitarium, or health center is perhaps the most sensitive recipient of noise. Yet noise is one of the most pervasive problems in modern hospitals. The common sources and usual levels of sound in health care buildings are shown in the following table:

SOURCE AND SOUND LEVELS OF HOSPITAL NOISE¹⁴⁷

Source	Sound Level Range	
	In Corridors	In Bedroom
Radio and TV sets	Not measured	Not measured
Talk in corridors by staff, visitors and patients	60-72 dBA	53-69 dBA
Talk in patients' rooms	51-62 dBA	50-65 dBA
Corridor activities: walking	50-61 dBA	—
Movement of equipment and carts	56-82 dBA	48-75 dBA
Floor, kitchen and utility room activities	48-75 dBA	55-75 dBA
Housekeeping activities: vacuuming, cleaning pans, etc	55-84 dBA	49-80 dBA
Telephones	60-70 dBA	50-65 dBA
Voice Paging System	55-78 dBA	58-75 dBA

The suggested background noise level in hospital bedrooms is approximately 35 dBA, although an attempt to achieve lower

¹⁴⁷ PUBLIC HEALTH SERVICE, NOISE IN HOSPITALS—AN ACOUSTICAL STUDY OF NOISE AFFECTING THE PATIENT 84-88, 99-129 (Pub. No. 930-D-11, 1963). This report consisted of acoustical testing and patient surveys in eight eastern hospitals. The most prevalent sound found in the sample, arranged in order of patient annoyance, were (1) radio and television sets, (2) staff talk in corridors, (3) other patients in distress and recovery room sounds, (4) voice paging, (5) talk in other rooms, (6) babies and children crying, (7) telephones, and (8) pantry, kitchen, and utility room activities. *Id.* 21.

levels than this in wards, especially acute wards, is desirable.¹⁴⁸ Achievement of these levels solely by means of a simple NNIC rating is unrealistic. First, since it is general practice to leave patient room doors partly open at night to permit staff observation, more noise is transmitted from room to room through open doors than through walls or floor constructions.¹⁴⁹ Second, since a significant portion of noise in hospitals results from structure-borne impacts (such as dropped bed pans and hard heels on tile floors) and equipment in patient rooms, isolation from intruding airborne sound alone is not a final solution.

This does not, however, constitute grounds for allowing the use of lightweight and acoustically inferior construction. Since intense noises are not ordinarily generated in patient rooms, isolation ratings in excess of 40 should be sufficient between rooms used for bed-patient care.¹⁵⁰ On the other hand, separation between patient rooms and service areas, corridors, stairways, treatment centers, and spaces containing mechanical equipment should have more effective sound-isolating construction, as the 50 NNIC rating suggests.¹⁵¹

Section XX03.0 *Noise Control of Mechanical Equipment*

Section XX03.1 *Maximum Noise Criteria Ratings*

For the purposes of this article, the maximum noise criteria ratings are defined by the sets of maximum octave-band sound pressure levels designated in Table 2:

COMMENT: The units in most general use for specification of acceptable noise levels in buildings are the Noise Criteria (NC) curves developed by Beranek.¹⁵² Noise Criteria were derived specifically

148 LAWRENCE 101. PUBLIC HEALTH SERVICE, *supra* note 147, at 65. The Public Health Service recommends the noise criteria curve NC-30 (approximately 35-40 dBA) as a design objective for patient rooms in hospitals. For an explanation of such NC curves, see text *infra* at notes 152 to 158.

149 PUBLIC HEALTH SERVICE, *supra* note 147, at 60-61.

150 The Public Health Service recommends 3-inch or 4-inch block walls, plastered or seal-painted on both sides (STC rating \cong 44) between hospital bedrooms. *Id.* 60.

151 Between hospital patient rooms and service areas, the Public Health Service report suggests a cavity wall with at least a 2-inch air space, or a 6 to 10-inch air space if metal studs with lath and plaster are used for such cavity walls. *Id.* The approximate STC rating for such walls is 49-54. BERENDT, *supra* note 13, W-22.

152 Beranek, *Revised Criteria for Noise in Buildings*, NOISE CONTROL vol. 3, no. 1, p. 19 (1957); L. BERANEK, NOISE REDUCTION, ch. 20 (1960).

Table 2
Maximum Noise Criteria Rating
 [in dB re 0.0002 microbars]

Noise Criteria Rating	Maximum Sound Pressure Levels at Octave Bands with Center Frequency of							
	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
50	71	64	58	54	51	49	48	47
45	67	60	54	49	46	44	43	42
40	64	56	50	45	41	39	38	37
35	60	52	45	40	36	34	33	32
30	57	48	41	35	31	29	28	27
25	54	44	37	31	27	24	22	21

for offices and commercial buildings where speech communication is of primary concern,¹⁵³ but have been extended to cover the whole range of building uses, from residences and hotels to churches, hospitals, and schools.¹⁵⁴ The NC rating system consists of a family of curves delineating the maximum sound levels allowable in each of eight octave bands with center frequencies 63 to 8000 Hz.¹⁵⁵ Thus a single NC curve number designates the maximum decibel levels which will be allowed in each of the eight octave bands. Reflecting the increased sensitivity of speech (and other activities) to sounds in higher frequencies, NC curves allow higher levels for low frequencies and apply stricter standards in higher octave bands.

¹⁵³ LAWRENCE 86.

¹⁵⁴ See ASHRAE GUIDE AND DATA BOOK (1963), *supra* note 71, at 212.

¹⁵⁵ L. BERANEK, NOISE REDUCTION 519 (1960). Schultz, *Noise-Criterion Curves for Use with USASI Preferred Frequencies*, 43 J. ACOUST. SOC. AM. 637 (1968). Dr. Schultz has correlated the curves developed by Beranek to the new standard octave band center frequencies designated by the American National Standards Institute (formerly United States of America Standards Institute). As all contemporary sound level metering equipment uses the new frequencies, this section uses the Schultz curves (in tabular form) for definition of maximum noise criteria levels. NOISE AND VIBRATION CONTROL, *supra* note 3, at 566.

It should be noted that recently Dr. Beranek has published "new 1971 preferred noise criteria levels" (PNC). NOISE AND VIBRATION CONTROL 566-68. These new specifications provide for adjustments, primarily in the low and high frequency ranges, in an attempt to achieve more acceptable noise "quality" specifically, to avoid hiss and rumble problems which, according to some critics, were not adequately accounted for by the original NC curves. However, these new curves have not received universal acceptance or official recognition, and it is likely that for some time, both the NC and PNC systems will coexist. Because of the official recognition already accorded the original NC specifications, and their widespread use by architects and engineers, this model code has utilized the original NC standards, as modified for use with the current octave band frequencies.

For the purposes of this section, Table 2 defines six NC levels, which are the 50, 45, 40, 35, 30, and 25 NC curves set forth in tabular form. When testing the performance of mechanical equipment as contemplated by this section, measurements will be taken in each of the eight octave bands. By specifying a maximum noise criteria level, say NC-30, for a certain room, this code would require that noise from all building equipment as measured in such room not exceed the stated level at each center frequency, e.g., 57 dB at 63 Hz, 48 dB at 125 Hz, and so on.¹⁵⁶

One advantage of using the NC system for code performance standards is its widespread use during the past decade in architectural and engineering specifications.¹⁵⁷ Recommended NC levels have been suggested for many different types and uses of buildings.

It is possible to correlate NC levels with A-level measurements for common building background noise spectra by the following formula:¹⁵⁸

NC rating in dB = A-level in dB -6 ± 2 . If simplified measurements are made in the A-scale, however, to check compliance with an NC specification (as might be done in a go-no-go testing procedure) the A-level standard should be set no more than five units above the allowable NC rating.¹⁵⁹

Section XX03.2 *Pure Tone Correction*

The maximum noise criteria levels designated in Section XX03.1 shall be reduced by 5 decibels in any octave band in which a significant pure tone component is present. For the purposes of this section, a significant pure tone component is an audible pure tone which produces an increase in sound pressure level in the corresponding one-third octave band above the mean of the two adjacent one-third octave bands of at least the amount indicated in the following table:

¹⁵⁶ For the purposes of field testing to check the compliance of completed buildings with the maximum NC-ratings allowed by the code, some of the same equipment used in the NNIC tests may be used to make the measurements required for the NC-rating. In particular, although the NC-rating is defined in terms of octave bands, Section XX03.2 may necessitate one-third octave band analysis where pure tones are present. Thus, a frequency analyzer with one-third octave band filters is an essential piece of equipment needed for both the NNIC and NC tests.

¹⁵⁷ See, e.g., ASHRAE GUIDE AND DATA BOOK, *supra* note 71, at 210-13; BERENDT 10-8; Barnett & Erickson, *supra* note 144, at 145-47; PUBLIC HEALTH SERVICE, *supra* note 147, at 65-69.

¹⁵⁸ ASHRAE GUIDE AND DATA BOOK, *supra* note 71, at 210.

¹⁵⁹ LAWRENCE 88.

Table 3

For one-third octave bands with center frequency	Increase in sound pressure level
40-125 Hz	6 dB
126-250 Hz	4 dB
251-500 Hz	3 dB
501-1000 Hz	2 dB
1001-10,000 Hz	1.5 dB

COMMENT: A pure tone component, that is, a sound which is composed of a single frequency (or several frequencies very close together),¹⁶⁰ is a particular problem with respect to mechanical equipment. Pure tones are often found in the sound output of equipment containing electric motors, fans, transformers, compressors, and fluorescent lights.¹⁶¹ Such noises as the "whine" of a motor generally cause more annoyance than their overall sound pressure level would indicate, primarily because they are easily recognizable.¹⁶² To account for this effect, it is necessary to correct the octave-band specifications designated in Section XX03.1 where pure tones occur.

A pure-tone component is considered significant if it can be heard by the observer, and if the sound pressure level of the one-third octave band containing the tone exceeds by a certain number of decibels the levels in the adjacent one-third bands.¹⁶³ Because pure tones in higher frequencies are especially bothersome, the increment that defines the pure tone as significant (using the one-third band analysis) decreases as the frequency of the component increases.¹⁶⁴ Once a pure-tone component is found to be significant, a correction factor must be attached to the applicable maximum octave band specification established in Section

¹⁶⁰ AMERICAN NATIONAL STANDARDS INSTITUTE, AMERICAN STANDARD ACOUSTICAL TERMINOLOGY S1.1-11960 ¶ 13.2 (1960).

¹⁶¹ ASHRAE GUIDE AND DATA BOOK, *supra* note 71, at 211.

¹⁶² LAWRENCE 28.

¹⁶³ *Id.*; AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS, MEASUREMENT OF SOUND POWER RADIATED FROM HEATING, REFRIGERATING AND AIR CONDITIONING EQUIPMENT, ASHRAE STANDARD 26062 (1962); AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI) STANDARD 443, FOR SOUND RATING OF ROOM FAN-COIL AIR CONDITIONERS ¶ 5.2 (1966).

¹⁶⁴ *Cf.* NEW YORK CITY, N.Y., BUILDING CODE § C26-1208.3(a)(2)b.

XX03.1. The precise magnitude of the necessary correction is not universally agreed upon, but the range of suggested corrections is 5 to 10 decibels.¹⁶⁵ This code adopts the five decibel correction used in the New York City Code.¹⁶⁶ Thus, for example, if the applicable noise criteria curve were 40 for a particular room, and if tests revealed a pure-tone component produced by mechanical equipment in the octave band with a center frequency of 500 Hz, the standard applied to mechanical noise in that octave band would be 50 dB, rather than the normal 45 dB, permitted in the 500 Hz band by the 40-NC curve.

Section XX03.3 *Mechanical Equipment Standards*

The sound transmitted from piping and plumbing equipment, ductwork, grills, registers, and spaces or shafts containing mechanical equipment to the interior of:

- (a) any bedroom in a dwelling unit shall not exceed the maximum noise criteria level of [NC-25];
- (b) any room, other than a bedroom, in a dwelling unit shall not exceed the maximum noise criteria level of [NC-35];
- (c) any ward, semi-ward, or private room used for bed-patient care in a hospital, sanitarium, infirmary, clinic, or health center shall not exceed the maximum noise criteria level of [NC-35];
- (d) any classroom, lecture hall, or library in any building used for educational purposes shall not exceed the maximum noise criteria level of [NC-40];

COMMENT: In determining the maximum levels to be allowed by the code, it is necessary to assign a numerical value that will provide a proper balance between mechanical equipment noise and all other sounds in the particular rooms. Acceptability of mechanical sound depends less on its absolute level of loudness than on its relationship to other sounds. The level of noise from mechanical sources must be low enough so that it will not interfere with communication and other activities, but there is no point in reducing

¹⁶⁵ See NEW YORK CITY, N.Y., BUILDING CODE § C26-1208.3(a)(2)b; ASHRAE GUIDE AND DATA BOOK, *supra* note 71, at 211; BRITISH STANDARDS INSTITUTION, B.S. 4142:1967, METHOD OF RATING INDUSTRIAL NOISE AFFECTING MIXED RESIDENTIAL AND INDUSTRIAL AREAS ¶ 3.2.1 (1967); INTERNATIONAL STANDARDS ORGANIZATION, RECOMMENDATION R1996, NOISE ASSESSMENT WITH RESPECT TO COMMUNITY NOISE ¶ 3.1.5 (1971).

¹⁶⁶ NEW YORK CITY, N.Y., BUILDING CODE, § C26-1208.3(a)(2)b.

it much below normal background levels due, for example, to exterior traffic. Indeed, often it is desirable to have sufficient mechanically created sound, as from air-conditioning outlets, to mask intruding speech from adjacent rooms and assure acoustic privacy.¹⁶⁷ Considering these factors, the following table provides suggested noise criteria design ranges for selected building uses and activities:¹⁶⁸

SUGGESTED NOISE CRITERIA DESIGN LEVEL RANGES

Type of Area	Low	NC Rating Average	High
Residences			
Private homes (rural/ suburban)	20	25	30
Private homes (urban)	25	30	35
Apartment houses	30	35	40
Hospitals and clinics			
Private rooms	20	30	35
Wards	30	35	40
Commercial spaces			
Conference rooms	25	30	35
Private offices	30	35	40
General open offices	35	40	50
Tabulation and computation	40	50	60
Clothing stores	35	40	45
Department stores	40	45	50
Small retail stores	40	45	50
Schools			
Libraries	30	35	40
Classrooms	30	35	40
Laboratories	35	40	45

This section specifies maximum levels for mechanical noise in residences (for bedrooms and other rooms), hospitals (for patient rooms), and schools (for classrooms and libraries). Generally, these are the locations where mechanical equipment sound is most intrusive. In addition, in each of these cases differences in the appropriate NC ratings between different rooms within the same classification (for example, between private hospital rooms and wards) is relatively minor. In contrast, specification of standards with respect to equipment noise in industrial, commercial, and

167 See ASHRAE GUIDE AND DATA BOOK, *supra* note 71, at 213.

168 *Id.* 212. See NOISE AND VIBRATION CONTROL, *supra* note 2, at 585.

professional establishments is practically impossible without involving great detail; thus, it is preferable to leave solution of the problems in these areas to consumer forces and office design advancements.

Selection of code standards from the ranges in the foregoing table must rest upon a review of local conditions — in particular, the predominant background noise levels that can be expected for different types of buildings within the jurisdiction. This, of course, will depend on location with respect to external noise sources, a factor which may be controlled to some extent by zoning and other noise regulations. A suburban area, for example, may well select lower allowable NC ratings to control mechanical equipment noise in view of generally lower background levels and, thus, greater sensitivity of building occupants to internal noise sources. The standards given in this section tend to favor the upper range of suggested NC ratings and would be most appropriate for urban areas with generally high background sound levels.

Section XX04.0 *Regulations and Enforcement*

COMMENT: For the purposes of these enforcement provisions, this model code posits the passage of a zoning noise control ordinance,¹⁶⁹ as well as this building code article. Considering the requirements for testing equipment and expert personnel, joint administration by one agency of these programs would be most effective, economic, and efficient, at least at this point of technological development. This section contemplates the organization of a separate acoustical testing department headed by the Administrator of the Office of Noise Control.¹⁷⁰ For those jurisdictions which have recently formed environmental protection agencies, a sound control division could be added to that agency. Other jurisdictions may wish to assign such functions to a separate division within the building department. In either event, it should be stressed that the building official (the municipal officer who directs the building department) is responsible for enforcement of the

¹⁶⁹ See, e.g., Statute, *A Model Ordinance to Control Urban Noise Through Zoning Performance Standards*, *supra* note 8, at 608; BOLT BERANEK & NEWMAN, INC., CHICAGO URBAN NOISE STUDY, PHASE 2: NOISE CONTROL BY LAW (1970); CHICAGO, ILL. MUNICIPAL CODE ch. 17, §§ 17-4.1 *et seq.* (1971).

¹⁷⁰ See Section XX01.2, *supra*.

code provisions. The administrator's office should be responsible only for acoustical inspection services and adoption of technical regulations in the area of building code sound control programs.

Section XX04.1 Testing and Supplementary Regulations

(a) The administrator shall adopt and publish regulations concerning (1) testing and reporting procedures and (2) instrumentation to be used pursuant to the standards of this article.

(b) The administrator may adopt preliminary testing procedures and standards, fulfillment of which shall constitute a presumption that the standards of this article have been fulfilled. Such preliminary test standards shall be designed to ensure compliance with the standard set forth in sections XX02 and XX03 of this article. Should such preliminary tests be conducted and such preliminary standards not be fulfilled, tests shall be conducted in accordance with the procedures specified pursuant to section XX04.1(a) and the standards of this article.

(c) In conducting tests with respect to standards specified in sections XX02.1 (multi-unit dwellings), XX02.2 (single unit dwellings), XX02.3 (office buildings), XX02.4 (schools), XX02.5 (hospitals), and XX03.3 (mechanical equipment), only a representative sample of rooms and room combinations need be tested in each structure.

(d) Prior to adoption of regulations and standards, or any amendment thereto, as authorized by sections XX04.1(a) and (b), the administrator shall conduct a public hearing and shall solicit oral and written comments by interested persons on such proposed regulations, standards, or amendments. Notice of the time and place of the hearing, and of the subject matter of the proposed regulation(s), standard(s), or amendment(s) shall be published in one or more newspapers of general circulation at least thirty days prior to such hearing. Full and complete copies of the proposed regulation(s), standard(s), and amendment(s) shall be available for public inspection at least thirty days prior to such hearing.

