THE TRANSPORTATION LAW JOURNAL

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THE INTERSTATE COMMERCE COMMISSION AND THE CONSUMER

BY

GEORGE M. STAFFORD*

If he has been reading his press notices, it may appear to the consumer that he is now, for the first time, receiving some attention from public officials. However, this impression may not be justified under closer scrutiny.

Although the consumer is not specifically mentioned in the Interstate Commerce Act,1 it is interesting to note that more than 50 references to the public interest are contained in the Act.

Some observers seem