COMMENT: The administrator must prepare and adopt regulations on such matters as specifications for instruments (microphones, meters, sound sources, amplifiers, and speakers) to be used, placement of equipment during tests, test conditions (allowable ambient noise, et cetera) and reporting forms.¹⁷¹

¹⁷¹ No uniform testing methods have been adopted for the NNIC or NC systems. For guidance in this area, there are testing procedures for similar standards, such as

Subsection (b) authorizes the adoption of preliminary go-no-go test procedures for both airborne and mechanical equipment noise.¹⁷² Such preliminary test specifications must be designed so that an airborne noise isolation or mechanical equipment sound level which meets the preliminary test standards would also comply with the applicable NNIC rating or allowable NC rating designated in the code. If a building fails to meet the preliminary test standards, before a certificate of occupancy could be refused, testing under the more extensive NNIC and NC rating procedures would be necessary.¹⁷³

Subsection (d) follows the rule set out in the BOCA BASIC BUILDING CODE.¹⁷⁴ The MODERN STANDARD BUILDING CODE, on the other hand, does not specify a notice-hearing type procedure, but rather requires that "such rules and regulations shall be subject to ratification by the Legislative authority of the governmental authority exercising jurisdiction."¹⁷⁵ The regulations provided for in sections XX04.1(a) and (b) involve technical and scientific matters of technique and testing procedure. The purpose of hearings is to give members of the technical community, particularly those acquainted with acoustics, sufficient time to study and react to the proposed regulations. Professional opinion on criteria of acceptability is likely to differ, and the widest possible commentary should be solicited and considered by the administrator, who will himself be a professional capable of assimilating and constructively

the sound transmission loss (ASTM RECOMMENDED PRACTICE E336), absorption (ASTM, DESIGNATION C423-66, FOR SOUND ABSORPTION OF ACOUSTICAL MATERIALS IN REVERBERATION ROOMS, 1970 ANNUAL BOOK OF ASTM STANDARDS, PART 14, 161 (1970)), sound transmission class (ASTM DESIGNATION E413-70T), and heating and air conditioning equipment (ASHRAE STANDARD 36-62; ARI, *supra* note 163).

¹⁷² Possible techniques available for such preliminary tests are discussed in text *supra* at notes 82 to 85.

¹⁷³ Since the administrator's discretion to deny certification is limited to situations where the NNIC and NC rating standards are not met, there is no issue of delegation of legislative authority. See *Brennen v. George L. Walker Co.*, 105 Misc. 601, 173 N.Y.S. 440 (Sup. Ct. 1948); C. RHYNE, SURVEY OF BUILDING CODE LAWS 15-18 (1960). Cf. BOCA BASIC BUILDING CODE § 109.0 *et seq.* The authority to make rules and regulations to carry out express legislative purposes or to effect the operation and enforcement of a law is not an exclusively "legislative power," but is "administrative in its nature." See, e.g., *Motsinger v. Perryman*, 218 N.C. 15, 9 S.E.2d 511 (1940).

¹⁷⁴ BOCA BASIC BUILDING CODE § 109.3. See also *Id.* § 109.4 (relating to use of identical procedure for amendment or repeal of regulations).

¹⁷⁵ MODERN STANDARD BUILDING CODE § 102.11.

using such reaction. On the other hand, ratification by the legislative body of the municipality (which presumably is not technically proficient in this area) would be a less desirable means of achieving basic goals of rule-making procedure — namely, to seek improvement of proposed technical regulations.

Section XX04.2 *Conformance and Field Testing*

(a) The administrator or his duly appointed assistant shall conduct inspections and tests as may be required under this article. Records of inspections and tests shall be retained so long as the building or structure to which they relate remains in existence. Such records shall be open to public inspection.

(b) The administrator may accept, in lieu of tests under his own supervision, reports of inspection services which satisfy his requirements as to qualifications and reliability. Such reports shall be in writing and shall state in detail the results of all tests in accordance with such reporting procedures as the administrator may require. A responsible officer of such service shall certify that the results reported are true and correct, and that the tests were conducted in accordance with the procedures adopted pursuant to sections XX04.1 (a) and (b). The administrator shall retain a copy of all such reports so long as the building or structure to which they relate remains in existence. Such records shall be open to public inspection.

(c) Measurements which fail by less than two (2) decibels in any octave band to meet a maximum noise criteria rating set forth in section XX03.3, or by less than two (2) rating points to meet any normalized noise isolation class (NNIC) standard set forth in sections XX02.1 through XX02.5, shall be deemed to conform with the requirements of this article.

(d) Within five days after completion of inspections and tests conducted pursuant to section XX04.2, or receipt of reports filed pursuant to section XX04.2(b), the administrator shall certify to the building official that inspections and tests required by this article have been conducted, and that the subject building, addition or alteration either satisfies or fails to satisfy the standards of this article.

COMMENT: The use of private inspection services in lieu of government agencies for the enforcement of a code provision is a well accepted practice.¹⁷⁶ For large and complicated test situations, such

¹⁷⁶ See, e.g., BOCA BASIC BUILDING CODE §§ 108.3, 111.2; NATIONAL BUILDING CODE

as major office buildings, both the administrator and builder may prefer to rely on an independent testing agency which has the manpower and equipment to conduct the necessary measurements. In the acoustical field, there are a few such organizations available (primarily in larger cities) which could provide such supplementary services. So long as such test results meet the administrator's requirements as to reliability, and are conducted and presented in a standardized manner, there should be no objection to their use.

The specifications set forth in sections XX02 and XX03 should be used for design and planning of buildings by architects and engineers. But since planning in acoustics requires a pre-construction prediction of results, and, moreover, depends on not wholly predictable factors, the final products may not meet design expectations. So long as such error does not result in a significant degradation of the acoustic environment, the building should not be penalized. Otherwise, the result could be to require costly post hoc modification in pursuit of marginal benefits. Subsection (c) provides a reasonable margin of error to be applied to the results of performance tests made under this code, following a similar provision of the New York Code.¹⁷⁷

Experience in Europe, where noise specifications have been included in national building codes for many years, has shown that where field tests were conducted following construction, approximately 50-60 percent of the completed structures complied with the noise reduction standards.¹⁷⁸ Around 75 percent of the structures either met the standards or failed by 2 dB or less¹⁷⁹ (the margin of error provided by subsection (c)). Less than 5 percent failed to meet the code ratings by 10 db or more.¹⁸⁰ For those buildings which fail by large margins it is clear that some remedial action should be taken, either in the form of additional work by the contractor, or where corrective measures are not sufficient, perhaps the partial abatement of rent.

§ 103.7. The format of this section, with some editorial changes, follows that of the National Building Code § 103.7, with the exception of an additional record keeping provision parallel to that of section XX04.2(a) *supra*.

¹⁷⁷ NEW YORK CITY, N.Y., BUILDING CODE § C26-1208.1(a).

¹⁷⁸ See Schultz, *Privacy for Apartment Dwellers, Paper X4*, delivered at the 82d Meeting, Acoustical Society of America, Denver, Colo. (Oct. 21, 1971).

¹⁷⁹ See *id.*

¹⁸⁰ See *id.*

Because responsibility for acoustical testing is assigned by this article to an administrator who is not part of the normal building inspection department,¹⁸¹ subsection (d) requires certification and reporting to the building official of compliance or noncompliance with noise control standards. The legal remedies available to the building official — in particular, refusal to issue a certificate of occupancy — could then be utilized to abate nonconformance in the same manner as other code provisions are enforced after inspection by regular building department personnel. Later reinspection with respect to this article would then be conducted by the administrator until full compliance is achieved.

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¹⁸¹ See text *supra* at notes 169-70.

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NOTES

SITE VALUE TAXATION: ECONOMIC INCENTIVES AND LAND USE PLANNING

Introduction

Renewed interest has been expressed during recent years in replacing the present real property tax with a levy based solely upon land value.¹ The current tax on both land and buildings produces suboptimal land-use patterns; by taxing improvements, it penalizes development and discourages intensive property uses. In contrast, the site value tax² removes the financial deterrent to improvements. By taxing land value only, it penalizes inefficient property uses and stimulates redevelopment.

The concept of site value taxation has a long history. The initial concepts are derived from early nineteenth century Ricardian³ economic analysis and the later writings of Henry George⁴ in the 1880's and 1890's.⁵ Georgian analysis was based upon the belief

1 See generally THE ASSESSMENT OF LAND VALUE (D. Holland ed. 1970); LAND AND BUILDING TAXES (A. Becker ed. 1969); Netzer, *Some Alternatives in Property Tax Reform*, in TAX INSTITUTE OF AMERICA, THE PROPERTY TAX: PROBLEMS AND POTENTIALS 386 (1967); Symposium on Property Taxation, Housing and Urban Growth, PROPERTY TAXATION (1970) [hereinafter cited as Symposium on Property Taxation]; Woodruff, *Land Value Taxation: A 1966 Evaluation*, in TAX INSTITUTE OF AMERICA, THE PROPERTY TAX: PROBLEMS AND POTENTIALS 427 (1967).

2 Throughout this Note, the terms "site value," "land value," and "unimproved value" taxation are used interchangeably. Pure site value taxation involves a property tax based solely upon the value of land. Buildings and other improvements to land are not taxed. More broadly defined, the site value concept includes any system which taxes land more heavily than improvements.

3 English economist David Ricardo (1772-1823). See generally E. STOKES, THE ENGLISH UTILITARIANS AND INDIA (1959).

Through the influence of Thomas Malthus and the support of James and John Stuart Mill, the principles of Ricardian analysis were put into effect in several provinces in India. In the 1830's, a cadastral survey of soil quality was made which provided a careful estimate of the amount of rent surplus which could be taken without causing hardship or disincentive. Hicks, *Can Land Be Assessed for Purposes of Site Value Taxation?* in THE ASSESSMENT OF LAND VALUE 12 (D. Holland ed. 1970).

4 American economist Henry George (1839-1897). See generally C. BARKER, HENRY GEORGE (1955); H. GEORGE, PROGRESS AND POVERTY (1911); H. GEORGE, OUR LAND AND LAND POLICY (1871); R. HAIG, THE EXEMPTION OF IMPROVEMENTS FROM TAXATION IN

that land was the most important of the basic factors of production.⁶ Since land was a gift of nature rather than a result of productive labor, George urged that it should not be subject to private ownership. Given this premise, rent gained through the mere occupation of land was an "unearned increment" and, as such, an advisable object of taxation. Taxes levied off such a base would not thwart production unless they exceeded the annual rental value of the land. More importantly, such a levy would "promote equality by denying land owners an unfair monopoly, revive trade by rewarding work and production, and increase wages by giving laborers [in the land freed from monopoly control] the possibility of self-employment as a bargaining lever."⁷ As George explained, the tax on annual land rent would "tend to increase production by destroying speculative rent. If land were taxed to anything near its rental value, no one could afford to hold land that he was not using."⁸

George's single tax recommendation became the most original and comprehensive proposal for tax reform⁹ in the late 1880's, after the breakdown of the uniformity and universality movements¹⁰ in American property taxation. His condemnation of the wealthy and powerful made him a natural rallying point for late nineteenth century reformers concerned with numerous forms of social injustice. His taxation theory reflected much of the political and economic thought of that period.¹¹ In addition, it offered a relatively simple solution to diverse social and revenue difficulties. As Dick Netzer observed in 1965, the site value levy

CANADA AND THE UNITED STATES (1915); W. SMART, *TAXATION OF LAND VALUE AND THE SINGLE TAX* (1900).

5 See Hicks *supra* note 3, at 12. Cf. Symposium on Property Taxation 14, where Professor Manuel Gottlieb suggests that the site value concept emerged some two centuries ago when "the Physiocrats boldly proclaimed . . . that the kingdom of France should depend for finances solely on the taxation of land, then held predominately by aristocratic landholders."

6 Benson, *A History of the General Property Tax*, in G. BENSON, S. BENSON, H. McCLELLAND, & P. THOMSON, *THE AMERICAN PROPERTY TAX: ITS HISTORY, ADMINISTRATION AND ECONOMIC IMPACT* 59 (1965).

7 *Id.* 60.

8 H. GEORGE, *PROGRESSES AND POVERTY* 411 (1911).

9 Benson, *supra* note 6, at 52, 59.

10 See *id.* 52-57; W. NEWHOUSE, *CONSTITUTIONAL UNIFORMITY AND EQUALITY IN STATE TAXATION* 610 (1959).

11 Benson, *supra* note 6, at 61.

which formed the core of George's single tax proposal was presented "not only as a panacea for urban land use but also as a cure for unemployment, a preventative for inflation and a guarantor of perpetual industrial and international peace"¹²

George's ideas evidenced a partial understanding of the relationship between economics and urban land development, but his relatively simple solution spawned intense professional controversy. George's taxation proposals did not receive substantial implementation in the United States during this period, although Pennsylvania enacted a graded tax variation on the land value scheme in 1913.¹³ Following World War I, the academic controversy over the single tax cooled rapidly. The Georgian solution had failed to solve the complex crisis in American taxation and other forms of revenue began to replace or supplement the property tax. By the end of World War II, the impassioned single tax movement in the United States had "mellowed into a modulated advocacy of site value taxation."¹⁴

In contrast, the land value assessment which formed the core of George's single tax enjoyed much greater success in the developing areas of other nations. The Scandinavian system of "land liga"¹⁵ was already in existence when George began his crusade. In 1890 George personally carried the concept of taxation on unimproved value to South Africa, Australia and New Zealand. Permissive legislation for land value assessment was enacted in South Africa, and Johannesburg instituted the plan. From that introduction, the concept spread to Rhodesia and later to the British East African territories, Kenya, Uganda, and Tanganyika.¹⁶

The single tax doctrine also gained popularity in Australia, where conditions in 1890 were similar to those in California dur-

12 D. NETZER, *ECONOMICS OF THE PROPERTY TAX* 197-98 (1965).

13 No. 147, [1913] Pa. Laws, pp. 209, 211. See PA. STAT. ANN. tit. 53, §§ 25891, 25894 (Purdon 1957). The statute required the cities of Pittsburgh and Scranton to assess land and improvement values separately, gradually reducing the millage on improvements until 1925 when this rate was to become one-half of that assessed on land values. See Daume, *A Critical Analysis of the Operation of the Pittsburgh Graded Tax Law*, 148 ANNALS 145 (1930); Harrison, *Housing Rehabilitation and the Pittsburgh Graded Property Tax*, 2 DUQUESNE L. REV. 213 (1964).

14 Woodruff, *supra* note 1, at 433.

15 Hicks, *supra* note 3, at 13.

16 *Id.*

ing the gold rush land boom. The states of New South Wales, Queensland and South Australia enacted taxes based upon unimproved value, and permissive legislation was approved in New Zealand.¹⁷ By 1947, over 90 percent of the area under Australian local government was included in some land value scheme.¹⁸

In 1891, a British Columbia statute opened the way for site value taxation throughout western Canada.¹⁹ Under this law, land and improvements were assessed separately. At local option, the tax on the latter category could range from zero to a 50 percent valuation rate. Throughout the first two decades of the twentieth century, the localities progressively instituted a total exemption of improvements. By 1913, however, the real estate boom of earlier years collapsed and numerous municipalities began the arduous task of increasing their taxation of improvements.²⁰

In recent years, the suggestion that American communities adopt the site value approach has again received support.²¹ Numerous institutional groups have expressed new interest in the tax.²² Hawaii enacted a graded tax variation of the site value plan in the early sixties.²³ Southfield, Michigan has also adopted the site value approach.²⁴

The economic rationale which has led an increasing number of governments to implement site value taxation seems compelling. A comparison of the economic effects of the current property tax system with the effects likely to occur under a site value scheme leads to the conclusion that site value taxation is preferable, especially with regard to the development problems of the deteriorating city core. The more difficult issues, however, are of a practical nature. Can developed land be valued accurately, for example, or will there be legal obstacles to the enactment of a site value system of taxation?

17 See *id.*

18 See Comment, *Municipal Real Estate as an Instrument for Community Planning*, 57 YALE L.J. 219, 237 (1947).

19 [1891] British Columbia Stat. ch. 29, § 121.

20 See Comment, *Municipal Real Estate*, *supra* note 18, at 235-36.

21 Holland, *Introduction*, in *THE ASSESSMENT OF LAND 4-5* (D. Holland ed. 1970). See note 1, *supra*.

22 See Hagman, *The Single Tax and Land-Use Planning: Henry George Updated*, 12 U.C.L.A. L. REV. 762, 770 (1965).

23 See the text accompanying note 174, *infra*.

24 See the text accompanying note 150, *infra*.

After considering the economic rationale for the current property tax and comparing it with the rationale for a site value system of taxation, this Note will consider some of the practical aspects of site value taxation such as public acceptance, methods of valuation, revenue sufficiency, and legal obstacles. Among the most important of the practical considerations is the actual effect of site value taxation upon land use. After a survey of the known effects of site value taxation upon the inner city and urban fringe this Note concludes that the economic pressures generated by the tax must be moderated and directed by zoning and land use planning to reflect contemporary social values and needs.

I. ECONOMICS OF THE PRESENT TAX

In most American jurisdictions, the property tax is levied at an equal rate on both land and buildings. This system of taxation has several important economic effects.

Taxing buildings and other property improvements adds to their total net costs, for overall expenses include ad valorem taxes as well as the actual or implicit interest on the investment.²⁵ Because these taxes increase in proportion to the value of the building, the present system is not economically neutral.²⁶ Rather, the tax on buildings is biased in favor of land uses involving minimal improvements. The result is a burdening effect and a disincentive to more intensive land uses.

This burden on development may be explained as follows. The amount of capital which may be economically utilized on a parcel of land depends upon the expectation of profit, in which the assessment of improvement taxes plays an important role.

²⁵ LAND AND BUILDING TAXES 289 (Becker ed. 1969); Mason Gaffney illustrated the impact of a tax on improvements by calculating its equivalent as a lump sum at the time of construction. He estimated that an annual tax payment of one dollar, continued for 60 years, and discounted at five percent, would have a present value of \$19. An effective tax rate of one percent would thereby be equivalent to a 19 percent tax payable at the time of building. Since few major localities maintain an effective rate as low as one percent, see Thomson, *The Property Tax and the Rate of Interest* in Benson, *supra* note 6, at 111; Comment, *Toward Optimal Land Use: Property Tax Policy and Land Use Planning*, 55 CALIF. L. REV. 856, 862 n.23 (1957); *cf. id.* 863 n.24, the the present discounted tax burden could be a substantial deterrent to investment. Gaffney, *Property Taxes and the Frequency of Urban Renewal*, in NATIONAL TAX ASSOCIATION, 1964 PROCEEDINGS OF THE FIFTY-SEVENTH ANNUAL CONFERENCE ON TAXATION 272-85 (W. Kress ed. 1965).

²⁶ Holland, *Introduction*, *supra* note 21, at 5.

The owner will hold and use his land as long as the return or expected future return exceeds the tax. Similarly, as to buildings or other improvements on land, the owner will use or rent such assets so long as the additional return covers additional costs associated with use, or operating losses are less than losses associated with abandonment. If the return does not cover fixed charges, including the property tax and a return to capital, there will be no incentive for new buildings or other improvements and existing buildings will not be maintained.²⁷

Even if this stage is not reached, development may nevertheless be penalized.²⁸ Less capital will be expended on each site than would have been in the absence of a tax on improvements or in the presence of an economically neutral levy. The degree of site development will be reduced by the economic impact of the improvement tax factor. Concentrated development on a given parcel will be discouraged by the tax while non-intensive land uses will be encouraged.

As a result, the urban sprawl will proliferate, requiring increased public revenues as government services are provided in new geographical areas. The relentless growth of this sprawl fosters two conflicting claims regarding the impact of the property tax on the urban-rural fringe. First, concern is expressed that farmland and open space is effectively being taxed out of existence.²⁹ Developers interested in inexpensive land for subdivision purchase rural farmland near urban centers. As a result, the assessed value of the surrounding farmland or open space is increased to reflect its value in its "highest and best use" as potential residential property.³⁰ The higher tax rates may exceed the land's net income as farm or forest land, thus forcing the owner to sell the property to meet tax obligations.³¹ According to this argument, the rural landowner is overtaxed and, as a result, farm and open space land is converted into other uses at an alarming

27 Comment, *Municipal Real Estate Taxation*, *supra* note 18, at 229.

28 Holland, *Introduction*, *supra* note 21, at 6.

29 See Note, *Property Taxation of Agricultural and Open Space Land*, 8 HARV. J. LEGIS. 158 (1970).

30 McCloskey, *Preservation of America's Open Space: Proposal for a National Land-Use Commission*, 68 MICH. L. REV. 1167, 1170 (1970).

31 See Comment, *Toward Optimal Land Use*, *supra* note 25, at 871.

rate.³² Legislative recognition of this position has led to state laws granting preferential tax treatment to agricultural and open space property.³³

Second, concern is also expressed that some rural land may be underassessed relative to property in the central city and adjacent suburban areas.³⁴ An assessment lag may occur where land values are rapidly changing and the property assessor may be a part time official without professional training. Even where tax rates have begun to reflect the pressures of urbanization, their impact upon the rural landowner may be justified; for the farmer or real estate investor who eventually expects to sell his rural property "may take some solace in the large net profit he will realize on [the] sale . . . at capital gains rates. The property tax is thus said to encourage speculation by underassessment, thereby creating artificial inflation in land prices."³⁵ Lowering tax assessments to aid the farmer may also benefit the speculator, unless some adequate means for distinguishing between the two can be devised.³⁶

Although the present combined tax on land and buildings contributes to the problems concerning open space and the urban sprawl, from a more immediate viewpoint it also influences the

³² See Barlowe, *Taxation of Agriculture*, in PROPERTY TAXATION—USA 93-94 (R. Lindholm ed. 1967); Note, *Property Taxation of Agricultural and Open Space Land*, *supra* note 29, at 159-60.

³³ By late 1970, statutes of this type had been enacted in at least 19 states. For a compilation of the statutes and their provisions, see Note, *Property Taxation of Agricultural and Open Space Land*, *supra* note 29, at 192-96.

³⁴ See Comment, *Toward Optimal Land Use*, *supra* note 29, at 871.

³⁵ *Id.* Support for this position was documented in 1960 as follows: (a) on an average, farms were assessed at 20.2 percent of market value in 1957 in comparison with 22.7 percent for vacant lands, 31.5 percent for non-farm homes and 40.8 percent for business properties; (b) outside Salt Lake City, a bidder offered \$7,000 per acre for property assessed at \$300 per acre; (c) in Westchester County, N.Y., assessments rose 10 percent while land prices doubled and tripled; (d) in Contra Costa County, California, a farmer sold three one-acre lots for \$10,000 each while litigating an assessment increase to \$350 per acre; (e) in San Francisco, a lot on Telegraph Hill assessed at \$3,800 sold for \$60,000. *Today's Taxes Harness the Profit Motive Backwards: They Abet Speculation, but Penalize Development*, HOUSE AND HOME, Aug. 1960, at 138. Presumably, this process of land sales might be different in a perfect property market. For a discussion of the speculator's role in a theoretical or perfect land market, see Elias & Gillies, *Some Observations on the Role of Speculators and Speculation in Land Development*, 12 U.C.L.A. L. REV. 789 (1965).

³⁶ One means of achieving this differentiation may be through provision of a penalty for change once a property has qualified under a use-value assessment statute. See e.g., HAWAII REV. STAT. § 246-12 (1968); MD. ANN. CODE art. 81, § 19 (1969); PA. STAT. ANN. tit. 16, §§ 11941-47 (Supp. 1971).

growth of blighted areas in the central cities. "In the slum, the process of natural renewal by private action has come to a stop, hindered, among other things, by a speculation in land and by the taxation of improvements."³⁷ The present property tax system has hardly been the sole cause of contemporary urban blight. The poor condition of many slum properties is a result of the interplay of numerous variables, *e.g.* poverty of tenants, vandalism, absentee ownership of multiple-unit properties, long-term neglect of premises, and the urban environment created by a concentration of deteriorating properties.³⁸ But the economic effects of the present property tax accelerate the slum process and at a minimum provide a force against redevelopment.

If our blighted areas are to be rehabilitated at a manageable cost to the public, some incentive to private development and redevelopment seems necessary. Yet with the undifferentiated real estate tax in operation, the owner of a well-constructed and well-maintained building is required to pay higher taxes than the land owner who leaves his land vacant or allows his building to decay. The building which is an asset to the area bears the higher tax penalty. As the deterioration of private investment continues, the monetary assessment base in the central city declines, frequently forcing an increase in the tax rate or elimination of essential municipal services.³⁹ Once the tax rate rises,⁴⁰ the disincentive to private investment becomes more meaningful. The housing shortage is made more acute and speculation in centrally-located sites adds to the barrier against natural renewal.⁴¹ Urban decay is spawned at an increasing rate.

During the early phases of this period, increased taxes on buildings tend to be passed on to the tenants through rent escalation.⁴² As long as the market can bear these increased rent levels, the dis-

37 M. RAWSON, PROPERTY TAXATION AND URBAN DEVELOPMENT 28 (Urban Land Institute Research Monograph No. 4, 1961). See Breckerfeld, *How to Stop Squandering Urban Renewal Money*, HOUSE AND HOME, July 1959, at 49; Nagy, *Realtors/Housing: Keys to Our Economic Life*, APARTMENT J., Nov. 1965, at 6.

38 Comment, *Toward Optimal Land Use*, *supra* note 25, at 865.

39 *Id.* 862.

40 See, *e.g.*, M. BECK, PROPERTY TAXATION AND URBAN LAND USE IN NORTHEASTERN NEW JERSEY (Urban Land Institute Monograph No. 7, 1963).

41 See M. Rawson, *supra* note 37, at 11.

42 See Comment, *Municipal Real Estate Taxation*, *supra* note 72; H. BUTTENHEIM, DIFFERENTIAL TAXATION OF LAND AND BUILDINGS 4 (1937).

incentives to private investment may be minimized. In practice, the scarcity of housing caused by speculation and the penalty of a tax on improvements may allow a substantial increase in rent charges. But as maximum rent levels no longer enable owners to achieve the current interest rate on their investments, new building virtually ceases and the maintenance of older structures declines.⁴³ In the most severely depressed areas, operating losses may lead to structure abandonment.

The economics of a blighted area may place acute practical limits on the ability of many owners to maintain their property. As tax rates rise and other operating losses increase, owners face the decision of maintaining their property as a slum, selling it, or demolishing and replacing it. "Many owners may lack the resources required for destruction and replacement. Most owners would probably maintain the property hoping to sell it in the future to a renewal agency at an inflated price."⁴⁴ Even those financially able to renovate their properties may be reluctant to do so without some assurance that other owners in the area would follow suit.

In summary, the existing interrelationship between property taxation and land use patterns has produced numerous suboptimal economic effects in the cities and urban-rural fringe. The non-neutral economic impact of the present tax is biased in favor of inefficient and less-intensive property uses. Even so, the present property tax may still be more appropriate than any available alternatives. Although economic neutrality and distributional equity may be desirable attributes of a tax in an axiomatic sense,⁴⁵ as Professor Daniel Holland explains,

[g]iven the public sector's need for funds, decisions about the tax structure must recognize the responsibility to keep total revenues constant. In other words, to warrant the reduction or removal of a particular tax, we must be able to identify another one — less deleterious in its economic effects — but capable of raising the same amount of revenue as the tax it would replace.⁴⁶

⁴³ See Comment, *Municipal Real Estate Taxation*, *supra* note 18.

⁴⁴ Comment, *Toward Optimal Land Use*, *supra* note 25, at 866.

⁴⁵ Holland, *Introduction*, *supra* note 21, at 3.

⁴⁶ *Id.* 5.

Thus, any inquiry concerning an alternative to the present system must be comparative.⁴⁷ The net advantage of utilizing a new assessment base must be derived. While differing tax options may not be theoretically perfect, they may prove to be more suitable than continued use of the present structure. The following section presents a discussion of the site value alternative to the current property tax.

II. ECONOMICS OF THE SITE VALUE TAX

Contemporary supporters of site value taxation as a substitute for the present property tax make their case by stressing the theoretical neutrality of the former scheme.⁴⁸ Unlike a levy on both land and buildings, a tax based solely upon unimproved land value should be invariant with development decisions. "What was optimal development in the absence of the [site value] tax will remain optimal in its presence."⁴⁹ When compared to the present tax system, however, the practical neutrality of the site value scheme seems questionable. As the following pages explain, land value taxation provides four incentives for increased economic development:⁵⁰ (a) the unburdening of improvements; (b) emphasis on holding-costs; (c) fixed cost effects; and (d) capitalization of property taxes. This section also considers two further aspects of site value taxation. These are the transferability and the equity of the tax.

A. *The Unburdening of Improvements*

By assessing land only, site value taxation eliminates the tax burden on buildings and other improvements. Because the levy is thus constant for all levels of operating outlay and replacement,⁵¹ neither construction nor remodeling is penalized. Because

47 While site value taxation and the present American property tax will be discussed as alternatives, they are in fact only the polar extremes of a broad spectrum of tax possibilities which consist of varying degrees of reliance on each of the bases. Although a government might not wish to adopt pure site value taxation, it might choose to establish a differentially lower tax on improvements vis-a-vis land.

48 Holland, *Introduction*, *supra* note 21, at 6.

49 *Id.*

50 See Becker, *Principles of Taxing*, in *LAND AND BUILDINGS* 24 (A. Becker ed. 1969).

51 Comment, *Toward Optimal Land Use*, *supra* note 25, at 890.

the tax is assessed equally on occupied and unoccupied structures, no artificial burden affects building resource allocation.⁵² Land development corresponds more directly to market developments. Although the tax doubtless increases the burden on land values, the corresponding removal of that burden from improvements should result in a net tax reduction to owners of "efficiently utilized" parcels, *i.e.* where property improvements outvalue land.

B. *Emphasis on Holding-Costs*

By escalating the relative cost of holding unimproved property, site value taxation (demand permitting) encourages more intensive land uses and discourages speculation.⁵³ This holding-cost effect has two aspects: a maximizing insistence impact and a time-persistence or accumulation factor.⁵⁴ The first follows because the strongest pressures for economic development are induced on sites with the largest increase in taxes. Land value assessment is based upon the potential earning value of the property; thus, these sites are also those offering the largest development capacity.

The time-persistence factor is derived from the annually-recurring liability that the American property tax places upon the property owner, regardless of whether his property is used or not.⁵⁵ As the tax rate on land is increased (or correspondingly, the differential rate between land and improvements is escalated) the time-accumulation burden becomes more acute for owners of undeveloped land.

Thus, under a site value scheme, the holder of vacant property is confronted with three choices: (a) leaving the land vacant and bearing the tax; (b) offsetting the tax burden by achieving more efficient site utilization; or (c) selling the land to escape the time-persistence of the tax. As the tax rate increases, the first choice becomes financially untenable and the owner is induced either to develop the property or sell it to someone who will. The owner

⁵² See *id.*

⁵³ Cf. Comment, *Municipal Real Estate Taxation* *supra* note 18, at 230; Davenport, *Theoretical Issues in the Single Tax*, 7 AM. ECON. REV. 1, 15-24 (1917).

⁵⁴ This discussion is derived largely from Becker, *Principles of Taxing*, *supra* note 50, at 26.

⁵⁵ This impact can be distinguished from that in other nations, *e.g.*, England, where taxes are imposed only if the property is in actual use and where the taxes are levied according to the actual or imputed rental income produced. *Id.* 26 n.33.

is thereby introduced to the fixed cost factor of land value taxation.

C. *Fixed Cost Effects of Site Value Taxation*

A fixed cost effect results because the amount of a land value tax bears no relation to the extent of development of any given site.⁵⁶ Rather, since the levy is derived solely from unimproved land value, its amount depends upon the advantages of property location. Because any increase in the tax will be determined only by an increase in land value, the particular land use will not alter total property tax costs; the tax is neutral with reference to development expenses. Average tax costs per unit of improvement will decline as the investment in improvements (presumably spread over more units) increases, thus leading any investor to develop his property to its maximum efficient capacity.⁵⁷

D. *Capitalization of Property Taxes*

Site value taxation affects the capitalization of property taxes in several ways. To facilitate discussion of these effects two assumptions must be made: (a) the parcel involved is unique, so that the buyers have no alternative opportunities; and (b) the rate of the site tax is expected to remain constant. Under these conditions, a purchaser of property will deduct the capitalized value of the tax⁵⁸ from the sale price of the land.⁵⁹ Considered alone, this effect should lower the sale price of the property, regardless of the type of property tax imposed. However, by removing the tax on improvements, site valuation precludes capitalization of future building taxes. This result, coupled with the fixed tax effect noted above, increases the value of sites suitable for the construction of improvements.⁶⁰ The potential increase

⁵⁶ *Id.* 27.

⁵⁷ *Id.* The fixed cost result is not unique to a site value scheme. For example, similar effects could be obtained by freezing existing tax rates or by increasing them by a fixed percentage per year regardless of land use. In both situations, construction of improvements would not lead to an additional tax burden. Symposium on Property Taxation 40-41 (remarks of Henry Aaron and Mason Gaffney).

⁵⁸ See Y. SCHEFTEL, *THE TAXATION OF LAND VALUE* 315 (1916).

⁵⁹ Comment, *Municipal Real Estate Taxation*, *supra* note 18, at 229.

⁶⁰ This potential increase in sale price may be offset by an increase in the supply of available property which may occur as the development incentives accompanying

in sale price is proportional to the degree to which a given parcel will support intensive improvements. Even under a site value scheme, however, capitalization may reduce parcel value if the rate of tax is expected to increase. Because a shift to site valuation will probably require an increase in the land tax rate for many parcels, the overall effect upon the capitalization of property taxes will vary depending upon the capacity of the parcel to support improvements and the amount of any rate increase anticipated in the shift to a site value scheme. Reduction in value ensuing from the capitalization effect should occur with regard to poorly located parcels. But as Professor Arthur Becker asserts, "[t]he fixed cost and unburdening effects . . . will win out over the capitalization and holding-cost effects on land that is strategically located or in great demand for nonlocational reasons."⁶¹

E. *Nontransferable Aspect of Site Value Taxation*

Although the four incentives to development discussed above largely explain the economics of a site value tax, one additional aspect should be noted. A tax on land generally cannot be passed on from owner to tenants.⁶² Because a given site is a capital resource incapable of duplication, the land owner will lease his property for the maximum possible price and should receive this price despite the imposition of taxes. Theoretically, this is because

. . . the supply cannot be increased, and since there is no question of cost of production, the change in price will be effected only through a change in demand. Now if the demand for the site increases to such an extent that the ground rent not only covers the rent but also leaves a profit in addition, the tax cannot be shifted to the lessee. For the price would have been the same without the tax, since the demand of the lessees is not affected by a tax on the lessor. The ground owner will simply get less net return.⁶³

Similarly, if demand for the site declines, the corresponding de-

the site value tax force owners of prime properties to either develop them or sell them to someone who will.

⁶¹ See Becker, *Principles of Taxing*, *supra* note 50, at 25.

⁶² See D. RICARDO, *PRINCIPLES OF POLITICAL ECONOMY* 221-24 (1817); Comment, *Municipal Real Estate Taxation*, *supra* note 18, at 228.

⁶³ E. SELIGMAN, *THE SHIFTING AND INCIDENCE OF TAXATION* 281-82 (4th ed., 1921).

crease in rental price should preclude the owner from passing on the land tax.⁶⁴

Unfortunately, in some situations this theory does not prevent the site value tax from being passed on to tenants. The principal example is the Indian experience in the nineteenth century. English economist David Ricardo theorized that land value taxation could have no adverse effects upon production because the rent or surplus owned by particularly fertile land is due to the inherent quality of the soil rather than any efforts of the individual cultivator. Because Ricardo based this position upon English socio-economic conditions in the early nineteenth century, he assumed a sensitive and mobile agricultural class. In such a setting, a farmer would be likely to move on if his landlord attempted to extract a rent which would offer the farmer a lower return for his labor than he could obtain elsewhere or in other occupations. Thus, Ricardo reasoned that even if all the owner's surplus were taken through property taxation, the owner would not be able to increase the rent. Because they would continue to make the normal marginal profits, the farmers cultivating the more fertile soil would nevertheless feel no incentive to discontinue their efforts. Thereby, the tax on the land would fall solely upon the rich property owners and could not be passed on as a disincentive to the farmer-tenants.⁶⁵

After the principles of Ricardian analysis were put into effect in several provinces in India, the hypothesis that the landlords would be unable to shift the tax burden was seriously weakened. The flaw in Ricardo's analysis was his assumption of a knowledgeable and mobile tenant class. As Ursula Hicks notes, Indian landlords could and did pass on the tax to tenants—ignorant Indian peasants having no knowledge or powers of moving and nowhere better to go. The days of urban drift in underdeveloped countries were still far in the future.⁶⁶

64 Seligman notes that even if the demand remains the same, the tax cannot be transferred. *Id.* For a detailed discussion of the economics involved in calculating the probability that site value taxes will be passed on to the tenants, see Thorndike, *Some Theoretical Aspects of Building Value Tax Burdens on Landowners*, 46 *LAND ECONOMICS* 59 (1970).

65 Hicks, *supra* note 3, at 11.

66 *Id.* 12.

The mobility problems evidenced in India are analogous to those in the crowded central cities of urban America. Due to ignorance, poverty, or the lack of alternative housing, tenants may be unable to move when the landlord passes on a site value tax increase. Although the economic impact of a site value scheme may be strongest in central city slum areas, the tenants in these regions may be least equipped to prevent the landlord from shifting the tax. Moreover, because the incentives to private development are not limited to housing,⁶⁷ the site value tax may only further reduce the limited supply of low cost housing in the inner city area. This result could make it even more difficult for certain tenants to move to alternative locations if the landlord attempted to pass on an increase in the site value tax.

The problem of tax transferability, however, may be limited in scope. For example, transfer of the tax should be more difficult with regard to business properties where increased market knowledge and tenant mobility more closely reflect the conditions initially assumed by Ricardo.⁶⁸ In addition, the redevelopment incentives inherent in a site value scheme should increase the supply of buildings available for rental in the central city. Because these incentives involve both the residential and business markets, the net gain in available buildings over present inner city slum development will depend upon the pattern of site use in the area at the time the new tax is imposed. If the number of parcels available for business rental declines, the previously noted knowledge and mobility factors should minimize any chance that the tax will be passed on to business tenants. If the number of available residences in the relevant market area declines, however, the lack of adequate alternative locations could allow landlords to shift the tax to some tenants. Although an important consideration, the latter danger is minimal in geographical areas where the regional market supply of alternative residential properties is sufficient to allow reasonable tenant mobility. Where this mobility exists in conjunction with an adequate interchange of market information, the market itself should limit any efforts by owners to shift the land tax to residential tenants.

⁶⁷ Symposium on Property Taxation 12.

⁶⁸ See generally Thorndike, *supra* note 64.

F. *Tax Equity*

The equity argument in favor of site value taxation is based upon the belief that land value is not derived from the labor and actions of property owners. Rather, the value of a site is largely a consequence of collective investment, community development, and population growth.⁶⁹ As Henry George explained, "[1] and . . . was not produced. It was created."⁷⁰ Thus, through the natural processes of development, land owners are able to realize substantial "unearned increments." Proponents of the site value system observe that community taxation to recapture these "wind-fall" amounts is entirely appropriate.⁷¹ The community, rather than individual owners, should reap the benefits of increases in land value which stem from collective action.

This position is particularly compelling in instances where the escalation of land value stems from government financial assistance. Central city slum areas offer a case in point.⁷² Currently these core locations provide the setting for myriad socio-economic problems. Structures are deteriorating and the quality of life is declining. Private redevelopment of these areas has become financially unfeasible. Continued operation of older buildings is often economically unwise. But land speculation may offer strong potential for eventual profit. For if and when government financed urban renewal programs revitalize the area, the improvements in social welfare will be reflected in increased land values. Professor Holland aptly inquires, "[w]hy should not government recapture the increments in land values due not to the outlays or activity of landlords but to public expenditures. A site value tax would do this more directly than the current property tax."⁷³

The equity attributes of a land value system must be balanced, however, by at least one complication. In their purchase prices, most landowners have already paid for at least part of the un-

69 Netzer, *Some Alternatives in Property Tax Reform* in TAX INSTITUTE OF AMERICA, *THE PROPERTY TAX: PROBLEMS AND POTENTIALS* 393 (1967).

70 H. GEORGE, *SCIENCE OF THE POLITICAL ECONOMY* (vol. VI of COMPLETE WORKS) 225 (1911).

71 See Benson, *supra* note 6, at 59-60; Netzer, *supra* note 69, at 393-94; M. Rawson, *supra* note 37, at 10.

72 See Holland, *Introduction*, *supra* note 21, at 6 n.3.

73 *Id.* 7 n.3.

earned increment in land value.⁷⁴ Limiting taxation to site value *increments* would avoid expropriation of past increases in property worth which may have been previously paid for by new owners. But any improvement in fairness resulting from an increment-only system might be insignificant in relation to the overall increase in equity offered by a total site value scheme. The "economic advantages of land value increment taxation are likely to be marginal ones."⁷⁵ "By and large," the site value equity argument "makes sense."⁷⁶

III. PRACTICAL ATTRIBUTES AND DETRIMENTS OF SITE VALUE TAXATION

As Dick Netzer states, "[i]n theory, there are few if any legitimate economic arguments against site value taxation."⁷⁷ The tax is said to be "neutral" with reference to land use decisions. But because the present property tax tends to discourage improvements, implementation of a land value scheme would provide incentives to development and more efficient land use. In some

⁷⁴ An important issue is defining the extent of the interest of present equity holders in any long term enrichment of land values. Economics professor Manuel Gottlieb warns:

[W]e are dealing with billions of dollars of property which it is proposed to shuffle from one set of owners to another. . . . The last report of the Douglas Commission shows that the worth of land now runs at half a trillion dollars, but proposals to deal with this greatly enriched body of land are confused because the land is no longer owned in the main by those who sat by and watched increments rising.

If we had, as the English landholding system tended to be, a system of vested entail . . . if we had the Hawaiian situation of large concentrated landholdings tied up in trust, why then . . . the equity case comes up differently.

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The site value approach is open to more general criticism on equity grounds because the tax is not levied according to the volume or cost of the municipal services provided to a property. The present property tax on both land and buildings may also be deficient in this regard. In many cases, however, the building tax factor may be related to the amount of services supplied to a given site. For example, although a property with extensive improvements may need more fire and police protection and access routes than a minimally developed parcel, the building tax factor on the former property will also be higher than that on the parcel with less extensive improvements.

⁷⁵ Netzer, *supra* note 69, at 396.

⁷⁶ *Id.* 394.

⁷⁷ *Id.* 393.

areas, these inducements might be highly valuable. In other sections, however, the pressure for development and more efficient land utilization might be inappropriate. Thus, the economics of the tax must be analyzed with reference to its area of expected application. In addition, the operational difficulties of implementing the new scheme must be considered. These factors are among those discussed in the following section on the attributes and detriments of a site value tax system. The analysis studies the relationship of a land value tax scheme to six broad areas: (a) public acceptance; (b) valuation and administration; (c) revenue yield; (d) legal barriers to implementation; and (e) land use.

A. *Public Acceptance*

Public acceptance of the land value tax is well established in both Australia and New Zealand.⁷⁸ In Victoria and South Australia, local communities may decide by plebiscite whether to be taxed on site value only or on an assessment scheme based upon both land and buildings. These plebiscites are usually preceded by studies which advise each taxpayer of his financial burden under the alternative systems. "Hundreds of plebiscites have been held and the overwhelming number have favored land value taxation. Virtually no communities have changed back to systems involving land and buildings."⁷⁹ Summarizing the 1964 interview responses of Australian and New Zealand officials, L. L. Ecker-Racz notes that "a very substantial majority expressed themselves in favor of the unimproved capital value system, and a significant number as strongly in favor of it."⁸⁰

Popular acceptance of site value taxation has also been recorded in other nations. Commenting on taxpayer approval of the land value scheme introduced in 1957 in Jamaica, Professor Holland notes that "most people have been reasonably satisfied with the unimproved value system."⁸¹ The results of five area case

⁷⁸ Woodruff, *Land Value Taxation*, *supra* note 1, at 435.

⁷⁹ *Id.* 436.

⁸⁰ Woodruff & Ecker-Racz, *Property Taxes and Land-Use Patterns in Australia and New Zealand*, in *LAND AND BUILDING TAXES* 180 (A. Becker ed. 1969).

⁸¹ Holland, *A Study of Land Taxation in Jamaica*, in *THE ASSESSMENT OF LAND VALUE* 273 (D. Holland ed. 1970).

studies conducted in six nations show "considerable popular support for the various land tax policies."⁸²

Land value taxation has been less well received in some North American experiments. The collapse of the scheme in western Canada during the early decades of this century led to popular opposition. Although public acceptance of the Pittsburgh graded tax plan has been amply recorded,⁸³ the scheme has also been roundly criticized.⁸⁴

Leaving aside skepticism concerning realization of the expected benefits of a site value tax, popular disapproval generally results from the following effects: (1) the disquieting problems of implementing a major institutional change in the present revenue base; (2) the adverse financial impact of the tax on speculators and owners of under-utilized land; and (3) the concern that economically efficient land use may be inappropriate in areas where development should not be encouraged. Although popular opposition to a land value tax may be nurtured by these difficulties, broad experience indicates that popular support for the tax can be gained. Nevertheless, the factors supporting public disapproval must be minimized. Adequate consideration of the fiscal policies linked to these points requires an analysis of the valuation problems posed by a site value scheme.

B. *Valuation and Administration*

Strong controversy exists over the relative merits and problems of administering a tax on land value. Although proponents of the tax admit that serious difficulties may arise in factoring out site values from improved properties, they assert that this minor difficulty is outweighed by overall administrative simplicity.

⁸² Becker, *Conclusion*, in *LAND AND BUILDING TAXES* 294-95 (A. Becker ed. 1970). The six nations were Australia, Chile, Columbia, Jamaica, New Zealand, and the United States (California water irrigation districts).

⁸³ See, e.g., *COMMITTEE ON TAXATION OF THE CITY OF TORONTO, REPORT RE SINGLE TAX* 15, 40-41 (1923) (remarks of tax assessors and others from Pittsburgh and Scranton); Harrison, *Housing Rehabilitation and the Pittsburgh Graded Property Tax*, 2 *DUQUESNE L. REV.* 213 (1964); Richmond, *The Theory and Practice of Site Value Taxation in Pittsburgh* in *NATIONAL TAX ASSOCIATION, 1964 PROCEEDINGS OF THE FIFTY-SEVENTH ANNUAL CONFERENCE ON TAXATION* 259-71 (Kress ed. 1964).

⁸⁴ See Daume, *A Critical Analysis of the Operation of the Pittsburgh Graded Tax*, 148 *ANNALS* 145 (1930); cf. Watson, *THE CITY REAL ESTATE TAX IN PITTSBURGH* 33 (Univ. of Pittsburgh, Bureau of Business Research 1934).

Several methods might be used to determine initial land value: (1) market comparison; (2) land residuals; (3) development or anticipated use; (4) allocation.⁸⁵ The market method relates comparative sales data to the land being valued, thus requiring sales of at least some unimproved properties. Woodruff asserts that these initial figures can be gained from the "fairly numerous sales of unimproved property, or of property the sale of which is speedily followed by demolition to permit more extensive improvement."⁸⁶ In the absence of sufficient sales data, values can be derived from "land residual" calculations. This technique capitalizes into value the residual income imputable to the land. This income is calculated from an actual or hypothetical new and "proper" building improvement. Thus, the method is based upon the principle of highest and best use. In sections where parcels are generally underused, site value may be obtainable only through this technique. However, the success of this method depends upon acquisition of detailed information concerning investor-expectation, economic rent, and economic expenses.

The development or anticipated-use method is similar to the residual system. But site value is calculated not from income potential; rather, it is derived from the projected selling cost of the hypothetically improved site, less the cost of its improvements. This technique is particularly useful in valuing undeveloped property. The controversial allocation method utilizes the ratio relationship between building and land value. Although complex calculations are necessary, the result tells the assessor the portion of a total sales price which should be assigned to the value of a given lot.⁸⁷ As Professor Paul Downing demonstrates, systematic multivariate analysis can also be used to estimate residential land values.⁸⁸

Once established, site values for a region can be mapped. Land value for parcels for which no information is available can be interpolated from known benchmarks. Accumulation of addi-

85 Back, *Land Value Taxation in Light of Current Assessment Theory and Practice*, in *THE ASSESSMENT OF LAND VALUE* 37 (D. Holland ed. 1970).

86 Woodruff, *supra* note 1, at 434.

87 *See id.* 43-47.

88 *See generally* Downing, *Estimating Residential Land Value by Multivariate Analysis*, in *THE ASSESSMENT OF LAND VALUE* 101 (D. Holland ed. 1970).

tional data increases the sophistication and usefulness of the map. As Donald Beach notes, the "compilation of information regarding value is only limited to the degree that the person preparing such maps is restricted by time or lack of initiative."⁸⁹

The cadastral map should disclose individual discrepancies resulting from assessment error or political favoritism. More importantly, because buildings and other improvements would not be valued, professional staff requirements might be lower and less expensive than under the present system. Although the present ratio of assessing effort applied to buildings versus land varies, in most urban jurisdictions 60 percent or more of the available staff time is devoted to building valuation.⁹⁰

Opponents of the tax scheme allege that accurate determination of site value is highly difficult. When the only sales in a wide area involve developed land, it may be almost impossible to separate site value from the combined worth of land and improvements. Dick Netzer observes that valuation of land only is not likely to be easier than the present system, "if only because there are fewer market sales of unimproved sites than of improved sites to use as a test of assessment quality."⁹¹

Improved parcels which would be more valuable without the improvement would raise particular difficulties. Under some valuation systems, the combined effect of high demolition cost and low building value could reduce the value of a site to zero or a negative figure. This possibility prompted one note writer to observe that perhaps "old buildings should receive an unearned decrement."⁹²

On balance, assessment of land value seems feasible in both theory and practice. Although difficulties in initially establishing site values would arise in a transition from the present system, the use of land maps, interpolation, and allocation systems should simplify later administration. In 1965, a Council of Mayors study

⁸⁹ Beach, *Preparation and Use of Land Value Maps* in THE ASSESSMENT OF LAND VALUE 84 (D. Holland ed. 1970).

⁹⁰ See Back, *Land Value Taxation*, *supra* note 85.

⁹¹ Netzer, *Some Alternatives In Property Tax Reform*, *supra* note 69, at 395. Certainly the most difficult assessment problems must arise under the Pittsburgh or Hawaiian graded or differential tax scheme.

⁹² Comment, *Toward Optimal Land Use*, *supra* note 25, at 892.

group appropriately summarized the feasibility of the scheme, while noting the need for competent assessment personnel:

The history of the land value tax does indicate that site values can be determined with an acceptable degree of accuracy if the task is performed by experts as it is almost universally where site value taxes are used extensively. Site value assessing, however, is not a task to be taken by poorly trained, inexperienced amateurs such as some American jurisdictions still use.⁹³

C. *Revenue Sufficiency*

Even if site value can be calculated with reasonable accuracy, the elimination of a tax on improvements would lead to an appreciable reduction in the total tax base. If the total government spending supported by the tax base remains constant or increases, the rate of taxation would have to be escalated. The difficult question is whether such an increase could raise the required public revenue without becoming confiscatory.

Several factors resulting from the untaxing of buildings should justify an increase in the tax rate under a site value system. In many areas, land is presently underassessed, thus warranting taxation at full worth under a site value scheme.⁹⁴ Moreover, removing the tax on improvements would increase economic ground rents by an amount equalling the loss of building taxes. Use of a site value tax stimulates growth and development expectations, thereby adding to the portion of the tax base attributable to land value increments. The equity of any increase in taxes must also be considered. Because a site value tax is generally not passed on to tenants, it falls wholly upon property owners.⁹⁵ Further, because land ownership is largely concentrated in wealthier classes, the tax is progressive. Thus, less reason exists for limiting any increase in tax rates.⁹⁶

Mason Gaffney notes that the sufficiency of land as a revenue base depends upon the factors which enter into the calculation

93 U.S. COUNCIL OF MAYORS, *LAND VALUE TAXATION: A STAFF STUDY 10* (1965).

94 Gaffney, *Adequacy of Land as a Tax Base*, in *THE ASSESSMENT OF LAND VALUE* 167 (D. Holland ed. 1970).

95 But see text accompanying notes 65-68 *supra*.

96 See Gaffney, *Adequacy of Land as a Tax Base*, *supra* note 94.

of site value. In arid regions, water rights may be worth more than land surface.⁹⁷ Utility privileges, easements, rights to emit pollutants, and shipping routes all affect land value and should therefore be taxed and assessed. The use of certain economic indicators to calculate the expected revenue loss from site value taxation may also lead to misleading results. The book value of corporate investment properties seldom reflects true economic-rental value.⁹⁸ Similarly, the contract rent reflected in national income accounts is defined differently than the economic rent used to measure the impact of a site value levy.⁹⁹

Perhaps most important, land value taxation has provided adequate revenues in operation. Sydney, Australia, and Johannesburg, South Africa, both use the system.¹⁰⁰ Each city has been able to finance municipal needs without instituting a confiscatory tax. In both cities, land values remain high.¹⁰¹ In Pittsburgh, the graded tax system led to a rate in the late 1960's of only 1.6 percent.¹⁰² Although evaluation at the present time is inappropriate, Hawaii's recent shift to a graded tax has hardly destroyed land values.¹⁰³

Other analysts contest the suggestion that a site value system would provide an adequate revenue base. Dick Netzer notes that some calculations suggest that the present yield of property taxes on nonfarm property appreciably exceed the total rental value of privately owned nonfarm land. Thus, he concludes that "even a 100 percent site value tax might not yield enough to fully replace the existing property tax [on real property]."¹⁰⁴ Plunkett asserts

97 *Id.* 181.

98 *See id.* 160-67.

99 *Id.* 159.

100 *Id.* 157.

101 *See Archer, Market Factors in the Redevelopment of the Central Business Area of Sydney, 1957-66, THE VALUER, Apr. 1968, at 3-19; Jo'burg Builds on More than Gold, BUSINESS WEEK, Feb. 15, 1969, at 88-92.*

102 Gaffney, *Adequacy of Land as a Tax Base, supra* note 94, at 158.

103 *See id.*

104 Netzer, *supra* note 69, at 395. Netzer's comments on this matter are particularly instructive because he generally supports site-value theory. In 1971, he observed: "Land values rise mostly because of other people's investment, community development and population growth, not because of actions by individual owners. The community as a whole creates the unearned increments of value, and it has every right to recapture them by taxation." *Trying to Change an Unfair Tax, TIME, May 3, 1971, at 82.*

that by eliminating improvements from taxation, the land value tax would remove 75 percent of the tax base and cause a tremendous increase in rates.¹⁰⁵ The Rawson study of Burnaby, British Columbia, also suggests that a site value system would result in a substantial rate escalation.¹⁰⁶

Although the increased equity and economic rents associated with the land value tax may justify these increases, recent opposition to the escalation of tax rates under the present system must be considered. As Rothenberg reported in 1968, "[a] highlight of legislative sessions in 1966 and 1967 was the widespread concern over rising property taxes. In the past five years, more than half of the states have passed laws to provide property tax relief, for all taxpayers or for . . . senior citizens."¹⁰⁷ Substantial rate increases spawned by a site value tax might lead to implementation of hardship and other exemptions. As in Australia and Jamaica, these exemptions would weaken the economic impact of the tax on urban land patterns. In addition, serious popular opposition to the tax might result from the high rates, the politically motivated exemptions, or both.

On balance, the questionable adequacy of land as a tax base seems to be the most serious obstacle to the implementation of site value taxation in this country. Neither adequacy nor inadequacy of yield has been definitely shown.¹⁰⁸ Opponents of the site value scheme offer strong practical evidence to suggest that elimination of improvement taxation will destroy the tax base and escalate rates. Proponents contest these figures and suggest that the equity of a land value tax mitigates the impact of rate increases. In addition, they observe that for tax purposes land is presently undervalued, due to low assessment percentages and the failure to consider complex external variables.

Because of the importance of property tax revenue to contemporary urban governments, additional research into the financial

105 See Comment, *Toward Optimal Land Use*, *supra* note 25, at 892 n.122.

106 See generally M. Rawson, *supra* note 37; Comment, *Toward Optimal Land Use*, *supra* note 25, at 892 n.122.

107 Rothenberg, *Recent Trends in State Taxation*, in COUNCIL OF STATE GOVERNMENTS, *THE BOOK OF THE STATES 1967-68* (E. Smothers ed. 1968).

108 Compare Gaffney, *Adequacy of Land as a Tax Base*, *supra* note 94, at 157 with J. HEILBRUN, *REAL ESTATE TAXES AND URBAN HOUSING* 150-54 (1966) and D. NETZER, *ECONOMICS AND URBAN PROBLEMS* 198 (1970).

adequacy of land value taxation seems essential. Particularly, proponents of the scheme must demonstrate that the projected increase in tax equity and economic rent will prevent the increased rates from being politically untenable or confiscatory. Additionally, they must show that an assessment system can be devised which will accurately reflect the numerous external variables said to affect land value. Finally, supporters of site value taxation must demonstrate the viability of a land tax base during a period of economic instability or declining property values. Although failure of the Canadian land value tax may have been due to several causes, the collapse of the real estate boom in the 1910's certainly contributed to its demise.¹⁰⁹

D. *Legal Obstacles to Site Value Taxation*

Assuming that the theoretical adequacy of a site value tax can be demonstrated, legal problems may still prevent its enactment in many states. The following areas pose legal obstacles to the implementation of site value taxation in certain jurisdictions: (a) constitutional uniformity clauses; (b) legal definition of land; (c) constraints upon assessment methods; (d) tax rate limits; and (e) debt limitation laws.

1. Uniformity Obstacles

Because it permits tax exemption and reasonable classification, the equal protection clause of the United States Constitution does not bar land value taxation.¹¹⁰ But the exemption of buildings from taxation would conflict with the uniformity clauses found in numerous state constitutions.¹¹¹ In 1959, Newhouse reported that 43 of the then 48 states had some form of uniformity requirement in their constitutions.¹¹² Professor Hagman states that the provisions in 16 of those states would "prevent the accomplishment of land-value taxation by exemption of buildings."¹¹³ Differential

¹⁰⁹ See Comment, *Municipal Real Estate Taxation*, *supra* note 18, at 235-36.

¹¹⁰ See W. Newhouse, *supra* note 10, at 601-08. This presumes that any increases in tax rates would not be an unconstitutional taking of property.

¹¹¹ Hawaii's graded tax scheme did not raise uniformity problems because its constitution contains no such restrictive clause. Similarly, the Pittsburgh graded tax was passed under a very liberal uniformity provision. See Hagman, *supra* note 22, at 772.

¹¹² W. Newhouse, *supra* note 10, at 3.

¹¹³ Hagman, *supra* note 22, at 771.

or graded taxation of land and buildings would be prohibited in 23 of the states.¹¹⁴

However, the state uniformity requirements are not insuperable. Constitutional uniformity clauses do not pose as great a barrier to land value taxation in the 1970's as did those in the early 1900's.¹¹⁵ More recent uniformity provisions have generally been more liberal. In addition, the contemporary pressure for open space taxation legislation has spawned new interest in the problems caused by uniformity provisions. Although open-space schemes were held unconstitutional in Maryland¹¹⁶ and New Jersey,¹¹⁷ later statutory¹¹⁸ and constitutional¹¹⁹ attempts in those states were successful. Open space legislation has been barely sustained under constitutional uniformity requirements in Florida¹²⁰ and Oregon.¹²¹ In sum, although the experience with open-space legislation indicates that uniformity provisions can present serious obstacles, it also suggests that careful statutory or constitutional drafting can eliminate these problems.

2. Legal Definition of Land

Because of its exemption of improvements, site value taxation would place new importance upon the legal definition of land. Semantic variation would eliminate tax liability and could destroy the economic impact of the tax. "Most legal definitions of land do not draw a distinction between land and improvements, since land as a general term includes not only the soil but also everything attached to it either by nature or by man."¹²²

As the Australian experience suggests, drafting a precise definition of land may be difficult. In *McGeoch v. Commissioner of*

114 See *id.*; W. Newhouse, *supra* note 10, at 677-78. See, e.g., *City of Houston v. Baker*, 178 S.W. 820 (Tex. Civ. App. 1915).

115 Hagman, *supra* note 22, at 773.

116 *State Tax Comm'n v. Wakefield*, 222 Md. 543, 161 A.2d 676 (1960).

117 *Switz v. Kingsley*, 37 N.J. 556, 182 A.2d 841 (1962).

118 MD. ANN. CODE art. 81, § 19 (1969).

119 N.J. CONST. art. viii, § 1 (Supp. 1969); see N.J. STAT. ANN. §§ 54:4-23.1 to -23.23 (Supp. 1969).

120 *Tyson v. Lanier*, 156 So. 2d 833 (Fla. 1963). See Wershaw, *Ad Valorem Taxation and its Relationship to Agricultural Land Tax Problems in Florida*, 16 U. FLA. L. REV. 521 (1964).

121 ORE. OPS. ATT'Y GEN. 279 (1961).

122 Lynn, *Legal Problems and Obstacles*, in *THE ASSESSMENT OF LAND VALUE* 149 (D. Holland ed. 1970), See, e.g., OHIO REV. CODE §§ 5701.02, 5701.01 (F) (1953).

Land Tax, the Australian High Court held the eradication of prickly pear cactus (which would otherwise have deprived the land of utility and value) to be an improvement.¹²³ Similar oddities have arisen in the United States. Thus, a blast furnace which is realty in Pennsylvania is personalty in Ohio.¹²⁴ An oil well casing may be personalty although the hole in the ground is classified as realty.¹²⁵

The semantic problems are hardly insurmountable. But if needless confusion and litigation are to be avoided, the legal definition of land must be adjusted to site value concepts before such a tax is enacted.

3. Constraints Upon Assessment Methods

Present valuation methods sometimes conflict with the legal assessment standards in certain jurisdictions. "In-use" value may be the practical basis for assessment, although a "market" value standard is required by law. Fair market value may be predicated upon "existing use" or "highest and best use."¹²⁶ Although an elaborate treatment of these controversies is not appropriate here, the probable extension of this difficulty to a land value tax scheme should be acknowledged. Because the assessment basis used may strongly affect the yield and economic impact of the tax, a change in the legal constraints on assessment methods may be required in some communities. In others, the controversy and litigation over the meaning of assessment constraints must be settled before the site tax can be safely enacted.

4. Tax Rate Limits

Many states limit the authority of local governments to levy property taxes. One of the most frequent methods used for this is a ceiling on permissible rates.¹²⁷ As the earlier discussion on ade-

¹²³ 43 Commw. L.R. 277, 36 Austl. Argus L.R. 82 (H.C. 1929).

¹²⁴ See, e.g., *Zangerle v. Republic Steel Corp.*, 144 Ohio 529, 60 N.E.2d 170 (1945).

¹²⁵ See Lynn & Oster, *Real Property Taxation of Farm Lands and Structures*, 17 Ohio St. L.J. 75-88 (1956).

¹²⁶ See *Discussion of Responsibilities for Administration*, in TAX INSTITUTE OF AMERICA, *THE PROPERTY TAX: PROBLEMS AND POTENTIALS* 131-34 (1967); cf. McCloskey, *supra* note 75, at 1170.

¹²⁷ J. Hellerstein, *STATE AND LOCAL TAXATION* 141 (3d ed. 1969).

quacy of yield observed,¹²⁸ implementation of a site value tax would probably require an upward adjustment of tax rates. Thus, in some jurisdictions, a conflict with the rate ceiling might arise.

Forty-three states maintain some form of rate limitation; 21 of these do so through constitutional provision.¹²⁹ Although the Federal Advisory Commission on Intergovernmental Relations has recommended the repeal of constitutional restrictions on local taxing powers,¹³⁰ little change has occurred.¹³¹ Because of increased popular opposition to rising property tax rates,¹³² elimination of these limits under the present system seems doubtful. Although a site value system might avoid conflict with some broad rate restrictions, such as those limiting increases to a percentage of the previous annual levy,¹³³ in other jurisdictions statutory or constitutional amendment would be required.

5. Debt Limitation Laws

Even if the previously mentioned problems can be overcome or avoided, site value taxation may not be feasible under certain state limitations on local government debt. In 1961, the Advisory Commission on Intergovernmental Relations reported that 34 state constitutions included some form of local government debt limitation.¹³⁴

The Commission characterized three types of limits: (1) requirement of a local referendum to authorize bond issues; (2) limitation of debt service tax rates; (3) limitation of indebtedness, expressed as a percentage of the assessed value of the locality's tax base.¹³⁵ The first restriction should not raise special problems

128 See text accompanying notes 85-93, *supra*.

129 Lynn, *Legal Problems and Obstacles*, in *THE ASSESSMENT OF LAND VALUE*, *supra* note 122, at 152; see Howards, *Property Tax Rate Limits: A View of Local Government*, in *PROPERTY TAX—USA 169* (R. Lindholm ed. 1967).

130 See ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS, 1968 LEGISLATIVE PROGRAM 92 (1967).

131 Lynn, *supra* note 122, at 153.

132 See text accompanying note 107 *supra*.

133 Howards, *supra* note 129.

134 ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS, STATE AND STATUTORY RESTRICTIONS ON LOCAL GOVERNMENT DEBT 28 (1961). See generally M. REMMLEIN, *TAX LIMITATION LAWS* (1965) (includes state-by-state summary).

135 ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS, *supra* note 134, at 1.

under a land value system. However, the second provision could pose problems similar to those considered in the earlier discussion of rate limitations.¹³⁶ In addition, this requirement could reduce a community's effective borrowing power. Yet if a land tax is utilized, a higher rate may be necessary to raise the same amount of revenue now gained under the current system. Thus, the ceiling placed upon rate increases by a debt retirement rate limit may reduce the amount of revenue which can be raised specifically for debt service. The third provision may provide the greatest debt limit obstacle to a site value scheme. Because this indebtedness limit is expressed as a percentage of a community's assessed value base, the assessor effectively determines the amount of permissible local government borrowing. Reducing the total assessed value by exempting improvements could severely limit the future borrowing power of a community. In some jurisdictions, reduction of the tax base might be impossible, due to existing debt service obligations.¹³⁷

Local government commentators have urged relaxation of state debt limit provisions. But, as in the case of rate restrictions, modification has been slow. Avoidance techniques have been and will be developed. Even so, unless less restrictive debt limitation clauses are adopted, land value taxation may be barred in many states.

E. Site Value Taxation and Land Use Patterns

As previous discussions concerning the economics of alternative property tax bases have suggested, land use patterns may be influenced by the assessment method used. Thus, cooperation is needed between land use planners and tax policy formulators. Although the idea that taxation should be used to advance community objectives is hardly new,¹³⁸ until recently tax experts and planning personnel have too frequently avoided serious contact with one another.¹³⁹ As a planning instrument, taxation is seldom

¹³⁶ See text accompanying notes 127-133, *supra*.

¹³⁷ See Lynn, *supra* note 122, at 154.

¹³⁸ See, e.g., 1 COOLEY, A TREATISE ON THE LAW OF TAXATION 13 (3d ed. 1903); E. SELIGMAN, ESSAYS IN TAXATION 16-17 (1921).

¹³⁹ See Hagman, *Land Use Planning Through Taxation*, 6 CURRENT MUN. PROB. 345 (1965); Comment, *Toward Optimal Land Use*, *supra* note 76. For an

part of the planner's formal training. Similarly, the tax theoretician is infrequently familiar with the problems of land use development.

The resources of both of these professional groups should be directed toward effectuating an interrelationship between fiscal policy and land-use planning. "It must be accepted that the primary purpose of taxation is to raise revenue. But, along with zoning and subdivision regulations, taxation may be also viewed as an instrument for the promotion of sound urban development."¹⁴⁰

The site value tax offers a ready means of implementing a joint approach to the municipal problems of revenue adequacy and rational land use. The discussion below focuses on the operational effect of this tax in several areas of contemporary metropolitan concern.

1. Slum Areas and Inner City Development

As noted earlier,¹⁴¹ substituting site value taxation for the present system should remove certain financial deterrents to urban renewal. Stimulation of redevelopment and new construction should result. Empirical evidence from several sources generally confirms these theories.

In a study based upon a suburb of Vancouver, Canada, Mary Rawson determined that a site value tax would discourage speculative holding of land by placing a penalty on idle land or property utilized below its economic potential.¹⁴² Although Rawson's hypothetical shift to land value assessment escalated the tax burden of all vacant and poorly used lots, the increase varied according to the development potential of the given site. Because this potential was highest in the central city business districts, the greatest tax increase, and thus the strongest pressure for development, occurred in those areas.¹⁴³ Duplication of this result could

example of a joint taxation and planning approach to a contemporary problem, see Note, *Property Taxation of Agricultural and Open Space Land*, *supra* note 29.

140 M. Rawson, *supra* note 37, at 8. See generally J. PICKARD, *TAXATION AND LAND USE IN METROPOLITAN AND URBAN AMERICA* (Urban Land Institute Monograph No. 12, 1966).

141 See text accompanying notes 48-61 *supra*.

142 M. Rawson, *supra* note 37, at 25.

143 See *id.*

be expected in other urban regions. Although deterioration of inner city sections is frequent today,¹⁴⁴ property in these areas may have the highest site development potential in the region. "Cities, which find themselves in a fiscal crisis because their buildings have gotten so old that they no longer yield very much tax revenue, do have a large [tax] base in the form of land value."¹⁴⁵ If so, the financial pressure for new construction and efficient land use would therefore be most intense in the sections where physical improvement is most needed.

Analysis of the Australian experience is more difficult because "slum property" of the type familiar to most Americans does not exist in that nation.¹⁴⁶ Ecker-Racz states that the Australian land value tax system is only one of several factors contributing to this result.¹⁴⁷ However, local Australian officials interviewed by Ecker-Racz and Woodruff in 1964 disagreed; the substantial majority strongly believed that unimproved value assessment encouraged development.¹⁴⁸ The exemptions enacted following implementation of the tax in Australia indicate that the levy has provided pressure toward development:

In the older parts of almost every city elderly pensioners of limited means found it difficult to retain their homes in neighborhoods where land values were rising as commercial and industrial uses began to supersede single residences. These "hold outs" were noneconomic users in the classic sense, but their strong emotional ties to their residences were a political factor too important to ignore and the hardship exemptions were enacted to enable such owners to stay put.¹⁴⁹

In the United States, the limited experience with land value taxation supports the view that central city development would be encouraged. Southfield, Michigan, a suburb of Detroit, provides one example. Southfield's shift to site value assessment was

144 For a brief analysis of the American slum, see Walker, *Urban Blight and Slums* in C. HAAR, *LAND-USE PLANNING* 412 (1959); Nakagwa, *The Profitability of Slums* in *id.* 419.

145 Symposium on Property Taxation 13 (remarks of Mason Gaffney).

146 Woodruff & Ecker-Racz, *supra* note 80, at 175.

147 *See id.* 179.

148 *See id.* 180.

149 Woodruff, *Land Value Taxation*, *supra* note 1, at 435.

followed by a massive building boom. In contrast, new construction in Detroit lagged far behind.¹⁵⁰ Some caution is necessary in interpreting this result, however, because several other conditions may have contributed to the rapid development in Southfield. Similar building increases were reported in Pittsburgh following the introduction of the graded tax in that city.¹⁵¹ The corresponding repeal of an archaic classification scheme may have aided the stimulation of development.¹⁵² A portion of the increase may also be attributable to a nationwide building boom.¹⁵³ Nevertheless, during the transitional period of the Pennsylvania law,¹⁵⁴ the number of building permits issued per capita in Pittsburgh represented a margin of 25 percent over New York City, 52 percent over St. Louis, 66 percent over Philadelphia, and 238 percent over Baltimore.¹⁵⁵

As these studies indicate, site value taxation encourages development. This impetus for private construction and more efficient land use would have a profound effect on deteriorating central city areas.

The more difficult question, however, is whether this theoretically efficient development would be beneficial in practice. More "efficient" site utilization might lead to higher buildings, greater inner city congestion, and increased social costs.¹⁵⁶ Intensive land use could further discourage open space preservation and low density construction. Because the financial pressures exerted by the tax would not distinguish between desirable low rent housing and undesirable slums,¹⁵⁷ both types of properties would be forced toward more intensive uses. Large lot and horizontal planned-unit development might prove to be financially impractical due to the burden of the site tax. Verticle high rise communities with limited open space would provide more efficient site

150 C. HATTISS, *Transition to Land Value Taxation: Some Major Problems*, in THE ASSESSMENT OF LAND VALUE 229 (D. Holland ed. 1970).

151 See McMahon, *The Operation of the Graded Tax Law in Pittsburgh*, 148 ANNALS 139 (1930).

152 LELAND, *THE CLASSIFIED PROPERTY TAX IN THE UNITED STATES* 174-76 (1928).

153 See Daume, *supra* note 84.

154 1913-1925.

155 TUCKER, *THE SELF SUPPORTING CITY* 101 (1946).

156 Cf. E. SELIGMAN, *STUDIES IN PUBLIC FINANCE* 237-38 (1925); Comment, *Municipal Real Estate Taxation*, 57 YALE L.J. 219, 240 (1947).

157 See Comment, *Toward Optimal Land Use*, *supra* note 25, at 892.

utilization. Conservation of historic architecture would be difficult¹⁵⁸ in areas where only contemporary buildings could draw the rents necessary to meet tax payments and provide a reasonable return on investments.

In addition, as the experiences in India and Canada demonstrate, some deviation may occur from the projected economic effects of the tax. Thus, in India, the land value tax was passed on to the tenants.¹⁵⁹ In Canada, the tax failed to curb land speculation.¹⁶⁰ Either result would be troublesome in any contemporary application of the tax.

The policy questions raised by these economic side effects must be carefully considered. In some regions, the impact of these detrimental results may be insignificant in comparison to the overall benefits offered by the site value scheme. In other sections, safeguards may be necessary to limit the economic effects of the tax.

Site value taxation may not lead to increased congestion in all areas. In some cities, the impetus for more efficient land use would merely discourage the congestion presently resulting from indiscriminate site development. Although the pressure for more intensive property use would stimulate varying degrees of new construction and redevelopment, the assertion that this would lead to massive crowding and high building density is questionable. In most regions, the effect on development would be beneficial, but also moderate. In addition, the reduction in site costs resulting from capitalization of the land tax should make new central city sites available for construction.¹⁶¹ The adverse effect of the tax on open space preservation may also be discounted to some degree. Although private conservation of inner city open space might be financially less feasible, increased tax delinquencies on marginal lands could provide a less expensive source of public land for community purposes.¹⁶² In some instances the adverse impact of the site value tax might be minimized through appropriate legislation. Property tax exemptions could be pro-

158 *See id.*

159 *See text accompanying notes 64-67 supra.*

160 *Comment, Municipal Real Estate Taxation, supra note 18, at 235.*

161 *See id.* 241.

162 *See id.*

vided to eliminate or reduce the financial hardship placed upon private or low-rent housing¹⁶³ and historic landmarks. But this would distort the economic "neutrality" of the levy and could lead to appreciable tax evasion.

If the side effects of intensive development are to be controlled sensibly, comprehensive land use planning and zoning must be implemented to limit and direct the economic effects of the site value tax. A recommendation for combining the attributes of the tax with the benefits of metropolitan and regional planning is considered in the conclusion to this Note. The need for such a joint approach should become more apparent in the following discussion of the effect of the tax on the urban-rural fringe.

2. The Urban-Rural Fringe

In theory, site value taxation should reduce speculation in fringe area property. By stimulating more efficient land use throughout the metropolitan district, the tax should also reduce urban sprawl. The evidence in support of these propositions is encouraging but hardly convincing.

In Burnaby, British Columbia, Mary Rawson found that it is

partly because land in central areas is ill-used or not used that perimeter land is brought into residential use prematurely. That is to say, the presence of ill-used or unused land in Burnaby is a contributing factor to the sprawl problem affecting the predominately rural metropolitan fringe municipalities.¹⁶⁴

Because of the higher development potential associated with inner city sites, the pressure for efficient use resulting from the site value tax should be stronger in central vacant lots than on outlying property. The data from a hypothetical switch to land value taxation in Burnaby confirm this expectation. Rawson calculated that the change would result in "the gradual consolidation of [downtown] commercial frontage and the deflation of peripheral expectations. Both central and peripheral sites should tend to be brought into more rational use."¹⁶⁵

¹⁶³ Similar exemptions have been provided in Australia to enable elderly pensioners to maintain their homes. Woodruff, *Land Value Taxation*, *supra* note 1, at 435.

¹⁶⁴ M. Rawson, *supra* note 37, at 24-25.

¹⁶⁵ *Id.* 25.

Most Australian assessors and real estate investment personnel believe that the site value tax exerts influences which encourage similarly desirable metropolitan development.¹⁶⁶ But Ecker-Racz and Woodruff assert that no "significant visual differences" appear between Australian communities that use the site value system of rating as compared with those that use the traditional property tax.¹⁶⁷ Although this finding may indicate that a tax on unimproved value has less effect on overall urban development than that predicted by Mary Rawson, two factors may explain the Australian experience.

First, in Australia a low percentage relationship exists between the local tax rates and the total amount of improved capital value.¹⁶⁸ Compared with percentages in most urban areas in the United States, Australian and New Zealand rates are low, probably too low to have any appreciable effect upon the pattern of community development. Second, numerous "hardship" exemptions enable certain property owners to escape the financial pressure imposed by the site value tax.¹⁶⁹ Pensioners and owners of some single family residences received exemptions, thus enabling them to retain their properties in areas where increasing multi-family uses have escalated land values. Most Australian states and New Zealand also grant exemptions to metropolitan agricultural land,¹⁷⁰ again to prevent the land from being forced into more intensive uses.

The existence of these exemptions indicates that the site value tax was exerting pressure toward development and presumably more efficient land use. This is also demonstrated by the part played by the tax in breaking up the large Australian estates. Collateral evidence confirming the socio-economic impact of the land tax appeared in the 1911 High Court decision in *Osborne v. Commonwealth of Australia*.¹⁷¹ Osborne alleged that the tax was a social measure, designed to break up large estates, rather than a revenue device. Although the High Court agreed that the tax

166 See Woodruff, *Land Value Taxation*, *supra* note 1, at 436.

167 Woodruff & Ecker-Racz, *supra* note 80, at 173.

168 See *id.*

169 See *id.* 173-74.

170 Several American states have also enacted provisions to reduce the property tax burden on urban farmland. See Note, *Property Taxation of Agricultural and Open Space Land*, *supra* note 29.

171 12 Commw. L.R. 321, 17 Austl. Argus L.R. 242 (1911).

had a social significance far in excess of its revenue value, it upheld the validity of the tax and declined to find it *ultra vires*.

These development pressures do not indicate whether the tax would in fact eliminate premature subdivision and urban sprawl. The studies do suggest that the financial force toward intensive land uses should make inner city property more readily available for development. In theory, this should remove the present scarcity of low priced city land. If additional property becomes available in or near the city, fewer developers should feel financially compelled to leapfrog over strip development areas and subdivide inexpensive rural land. The drive toward more intensive land uses in the central city should remove some of the development pressures currently being exerted in the urban-rural fringe.

Unfortunately, these theoretical expectations have not been supported by sound proof. The Burnaby report and the Australian experience offer some encouragement, but additional studies are clearly necessary.

In contrast, the Burnaby and Australian studies indicate that the tax can force elimination of open-space and agricultural lands near metropolitan areas. Because the present property tax already places heavy burdens on these lands, site value taxation might only increase the financial pressure toward subdivision or development.¹⁷²

Site value taxation would theoretically encourage urban land uses to be most intense in the central city. Although some variances in market demand could occur, the economics of the tax would probably force a linear reduction in use intensity from the inner city to outlying fringe areas. Presumably, no market mechanism would reflect the social need for green belt preservation. As noted in the previous discussion of slum areas,¹⁷³ the economic pressures of the tax would not necessarily correspond with social requirements or the master metropolitan plan.

3. A Recommendation

As the discussion in the two preceding sections suggests, the economics of site value taxation must be modified and directed

¹⁷² See Comment, *Toward Optimal Land Use*, *supra* note 25, at 892 n.121, 893; cf. M. Rawson *supra* note 37, at 17-21.

¹⁷³ See the text accompanying notes 141-163, *supra*.

by a comprehensive land use plan. The attributes of site value economics and regional planning could be maximized by designing tax "zones" which coincide with present land-use zones. By implementing tax sectors based upon land-use and zoning districts, a city could ensure that the site value tax would force only the highest and best market use *permitted* on a given site. Land value taxes would not force intensive development on parcels zoned for un-intensive uses; in contrast, areas zoned for concentrated development would be taxed on a higher assessment basis. Present property taxes force the highest and best use in certain districts. All too frequently, however, this occurs only in fringe and agricultural areas. Although urban sprawl and speculation are stimulated, the tax on buildings stifles development in the central city. Under a site value/land use planning system, the controlled economic pressure of the tax would force development in each sector toward the highest and best use allowed in that zone. Taxation and zoning would thus function concurrently to implement the urban plan.

This is similar to the Hawaii system. Under legislation passed largely in 1961 and 1963,¹⁷⁴ Hawaii formed a statewide Commission which classified property in the state according to four major land use categories.¹⁷⁵ The state tax laws provide that the land

174 *E.g.*, [1963] Hawaii Laws ch. 205, § 2.

175 HAWAII REV. STAT. § 205-2 (Supp. 1970) provides, in part, as follows:

There shall be four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural, and conservation. The land use commission shall group contiguous land areas suitable for inclusion in one of these four major districts. The commission shall set standards for determining the boundaries of each district, provided that:

(1) In the establishment of boundaries of urban districts those lands that are now in urban use and a sufficient reserve area for foreseeable urban growth shall be included;

(2) In the establishment of boundaries for rural districts, areas of land composed primarily of small farms mixed with very low density residential lots, which may be shown by a minimum density of not more than one house per one-half acre and a minimum lot size of not less than one-half acre shall be included;

(3) In the establishment of the boundaries of agricultural districts the greatest possible protection shall be given to those lands with a high capacity for intensive cultivation; and

(4) In the establishment of the boundaries of conservation districts, the "forest and water reserve zones" provided in section 183-41 are renamed "conservation districts" and, effective as of July 11, 1961, the boundaries of the forest and water reserve zones

must be further classified, upon consideration of its highest and best use, "into seven general classes collected in four categories."¹⁷⁶ In assigning the land to one of the general classes, the director of taxation must consider the land use districting established by the state land use Commission, as well as that established by a county in its general plan and zoning ordinances.¹⁷⁷ In valuing a given parcel, the director of taxation considers a variety of factors, including the present use of the property and the use to which it may be put in its respective classification.¹⁷⁸

Following valuation, the local government applies a single tax rate to "net taxable property" for each class of property in category I. Thus, the graded site value tax does affect improved residential, agricultural, or conservation property.¹⁷⁹ For all other classes and categories, however, the building tax factor is lowered

theretofore established pursuant to section 183-41, shall constitute the boundaries of the conservation districts; provided that thereafter the power to determine the boundaries of the conservation districts shall be in the commission.

In establishing the boundaries of the districts in each county, the commission shall give consideration to the master plan or general plan of the county. . . .

176 *Id.* § 246-10. The provision requiring classification reads:

(1) The land in each county shall be classified, upon consideration of its highest and best use, into seven general classes collected in four categories as follows:

Category I

- (A) improved residential;
- (B) agricultural;
- (C) conservation;

Category II

- (D) unimproved residential;
- (E) hotel and apartment;

Category III

- (F) commercial;

Category IV

- (G) industrial.

(2) In assigning land to one of the general classes the director of taxation shall give consideration to the districting established by the land use commission pursuant to chapter 205, the districting established by a county in its general plan and zoning ordinance, use classifications established in the general plan of the State, and such other factors which influence highest and best use; provided that lands, as to which the highest and best use is single-family and two-family residential, shall be classified as "improved residential" as set forth below. . . .

177 *Id.* § 246-10 (d)(2).

178 *Id.* § 246-10.

179 *Id.* § 248-2 (b), (c). *See id.* § 246-10 (d).

gradually over a period of years. After a minimum of ten years, land will be valued at a ratio of 2.5:1 as compared to buildings.¹⁸⁰ The actual period necessary for the graded tax to become fully implemented may be longer due to the governor's power to defer the effective date of each stepwise reduction in the building tax factor.¹⁸¹ The impact of the site value portion of the tax is also moderated by provisions which allow certain lands to be dedicated as open space preserves.¹⁸²

In essence, the Hawaii plan controls the economic pressures exerted by differential site value taxation. It applies the tax only where it will be beneficial. The impetus for development tends to force conformity with the highest use allowed in the urban and rural districts. But because the higher tax on land does not apply to the agriculture or conservation districts, nor to improved residential property, the social and aesthetic uses in these sectors are not endangered by the tax. If site value theory is correct, the intensive use of urban and rural land should eliminate much of the speculation in the agriculture and conservation districts.¹⁸³

The Hawaii plan is far from perfect. Improvements in the urban and rural districts are still taxed, although at a lower rate than land. Even where intensive uses are desirable, therefore, the economic impetus for development is lessened. This approach, however, may be a practical necessity. Yield problems may prevent total elimination of an improvements tax under the Hawaii scheme. As noted previously,¹⁸⁴ reducing or eliminating the tax

180 *Id.* § 248-2 (d). The key provision is subsection (d)(4), which allows a local government to reduce the building factor from 70 percent to 40 percent of the land factor, under certain circumstances.

181 *Id.* § 248-2 (d). TAX FOUNDATION OF HAWAII, ESTIMATED IMPACT OF HAWAII'S GRADED PROPERTY TAX i-ii (1964).

182 *E.g.*, HAWAII REV. STAT. § 246-12 (1968) ("a specific ranching or other agricultural use"); *id.* § 246-34 (exemption from taxation for certain dedicated lands in urban districts). See generally Note, *Property Taxation of Agricultural and Open Space Land*, *supra* note 29.

183 The operation of this theory must be evaluated in the coming decade. Hawaii's ability to maintain the present zoning on agriculture and conservation land should play an important role in determining the potential for speculation. See generally TAX FOUNDATION OF HAWAII, ESTIMATED IMPACT OF HAWAII'S GRADED REAL PROPERTY TAX, *supra* note 181.

184 See text paragraph preceding note 94, *supra*; text accompanying notes 98-109 *supra*. Cf. Hawaii University Legislative Reference Bureau, *Memorandum on Relative Property Tax Burden in Hawaii* (Request No. A-1621 1964).

on buildings decreases the revenue base, thus requiring a corresponding escalation in the tax rate. By limiting the economic pressure of the tax in certain zones, the Hawaii plan reduces the yield of the tax even further. Whether the tax rate in areas zoned for very intensive uses could be raised enough to ensure an adequacy of total yield is a question requiring further study.

The Hawaii approach is also vulnerable to criticism because it fails to clarify fully the relationship between tax zones and land use districts. Additional coordination between tax assessment and planning considerations would probably strengthen the law.

Even with these problems, Hawaiian experience offers a commendable framework for extension. Although the comprehensive statewide zoning system in Hawaii does not exist in most states, the principle of combining site value taxation and land use planning can and should be applied at other jurisdictional levels. As Housing Consultant Perry Prentice asserts:

Today's property tax harnesses the profit motive backward instead of forward. There is not a city in this country that is not making its growth, urban renewal, and redevelopment problems worse by the way it misapplies the property tax to penalize improvements and subsidize the misused land.¹⁸⁵

Land value taxation offers substantial advantages over the existing system. But the beneficial economic forces spawned by a site value tax will be maximized only if they are directed and controlled through effective zoning and land use planning.

Conclusion

In summary, the economics of site value taxation seem preferable to those of the present property tax on land and buildings. The practical questions raised by the implementation of a site value taxation system, however, are more difficult to answer. One troubling issue is whether the scheme will generate sufficient revenue. But the most important concern is the actual effect of the tax on land use patterns. The evidence indicates that the development pressures generated by the site value system offer inner city areas the benefits of new construction and privately-

¹⁸⁵ *Trying to Change an Unfair Tax*, TIME, May 3, 1971, at 82.

financed urban renewal. The danger is that these same pressures will further increase the concentrated development patterns presently found in central city regions. Moreover, the advantageous effect of the site tax on the urban-rural fringe has not been convincingly demonstrated. Given these consequences, more thought must be given to the desirability of qualifying the forces generated by a site value tax in order to reflect contemporary social values and needs.

Although many of the economic effects of the tax are desirable, land use planning and zoning must also be used to shape the future of a community using a site value system. The plan presently employed in Hawaii offers the best model in this regard. By applying the present tax on both land and buildings in conservation and agricultural regions, the Hawaii approach minimizes the potential conflict between site value development incentives and the master zoning plan. At the same time, the graded tax encourages efficient property utilization in areas zoned for intensive land use. Thus, the economic attributes of site value taxation are balanced with the social and ecological needs of a complex urban environment.

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ALIMONY TAXATION—THE CONTINGENCY DOCTRINE CHALLENGED

Introduction

Sections 71 and 215¹ of the Internal Revenue Code of 1954 provide basically for the taxability to the wife and deductibility by the husband of periodic alimony and separate maintenance payments made in discharge of a legal obligation. Although neither the statute nor the Treasury Regulations thereunder define the term "periodic payments," the statute does state that installment payments of a principal sum extending ten years or more shall be treated as periodic. The purposes underlying this scheme of taxation are to provide relief for a limited class of alimony paying husbands, *i.e.*, husbands making alimony payments out of current income, and to produce a uniform and therefore equitable pattern of federal income taxation by removing dependency on state law variations in determining the tax liability of alimony paying or receiving spouses. The introduction of the contingency doctrine as an alternate test for the periodicity of alimony payments has frustrated the realization of these statutory purposes first by extending tax relief beyond the limited class for whom it was intended and second by importing the variations of state law back into the determination of the husband and wife's income tax liability.

The following pages are devoted to exploring the history of section 71, including a sounding of the Congressional intent behind it, and to demonstrating the inconsistencies between the contingency doctrine and the purposes of making alimony payments taxable to the wife and deductible by the husband. Finally, a proposal is discussed for harmonizing section 71 with its original rationale.

¹ INT. REV. CODE OF 1954, §§ 71, 215. Section 71(a)(2) and (3) are new in the 1954 Code; § 71(a) (1) and (c) and § 215 are similar to the original alimony taxing provisions contained in Int. Rev. Code of 1939, § 22(k), (u), 56 Stat. 816, 817, respectively.

I. HISTORY OF ALIMONY TAXATION

A. Pre-1942 Practice

The question whether monthly alimony payments made directly to a wife must be included in her taxable income under the Revenue Act of 1913² was squarely presented for the first time in *Gould v. Gould*.³ The Court held that the payments arose from the husband's natural and legal duty to support his wife and did not constitute income to her since such payments were in the nature of an equitable division of the husband's estate. One defect in this solution went unnoticed until the *Gould* rule was combined with the dramatic upswing of federal income tax rates at the outset of World War II.⁴ Some husbands were faced at that time with a situation where alimony payments and income taxes consumed more than 100 percent of their current net incomes, an obviously harsh price to pay for their misalliances. Another problem raised by the Court's decision in *Gould* was how should payments from an alimony trust be taxed?⁵ Should alimony trusts fall within the sweep of the statutory scheme under which a beneficiary is taxed on income from the corpus of the trust?

The confusion surrounding the proper tax treatment of alimony trusts was apparent in the fact that within a period of one

² 38 Stat. 114, 167 (1913) which provides in pertinent part:

Section II.B. That subject only to such exemptions and deductions as are hereinafter allowed, the net income of a taxable person shall include gains, profits, and income derived from salaries, wages, or compensation for personal services of whatever kind and in whatever form paid, or from professions, vocations, business, trade, commerce, or sales, or dealings in property, whether real or personal growing out of the ownership or use of or interest in real or personal property, also from interest, rent, dividends, securities, or the transactions of any lawful business carried on for gain or profit, or gains or profits and income derived from any source whatever, including the income from but not the value of property acquired by gift, bequest, devise, or descent. . . .

³ 245 U.S. 151 (1917).

⁴ In 1934, the highest rate bracket for the individual surtax on net income of \$50,000 to \$56,000 was 30 percent; however, by 1944, the rate had climbed to 75 percent.

⁵ For a succinct discussion of the confusion caused by the *Gould* case on the issue of alimony trusts, see Rosenkranz, *Divorce and the Federal Income Tax*, 16 U. FLA. L. REV. 1, 2 (1963) [hereinafter cited as Rosenkranz].

year the Treasury ruled that income from an alimony trust was taxable to the husband,⁶ and then flatly contradicted itself in ruling that such income was taxable to the wife.⁷ Then, after 17 years of uncertain treatment by the courts a clear conflict arose between the Eighth Circuit Court of Appeals in *Douglas v. Willcuts*⁸ and the Seventh Circuit Court of Appeals in *Helvering v. Schweitzer*.⁹ On the theory that income from an alimony trust satisfies a clear obligation which the husband is bound to meet, the *Douglas* case held that the husband received a direct economic benefit for which he must be taxed. The opposite result in the *Schweitzer* case paved the way for the Supreme Court to step in and settle the long-standing controversy.

Reaffirming its disposition of *Gould v. Gould*, the Court held in *Douglas v. Willcuts*¹⁰ that the constitutionality of taxing the husband rather than the wife on income from an alimony trust was not open to challenge. In *Douglas*, the husband had created an irrevocable trust to provide payments to his wife in lieu of alimony and dower, and he agreed to make up any deficiency below a specified floor. On these facts, the Court held that the income flowed to the husband as surely as if he had first received the payments himself, disbursing them in turn to the wife.¹¹

But the *Douglas* decision could not supply a final answer for the tax treatment of alimony trust payments because the federal income tax was made to depend upon the variable input of state law. The trust income in the *Douglas* case was taxable to the husband since under state law the alimony trust had not released

6 O.D. 399, 2 CUM. BULL. 156 (1920).

7 O.D. 1092, 5 CUM. BULL. 190 (1921). The Commissioner soon reverted to his earlier position that the husband was the true trust beneficiary and should be taxed on its income. I.T. 2628, XI-1 CUM. BULL. 34 (1932). Just when it seemed certain that the husband would bear the tax burden, the courts began to find conditions to qualify his tax liability; e.g., the husband should be taxed only if the trust was established as a collateral security for alimony payments and was created under the compulsion of a specific obligation. Frank B. Turner, 28 B.T.A. 91 (1933), *aff'd per curiam*, 71 F.2d 1018 (2d Cir. 1934).

8 73 F.2d 130 (8th Cir. 1934).

9 75 F.2d 702 (7th Cir. 1935).

10 296 U.S. 1 (1935).

11 *Id.* For an excellent discussion of the ramifications of this decision within the pre-1942 context, see Note, *Taxing Income Received from an Irrevocable Trust in Satisfaction of the Settlor's Legal Obligations: The Aftermath of Douglas v. Willcuts*, 52 HARV. L. REV. 804 (1939). The subject is also treated in Bloomenthal, *Income Tax Aspects of Alimony Trusts*, 17 TAXES 455 (1939).

him from his legal duty of support; it merely served to provide for the gradual and systematic discharge of that obligation imposed by local law. The inequity accompanying this involuntary dependency on state law was that, while the husband in *Douglas* was taxed on such alimony trust income, the husbands in neighboring states who established identical trusts would escape taxation on their income simply because their legal duties of support were extinguished *in limine*.¹² This problem was clearly recognized by the end of the 1930's and had become intolerable by the time the 77th Congress was convened.

B. *The Revenue Act of 1942*

The Revenue Act of 1942¹³ contains the first attempt at a statutory solution for the taxation of alimony payments. As is shown by its legislative history, the problems which concerned Congress were the need for relief for husbands paying alimony out of current income and the need to restore uniformity among federal income taxpayers whose economic situations were similar.

Appearing before the House Ways and Means Committee in 1942, Randolph Paul, who was then an advisor to the Secretary of the Treasury, explained the need for taxing alimony to the wife and allowing a cognate deduction to the husband:

Generally speaking, alimony payments are not subject to tax

¹² The *Douglas* case demonstrates the central problem in permitting local law to determine federal income taxation: it destroys uniformity in *national* taxation among similarly situated taxpayers for the sole reason of accidental differences in geographical location. It is important to distinguish this problem from the case of federal estate and gift taxation where the influence of state law is recognized by experts to be inescapable because the focus is on wealth rather than income. See generally, C. LOWNDES & R. KRAMER, *FEDERAL ESTATE AND GIFT TAXES* (1962). For a clear articulation of the uniformity argument by the Supreme Court, see *Lyeth v. Hoey*, 305 U.S. 188 (1938), quoted in note 57, *infra*.

The question of the necessity of a specific obligation of support under Minnesota law, the state where *Douglas* originated, is examined in Note, *Taxation—Income Taxation—Liability of Settlor for Tax on Income from Trusts Created to Satisfy Obligations of Settlor*, 20 MINN. L. REV. 538, 542 (1936).

¹³ 56 Stat. 816, 817 (1942). The constitutionality of the Revenue Act of 1942 provision for the taxation of alimony would have been questionable if the *Gould* court, instead of basing its holding on the definitional provisions of the Revenue Act of 1913, had held that alimony is not income within the meaning of the sixteenth amendment which provides that Congress shall have power to lay and collect taxes on income from whatever source derived, without apportionment among the several States.

in the hands of the divorced wife. Even where irrevocable trusts have been established, and the husband has no further interest in the trust property, the income of the alimony trust is nevertheless taxable to him because it is used to pay an alimony obligation. Rising tax rates have in some cases absorbed the entire income of the husband required to pay the tax on his income and that of his divorced wife. At the same time, divorced wives receiving tax free alimony possess a privileged status under our tax laws which relieves them of any share of the tax burden.

The fair solution is that recommended by the Senate last year, namely to tax alimony payments to the divorced wife. We suggest that this solution be adopted.¹⁴

A crucial point to be noted in Paul's testimony is that he was concerned with the tax consequences to the husband who was paying alimony out of current income. He made no case for giving relief to husbands who fulfill their support obligations by a lump-sum or one-time property transfer to the wife. Nor was such a case made by any other witness.

The relief for husbands paying alimony out of current income is embodied in the ten-year statutory test for periodicity presently found in section 71(c) of the 1954 Code. Rather than attempt to define "current income" for purposes of alimony payments, the draftsmen used the ten-year minimum requirement for installment payments as a bright line test. Of course the ten year rule solution is not flawless—some alimony paying husbands who qualify thereunder would probably fail to satisfy a tautly drawn "current income" test, but at least it produced the results contemplated by Congress until the contingency doctrine was introduced.

The further problem of state divorce laws impinging upon the uniformity of the application of the Code was underscored in the House Report accompanying the final draft of the 1942 Revenue Revision:

[T]he amended sections will produce uniformity in the treatment of amounts paid in the nature of or in lieu of alimony regardless of variance in the laws of different States concern-

¹⁴ *Hearings on the Revenue Revision of 1942 Before the House Committee on Ways and Means*, 77th Cong., 2d Sess. 1, 92 (1942).

ing the existence and continuance of an obligation to pay alimony.¹⁵

Thus, the confusion caused by *Gould v. Gould* should have ended with the adoption of the Revenue Act of 1942, whose alimony provisions were carried forward essentially unchanged in the Internal Revenue Code of 1954.¹⁶ One contemporary observer of the 1942 act expressed guarded optimism in these words:

In view of the clearly expressed intent of Congress, and the all embracing character of the provisions, and particularly in view of the fact that the treatment of all taxpayers of a certain group on an equal basis is fundamental to a just tax system, it is to be hoped that the courts, when called upon to construe the new provisions, will do so in the light of the Congressional intent to achieve equality of treatment with respect to all taxpayers receiving, or paying, as the case may be, alimony or separate maintenance payments.¹⁷

The uniform rule of law and standards of equity envisioned by Congress have not, however, been achieved. In a series of decisions construing the new provisions for the taxation of alimony, the contingency doctrine was conceived, enlarged and permitted to frustrate the policy underlying the Revenue Act of 1942.

II. THE CONTINGENCY DOCTRINE

Perhaps the contingency doctrine would never have been read into the Code if the language of section 71(c)(1)¹⁸ had been designed to encompass every device which the ingenuity of legal craftsmen could conjure up in drafting agreements incident to marital dissolution.¹⁹

15 H.R. REP. NO. 2333, 77th Cong., 2d Sess. 72 (1942).

16 See note 1, *supra*.

17 Gornick, *Alimony and the Income Tax*, 29 CORNELL L. Q. 28, 51 (1943).

18 Section 71(c)(1) provides:

Principal Sum Paid in Installments.—General Rule.—For purposes of subsection (a), installment payments discharging a part of an obligation the principal sum of which is, either in terms of money or property, specified in the decree, instrument, or agreement shall not be treated as periodic payments.

19 Buckley, Krager, Oliver, & Stoke, *The Marriage Undone: Taxwise*, 42 CALIF. L. REV. 408, 424 (1954) [Hereinafter cited as Buckley].

A. *The Steinel View*

The Tax Court was first called upon to review the legislative history and policy judgments behind section 71 in *J.B. Steinel*²⁰ where the divorce decree provided that the husband would pay \$100 per month until \$9,500 was paid to the wife and that the payments would cease should the wife die or remarry. Holding that the payments were not periodic, the court said that the principal sum is deemed to be specified in the decree if it can be ascertained by arithmetical computation. Moreover, the court rejected the taxpayer's argument that the word "obligation" in the statute was intended to mean only an absolute and unconditional obligation.²¹ The court insisted that the apparent probability must have presented itself to Congress that the divorce decrees of the tribunals of the different states dealing with marital obligations would vary as to the degree of absoluteness and lack of contingency²² and remained steadfast in its conclusion that "Congress enacted the broad provision in question and intended it to be applied uniformly."²³ Thus, the rule was set down "that the word obligation is used in section [71(c)(1)] in its general sense and includes obligations subject to contingencies where those contingencies have not arisen and have not avoided the obligation during the taxable years."²⁴ The *Steinel* rule that a principal sum is deemed to be stated in the decree where, even if it does not appear as a figure, it is susceptible of computation was followed and reaffirmed in subsequent decisions.²⁵ The Tax Court made it clear in *Steinel*, and related cases²⁶ which continued the strict interpretation of section 71(c)(1), that it would tolerate no infidelity to the obvious intentment of Congress.

There was one scheme, however, to which the Tax Court did not apply the *Steinel* view. Where alimony payments were stated

20 10 T.C. 409 (1948).

21 *Id.* 412.

22 *Id.*

23 *Id.*

24 *Id.*

25 Estate of Frank P. Orsatti, 12 T.C. 188 (1949); Harold M. Fleming, 14 T.C. 1308 (1950).

26 *E.g.*, Frank R. Casey, 12 T.C. 224 (1949), held that Congress imposes the tax, and consequently, such imposition may not be changed by prior agreement. *But see* Rosenkranz n.39.

as a percentage of the husband's income, it seemed that a principal sum could not be definitely computed so that such payments must be treated as periodic. Thus, in *Roland Keith Young*²⁷ the alimony payments which the wife would receive in any given year were to be determined by taking a percentage of the husband's net income from the prior year, and in *John H. Lee*²⁸ the husband's annual alimony obligation was the sum of $33\frac{1}{3}$ percent of the first \$12,000 of his net income and 25 percent of any additional net income. In both cases, the payments were held taxable to the wife and deductible by the husband. The result was that contingencies which had not yet arisen (*e.g.*, death or remarriage of either spouse) had no tax effect, while contingencies which were continually present (*e.g.*, economic status of the husband) made the alimony payments sufficiently uncertain to qualify them as periodic for purposes of section 71.

The *Steinel* view enjoyed a short reign.²⁹ Its logic was applied in *F. Ellsworth Baker*³⁰ to deny deductibility where the husband had agreed to pay to his wife until her death or remarriage \$300 monthly for one year and \$200 monthly for five additional years. The decision went to the Second Circuit on appeal where the *Steinel* rule was put to the test.

B. *The Baker View*

Reversing the decision of the Tax Court³¹ and explicitly overruling *Steinel*, *Baker v. Commissioner*³² held that the husband's alimony payments were periodic and therefore deductible because section 71(c)(1) clearly implies by a principal sum "specified" in the decree that there must be "an amount of a fairly definite character."³³ Payments had been specified in two clauses of the

²⁷ 10 T.C. 724 (1948).

²⁸ 10 T.C. 834 (1948).

²⁹ In spite of its short reign, *Steinel's* demise was immediately lamented: "It is far more reasonable to believe that Congress had in mind the interpretation employed in *Steinel* than that adopted by the court in *Baker*. Furthermore, the interpretation employed in *Steinel* would seem to apply wherever a lump-sum can be computed from the terms of the original agreement, regardless of any contingencies . . ." Buckley 426.

³⁰ 17 T.C. 1610 (1952).

³¹ *Id.*

³² 205 F.2d 369 (2d Cir. 1953).

³³ *Id.* 370.

separation agreement, and even by placing the two clauses in juxtaposition and measuring their cumulative time span, the scheme fell short of the ten year requirement of section 71(c) by nearly four years. But the husband had appended a contingency to the agreement providing that his obligation to make further payments would cease when the wife died or remarried, and the *Baker* court was quick to seize upon this. Conceding that the contingency of death might be handled by actuarially computing the principal sum, the court pointed out that it must yield to the uncertainty of the contingency of the remarriage:³⁴

Since a divorced wife's remarriage . . . depends upon some elements of her own seemingly unpredictable choosing, the computation seems as far beyond the reach of an educated guess as what will be the first name of the man or woman who will become President of the United States in 1983.³⁵

Baker might have been considered an aberration and limited to its own facts if the Third Circuit had not reached a similar result in the same year. *Smith v. Commissioner*³⁶ was ironical not only because it lent support to *Baker*, but also because its holding was ambivalent, suspended between the opposite poles of *Baker* and *Steinel*. Frank Smith signed an agreement which was later incorporated into his divorce decree whereby he was obliged to pay his wife, contingent upon her death or remarriage, \$25,000 in ten equal semi-annual installments and \$300 monthly for five years.³⁷ The court found that the semi-annual payment was "an obvious installment payment,"³⁸ despite the stipulated contingency, thus manifesting the lingering influence of *Steinel*.³⁹ But, explaining that the statute does not always require the payments to run over ten years in order to qualify as periodic,⁴⁰ the court

³⁴ *But see* *Commissioner v. Maresi*, 156 F.2d 929 (2d Cir. 1946) affirming a decision by the Tax Court which relied on statistical tables to determine the probability that a divorced woman would remarry. The *Baker* court distinguished *Maresi* as a case where even a poor guess was better than none.

³⁵ 205 F.2d 369, 370 (2d Cir. 1953).

³⁶ 208 F.2d 349 (3d Cir. 1953).

³⁷ There was one other installment payment not relevant here.

³⁸ The \$25,000 would qualify as periodic under the present practice. Rev. Rul. 59-45, 1959-1 CUM. BULL. 666.

³⁹ 208 F.2d 349, 353 (3d Cir. 1953).

⁴⁰ 212 F.2d 448 (9th Cir. 1954).

found that because of the contingency, the \$300 monthly payments were periodic and taxable to the wife and deductible by the husband, thus manifesting the controlling influence of *Baker*.

Once the contingencies of death and remarriage were recognized in the law under section 71, it became easier to reaffirm *Roland Keith Young*⁴¹ which involved the contingency of a change in the economic status of the payor-husband. This minor step was accomplished by *Fidler v. Commissioner*⁴² where the husband, a radio announcer, agreed to make payments of \$800 monthly to his wife for fifty-three months so long as his radio contract continued without modification; but if his remuneration under the radio contract were diminished, then \$300 monthly would be diminished by the same proportion; and if his contract were discontinued, then the alimony payments would be cut back to \$500 per month.⁴³ In the face of this uncertainty as to the principal sum, the court held that the payments were periodic to the extent of \$300 per month.

The Treasury acquiesced in the *Baker* view along with the *Fidler* variation in its regulations⁴⁴ under the 1954 Code, and it subsequently held in a ruling⁴⁵ that payments under a decree of divorce extending over a period of less than ten years, subject to the contingency of death, remarriage, or change in the economic status of either spouse, qualify as periodic payments under both the 1939 and 1954 Codes. No mention of the contingency doctrine has ever been made in the Code itself,⁴⁶ but its applicability to alimony payments is now well established.⁴⁷

41 10 T.C. 724 (1948).

42 231 F.2d 138 (9th Cir.), *modifying* 20 T.C. 1081 (1956).

43 *Id.* 140.

44 Treas. Reg. § 1.71-(1)(d)(3)(i)(a) (1957). Instead of acquiescing in *Fidler*, the Treasury might have simply acquiesced in *Roland Keith Young* which first recognized the contingency of a change in the husband's economic status.

45 Rev. Rul. 59-45, 1959-1 CUM. BULL. 666.

46 Nor did Congress consider enacting the contingency doctrine into law when revising the Code in 1954. The only proposed change at that time in the taxation of alimony was that § 71 be extended to husbands and wives who are separated but who have not obtained a divorce decree or a decree of separate maintenance. H.R. REP. NO. 1337, 83d Cong., 2d Sess. 10 (1954). This proposal was adopted, but the Senate limited its application (to avoid upsetting existing agreements) to those agreements executed after the effective date of the revised Code.

47 *See generally*, 1 CCH 1971 STAND. FED. TAX REP. ¶¶ 814-820.407.

C. State Law Contingencies

Just as contractual contingencies are capable of commuting installment payments into periodic payments, so too can contingencies imposed by state law. The courts in the state of Washington, for example, have the statutory power to modify, alter, and revise alimony payments "from time to time as circumstances may require."⁴⁸ Furthermore, the Washington courts have adopted the common law principle that the obligation to pay alimony terminates upon the death of either spouse. The effect of these provisions is that a principal sum cannot be conclusively fixed from examining the face of a divorce decree obligating the husband to make alimony payments. In resolving this problem, the Treasury issued a ruling⁴⁹ in 1959 which held that alimony payments subject to state law contingencies will be treated as periodic payments under section 71(a).

Alton F. Lounsbury,⁵⁰ a leading case on the subject of state law contingencies, added a significant refinement to the 1959 ruling, *viz.*, that an express clause in the parties' agreement purporting to expunge state law contingencies is ineffective. In *Lounsbury* the parties had entered an elaborate support agreement which provided that the husband would pay \$250 per month to his estranged wife over a period of five years and that the payments would be absolutely due "without regard to modification of the divorce decree"⁵¹ if their agreement should later be incorporated into such a decree. Distinguishing between divisions of capital and periodic payments⁵² the Commissioner argued unsuccessfully

48 WASH. REV. CODE ANN. § 26.08.110 (1961). The allegation of a change in condition is to be liberally construed. *McClelland v. McClelland*, 163 Wash. 59, 299 P. 984 (1931). But modifications are not allowed unless a change is material. *Cook v. Cook*, 168 Wash. 649, 13 P.2d 38 (1932). The question and extent of materiality lie within the sound discretion of the court. *Hudson v. Hudson*, 8 Wash. 2d 114, 111 P.2d 573 (1941). The mere fact that the wife's financial needs have increased is not sufficient alone to justify increased alimony payments. *Gordon v. Gordon*, 44 Wash. 2d 222, 266 P.2d 786 (1954). An improvement in the economic status of the wife by reason of her employment can warrant a downward revision of the husband's obligation. *Richardson v. Richardson*, 55 Wash. 2d 208, 347 P.2d 550 (1959).

49 Rev. Rul. 59-190, 1959-1 CUM. BULL. 23.

50 37 T.C. 163 (1961), *aff'd*, 321 F.2d 925 (9th Cir. 1963).

51 37 T.C. 163, 164 (1961).

52 *Id.* 169. See note 14 and accompanying text, *supra*.

that the payments did not qualify for inclusion under section 71(a) because they did not drain the husband's current income. Instead of basing its analysis upon this distinction between payments out of capital and payments out of current income, the Tax Court gave recognition to the Oregon cases⁵³ holding that alimony payments which have not become due remain subject to modification by the court in the event of changed circumstances even when the parties have contracted for permanent payments. Hence, the court found the payments to be uncertain and, therefore, that they should be taxed as periodic.⁵⁴

Thus the wheel has come full circle — in the same way that the taxation of alimony trusts was made to depend upon state law under the old doctrine of *Douglas v. Willcuts*,⁵⁵ the periodicity of today's alimony payments is too often determined by reference to local law. The influence of state law has been somewhat attenuated by the recent rule⁵⁶ that periodic alimony payments could be deducted for federal income tax purposes even though there was no state law establishing a legal obligation to make permanent alimony payments. But the differences between state statutes and the disruption these differences cause are nonetheless deplored by scholars who have witnessed the gradual frustration of the policies embodied in the alimony sections of the Revenue Act of 1942.⁵⁷

⁵³ *Briggs v. Briggs*, 178 Ore. 193, 165 P.2d 772 (1946); *Prime v. Prime*, 172 Ore. 34, 139 P.2d 550 (1943); *Warrington v. Warrington*, 160 Ore. 77, 83 P.2d 479 (1938); *Phy v. Phy*, 116 Ore. 31, 236 P. 751, *rehearing denied*, 240 P. 237 (1925).

⁵⁴ One important fact in *Lounsbury* is that the separation agreement was executed before the effective date of the 1954 Code. This fact may explain the court's preoccupation with the modifiability of the decree, since the payments would not come within the statute unless pursuant to a decree of divorce or a separation agreement incident to such a decree.

⁵⁵ See note 12 and accompanying text, *supra*.

⁵⁶ *Taylor v. Campbell*, 335 F.2d 841 (5th Cir. 1964).

⁵⁷ Harris, *The Federal Income Tax Treatment of Alimony Payments—The Support Requirement of the Regulations*, 22 HASTINGS L.J. 53, 84 (1970) [hereinafter cited as Harris]. Insofar as he is concerned with the contingency doctrine, Harris relies on Sander, *Planning Tax Aspects of Divorce and Separation Agreements*, 9 PRAC. LAW 91, 92 (1963), and Sander, *Divorce and Separation*, 95-2d TAX MANAGEMENT PORTFOLIO A-9 (1967). Professor Sander gives recognition to, but does not focus on, the problems surrounding the contingency doctrine.

It is worthy of note, moreover, that the thesis that the Internal Revenue Code provisions are improperly reasoned when the courts must look to state law dates back to *Lyeth v. Hoey*, 305 U.S. 188, 194 (1938):

In dealing with the meaning and application of an act of Congress

III. CONCLUSION AND LEGISLATIVE PROPOSAL

Congress enacted the original versions of sections 71 and 215⁵⁸ in the Revenue Act of 1942 in response to two problems. First, the taxation of alimony trusts under the rule in *Douglas v. Willcuts*⁵⁹ had caused widespread confusion and inequality of treatment among taxpayers because it required a scrutiny of the law of individual states to determine whether the husband's support obligation was absolutely or *pro tanto* discharged by setting up a trust. Second, the unavailability of a deduction for alimony payments under *Gould v. Gould*⁶⁰ resulted in a situation where some husbands were required to make alimony payments in excess of their after-tax incomes because of the drastic increase in federal income tax rates during World War II. As the legislative history to the Revenue Act of 1942 shows, the purpose of taxing alimony payments to the wife and allowing a deduction to the husband was (1) to promote uniformity in the application of the federal income tax laws by avoiding state law variations, and (2) to grant relief to husbands who were paying alimony out of current income. These purposes have been effectively ignored by the introduction of the contingency doctrine as a result of which the test for periodicity under section 71(a) has been practically reduced to one perfunctory question: can a *principal sum* be ascertained from the support agreement or decree? Thus, the experience under the contingency doctrine has been an unfortunate episode of construing section 71 in the Code so as to preserve its linguistic precision rather than to satisfy its underlying rationale.

The disharmony between the application and purposes of section 71 lay below the threshold of legislative awareness when

enacted in the exercise of its plenary power under the Constitution to tax . . . it is the will of Congress which controls, and the expression of its will, in the absence of language evidencing a different purpose, "should be interpreted so as to give uniform application to a nationwide scheme of taxation." [citation omitted] Congress establishes its own criteria and the state law may control only where the federal taxing act by express language or necessary implication makes its operation dependent upon state law.

58 See note 1, *supra*.

59 See notes 8-12 and accompanying text, *supra*.

60 See note 3 and accompanying text, *supra*.

Congress passed the Tax Reform Act of 1969.⁶¹ There has been some clamor in recent years for legislative action in the area of alimony taxation,⁶² including a recent proposal by the American Bar Association (ABA).⁶³ But the ABA proposal would do nothing more ambitious than set up a presumption that payments made pursuant to section 71(c)(2) are for the wife's support in the absence of language in the decree, instrument, or agreement specifically stating that they are intended for the purpose of her property rights. One reason for creating this presumption is to obviate the necessity of making inquiries into the character of the consideration which the wife gives for her payments.⁶⁴ As one writer has remarked, the ABA proposal would eliminate confusion only where the payments are sought to be qualified as periodic under the ten year rule.⁶⁵ Perhaps, then, a more suitable recommendation for legislative reform can be synthesized from an enumeration of the possible solutions.

The contingency doctrine could be deleted from the Treasury Regulations. Since it has never been incorporated into the language of section 71, the contingency doctrine would be extirpated without the formalities and delays of further legislation. If clarification should become necessary, the fact of repeal by deletion could be explicated in future regulations and rulings. The argument against this solution, on the other hand, is that the contingency doctrine is by now too deeply entrenched in the law under section 71 to be so easily removed. The search for the most decisive solution suggests a revision of the statute rather than a tampering with the regulations. Thus, finally, the contingency doctrine should be deleted from the Treasury Regulations as set out above and its repeal specifically announced in section 71(a)(1) of the Code. Also, the ABA's proposed presumption in favor of finding support payments should be contemporaneously intro-

61 83 Stat. 487 (codified in INT. REV. CODE of 1954).

62 Peschel, *Income Taxation of Alimony Payments Attributable to Transferred Property: Congressional Confusion*, 44 TUL. L. REV. 223 (1970) (focusing on the need for revamping the treatment of alimony trusts); Note, *Taxation of Alimony*, 16 HASTINGS L.J. 608 (1965) (focusing on property settlements).

63 *Report of the Committee on Domestic Relations Tax Problems*, BULL. ABA SECTION OF TAXATION, July 1966 (Annual Report).

64 *Id.* 63.

65 Harris 84.

duced into section 71(c) so that the ten year rule becomes the test for periodicity and, therefore, deductibility.⁶⁶ This combination of alternatives is the most desirable solution because, by conclusively repealing the contingency doctrine on the strength of Congressional authority, it would finally place the avowed purposes of section 71 at peace with its application.

*Gary L. Wolfstone**

⁶⁶ Cf. Harris 107.

One conceivable loophole would remain, *viz.*, the case of the alimony paying husband whose life expectancy is well below ten years. In that case, however, qualification under § 71 could be denied on the grounds that the husband does not reasonably expect to satisfy the test for periodicity just as the grantor of a short term trust is denied qualification under § 673(a) when his life expectancy falls short of ten years. Treas. Reg. § 1.673(a)-1(c) (1960).

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BOOK REVIEW

ENVIRONMENTAL CONTROL: PRIORITIES, POLICIES, AND THE LAW.
By Frank P. Grad,¹ George W. Rathjens,² Albert J. Rosenthal.³
New York: Columbia University Press, 1971. Pp. vii, 311. \$9.00.

Reviewed by Steve Feldman⁴

Today, when environmental laws and learned writings are pouring off the presses in such numbers as to make commentators remark upon the growing galley-proof pollution, it may be proper to step back and ask a few questions about where this enthusiasm (if not frenzy) is taking us. Where, in fact, have we already gotten? What should or could government do to help? Which level or levels of government can or should be called upon?

These are some of the basic questions Professors Grad, Rathjens, and Rosenthal pose for themselves in their three-part work,⁵ *Environmental Control*. The book is an admitted "pilot project" originally conceived in 1969⁶ and updated while in progress to reflect legislative developments through late 1970.⁷ Its avowed

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5 Each author contributes one article to compose the entire book as follows: Rathjens, G.W., National Environmental Policy: Goals and Priorities.

Grad, F.P., Intergovernmental Aspects of Environmental Controls.

Rosenthal, A.J., Federal Power to Preserve the Environment: Enforcement and Control Techniques.

6 ENVIRONMENTAL CONTROL: PRIORITIES, POLICIES AND THE LAW iii [hereinafter ENVIRONMENTAL CONTROL], "In October 1969, the Sloan Foundation and the Council on Law-Related Studies made grants to the Columbia University Legislative Drafting Research Fund for an interdisciplinary program on Federal environmental policy, proposed by the Committee on Science and Law of the Association of the Bar of the City of New York."

7 The only national legislation of that year not included are the Clean Air Act Amendments passed by the second session of the 91st Congress in December of 1970. The Clean Air Act, 42 U.S.C. § 1857(1971), now includes the Clean Air Act of 1963, 22 U.S.C. § 287(a)(1971) and amendments made by the Motor Vehicle Pollution Control Act of 1965, 42 U.S.C. § 1857(1971), the Clean Air Act Amendments of 1966, 42 U.S.C. § 1857c note (1971), the Air Quality Act of 1967, 42 U.S.C. § 1857 (1971), and the Clean Air Act Amendments of 1970, 42 U.S.C. § 1857b note, (1971). At page 2 of the text of the book, the latter legislation is designated an act of

purpose is to "study to determine what ought to be studied"⁸ and in that purpose it succeeds in good measure. It is, in each of its parts, an overview of the topics chosen for consideration.

Professor Rathjens, in the opening article, discusses national policy and goals, pointing out the different priorities that would be assigned to environmental control among competing interest groups such as conservationists, business leaders and ghetto dwellers. He also deals with the problems of establishing priorities between different types and forms of "environmental insults." He then extends his analysis to the task of standard setting and control mechanics. His article is followed by Professor Grad's, which reviews the history of local, state and federal law-making efforts in the fields of air, water, solid waste, noise and radiation pollution control.

Professor Grad notes the trend in each of these fields for responsibility for setting standards to rise through levels of government as the pollutant in issue expands physically beyond government jurisdictions. Responsibility for enforcement, however, tends to remain anchored at a local level — for reasons relating to history and personnel limitations — causing a disjunction between the participating governmental levels. Professor Grad leans towards interstate compacts as a solution, seeing them as a cure for local and state governments' jurisdictional impotence, and as a means of avoiding a massive federal bureaucracy. Other major problems, such as a lack of integrative efforts between governmental development programs and concurrent control efforts are pointed out and evaluated in light of the corrective attempts proceeding under the National Environmental Policy Act of 1969, and the Environmental Protection Administration established in 1970.

Professor Rosenthal concludes the book with an article on the powers of the federal government to enforce anti-pollution regulations and a survey of other control techniques. The reader may well be surprised at the breadth of possibilities Professor Rosenthal considers in this extremely innovative effort.

the 92d Congress, but this is a typographical error since that Congress convened in 1971.

8 ENVIRONMENTAL CONTROL, 1.

Thus we are given overviews of the three areas selected by the authors for discussion. These selections themselves, however, invite some questions. If the book is to be a triptych, unfolding to reveal the large panorama of the problems of environmental protection "to determine what ought to be studied," one must question the validity of the panels chosen. Why these three topics and not others? Why not an article on the possibilities and problems of expanding judicial review of administrative agencies as a means of environmental control;⁹ or an article on population control;¹⁰ or one on restricting demographic movement?¹¹ Each of these has been considered a fruitful area for further research. In the introduction, Professor Grad states that "the question that had to be faced was what subjects to select for research and discussion, in order to provide coverage of a significant nature."¹² He then describes which subjects were, in fact, chosen, but does not relate *why* those selections were made. Perhaps the simple explanation is that a line must be drawn somewhere, and no one volume can give a full overview of so vast a problem as environmental pollution. Still, the book would have profited by a further statement justifying why these three topics were chosen for discussion over other likely candidates. Taken individually, on the other hand, each article is valuable in its own right and needs no further justification.

Professor Rathjens keys the major part of his discussion to a "Taxonomy of Environmental Insults" ranking, in order of ascending gravity, the pollution problems we face. They are: (1) degradable water pollutants and solid wastes, (2) non-persistent air pollutants, (3) persistent toxic pollutants (air, water and solid), and (4) factors which may alter the earth's geophysical environment. Essentially this taxonomy consists of two categories — temporary and permanent defilements of the environment. The author

9 See Sive, *Some Thoughts of An Environmental Lawyer in the Wilderness of Administrative Law*, 70 COLUM. L. REV. 612 (1970); Jaffe, *The Administrative Agency and Environmental Control*, 20 BUFFALO L. REV. 231 (1970).

10 See DAY & TAYLOR, *TOO MANY AMERICANS* 45-74 (1964), a study of birth control as a means of environmental protection; see generally EHRlich & EHRlich, *POPULATION, RESOURCES, ENVIRONMENT: ISSUES IN HUMAN ECOLOGY* (1970).

11 See e.g., KENT, *OPEN SPACE AND THE SAN FRANCISCO AREA: ORGANIZING TO GUIDE METROPOLITAN GROWTH*, (1970).

12 ENVIRONMENTAL CONTROL, 2.

expresses greater concern over the latter category for the obvious reasons that it is not amenable to presently known scientific solutions, and its effects may directly menace man's survival. In such instance cost-benefit evaluation, a pseudoscientific tool at best,¹³ can have no application. We simply don't know the extent of the dangers, nor, at this point, how to deal with them. As to temporary defilements he demonstrates that cost-benefit analysis is still of limited utility because we cannot accurately assign values to discomfort, illness, anxiety, loss of life or the synergistic effects of intermingling pollutants. However, the author does state that cost-benefit considerations can be useful at least on an *a fortiori* basis:

If one can identify one or more adverse effects of pollution and can impute to them costs in excess of those involved in eliminating or reducing pollution, one has a source basis for prohibition or lowering the permissible level of pollution.¹⁴

This is at most a rough guidance system the author gives us and perhaps only slightly more useful in preventing diseconomies than dead reckoning. This analysis does serve the much needed function of putting cost-benefit measurement back into a realistic perspective.

One troublesome aspect of Professor Rathjens "Taxonomy" is that while it is logically sound, it doesn't comport with certain realities of our pollution problems. In first category (degradable water pollutants) he states that the problems are serious, but "pollution of fresh water . . . can [be] largely brush[ed] aside in a paper such as this at least insofar as our concerns are technical."¹⁵ In other words, as long as technology exists to abate the pollution, the problem is less urgent than "persistent" insults, or factors altering the earth's geophysical environment (categories 3 and 4). Admittedly, this is sensible. But how long must a "temporary" and abatable pollution condition exist before we may term it "persistent" or an "alteration" of the environment? How long must Lake Erie remain dead — to use Professor Rathjens own example of a category 1 pollution problem — before it qual-

¹³ See Hammond, *Convention and Limitation in Benefit-Cost Analysis*, 6 NATURAL RESOURCE J 195 (1966).

¹⁴ ENVIRONMENTAL CONTROL, 26.

¹⁵ *Id.* 14.

ifies for category 3 or 4? Lake Erie, as it now exists, would seem to present virtually all the problems the author lists as representative of his fourth and most serious category.¹⁶ Nonetheless, because it is a technically reversible condition it remains in the category of soluble problems. Rationally, we cannot disagree with Professor Rathjens, but realistically his "Taxonomy" may not be pragmatic as a categorization of environmental insults.

Professor Grad offers an intensive and heavily documented study of state and federal legislative and administrative activity in air, water, noise, solid waste and radiation pollution control. It is as complete a survey and commentary as is presently available. In concluding his meticulous review Professor Grad comes out in favor of interstate compacts as the most effective governmental approach to pollution control both by way of standard setting and enforcement. He candidly admits the existence of substantial problems,¹⁷ e.g., length of time for implementation (approximately eight years on the average), ponderous operation, lack of responsiveness and, finally, interstate rivalries. But for all this he sees compacts as superior to outright and total federal control and necessary to fill the jurisdictional gaps inherent in state control. One might suspect Professor Grad of being partial to this device due to his early involvement in the Delaware River Basin Com-

16 Those being (a) lack of understanding of the seriousness of the environmental threat, (b) possible triggering of catastrophic and irreversible changes, (c) repercussions in the distant future, (d) world-wide impact and (e) necessity of implementing drastic social adjustments to abate the pollution. ENVIRONMENTAL CONTROL, 19-21.

17 Professor Grad has been so scrupulous in setting out the difficulties of interstate compacts that recent articles which rely, ultimately, for their authority on the earlier writings of Professor Grad, assert that such compacts are unworkable.

For example, in DUKE L. J. 943, 968 (1970) the commentator, in speaking of the varying political pressures in contiguous states, writes: "The resultant inconsistent state pollution laws create problems apparently *insolvable by interstate compacts.*" [Emphasis added]. As authority, he cites Green, *State Control of Interstate Air Pollution*, 33 LAW AND CONTEMP. PROB. 315, 320-30 (1968). At the pages indicated in Mr. Green's article one finds a very full consideration of interstate compacts which generously refers to early writings of Professor Grad [Grad, *Federal-State Compact: A New Experiment in Cooperative Federalism*, 63 COLUM. L. REV. 825 (1963)] for several quotations and concepts as to the difficulties inherent in interstate compacts. Mr. Green's conclusion, however, is that "it would appear that the only avenue offering any hope is through the interstate compact mechanism." (Green, *supra* at 330). This is in keeping with the distinct tone of the early Grad article which, after discussing the many problems of interstate compacts, states:

An approach to the problems of regional dimensions can only be in terms of larger units—and this leaves only two major alterna-

pact¹⁸ and his more recent contribution to the Penjerdal Compact, presently pending congressional approval.¹⁹ However, his basic assertions in favor of compacts are compelling. Interstate compacts comport with the geographical realities of air sheds and water basins, as state boundaries do not; they are consistent with the present trend of rising institutional responsibility for regulation and enforcement yet intercede before an unwieldy federal bureaucracy is created; also they answer the federal government's aversion to assuming full responsibility while relieving the state of burdens they cannot individually shoulder economically, administratively or politically. One must agree with Professor Grad that such compacts may offer much for the future of environmental protection.

There is one curious omission in Professor Grad's article that should be noted: *viz.*, there is virtually no mention of the environmental problems attributed to pesticides or the governmental efforts to deal with them.²⁰ One can understand the scant mention of thermal pollution as a less pressing problem *vis-à-vis* air and water, but there is no reason for ignoring pesticides. The reader might at least expect to learn why this topic is not included.

In the closing article, Professor Rosenthal surveys with clarity the potential of federal power to preserve the environment. His underlying attitude is a call for action:

Doubts, such as have been mentioned, as to the effectiveness of some of them [remedies] should not preclude their adoption. We need to experiment with every reasonable device we can invent, in order to develop the strongest possible arsenal of legal weapons. . . .²¹

tives: federal action, or interstate action with federal participation when necessary. The choice is largely up to the states. 63 COLUM. L. REV. (1963) *supra* at 851.

Thus Professor Grad, while remaining steadfast in his hopes for interstate compacts finds himself, through his candid presentation of the obstacles to be surmounted, as authority for the proposition that certain interstate problems are "insolvable by interstate compacts."

18 Grad, *supra* 63 COLUM. L. REV. 853 (1963).

19 A compact involving Pennsylvania, New Jersey and Delaware for which Professor Grad performed legal analysis and technical assistance in the preparation of the draft compact. ENVIRONMENTAL CONTROL, 208, n.353.

20 For an excellent treatment of this problem and the complexity of governmental machinery in this area see Rogers, *The Persistent Problem of Persistent Pesticides: A Lesson in Environmental Law* 70 COLUM. L. REV. 567 (1970).

21 ENVIRONMENTAL CONTROL, 277.

Professor Rosenthal examines the federal commerce power, the power to tax and spend, and the treaty power as possible sources of federal authority. While some of his theories may be strained, he rejects none in his positive search for solutions. He next considers some of the possible limitations on federal activity such as just compensation, due process, political impediments and preemptive difficulties, finding none insurmountable. In carrying his discussion into the area of direct regulation he reviews the pros and cons of a variety of civil and criminal sanctions. Again, he rejects none, concedes certain advantages in each, but appears to favor injunctive relief as the most flexible tool of control. He then analyzes economic incentives and reviews the standard possibilities of grants-in-aid, tax credits, loans, research programs and effluent charges. Typical of his innovative approach is his consideration of an artificial government market for waste — thereby producing economies of scale — until some profitable means of disposal is found.

What makes his article outstanding is his orientation to action and experimentation. If he is lacking in rigorous analysis — and some might say he is a bit too abandoned in his “damn the torpedoes” approach — he more than compensates with imagination and ingenuity. His approach reminds us that while we search for solutions that are acceptable to the lawyer, politician, economist, and social scientist, we are, day by day, fouling our air, water and land; and we’d better try *something* in the meantime.

In sum, *Economic Control* is not a cohesive or complete book. The views of its three authors do not coalesce around a central theme or approach. It is rather a compilation of three studies of separate problem areas in the field of environmental control. Mr. William F. Kennedy,²² in his foreword says:

protecting and restoring the quality of the physical environment presents choices of policy, and indeed of basic values, so pervasive, so difficult and so important that it will take an effort of years to create the new institutional and legal mechanisms required to deal with them in ways which are

²² Mr. Kennedy is chairman of the section of the New York bar sponsoring the study.

calculated both to achieve the desired results and be broadly acceptable in a democratic society.²³

The articles of Professors Rosenthal, Grad and Rathjens, taken as a statement of problems and a survey of possible solutions help to identify our options.

²³ ENVIRONMENTAL CONTROL, iv.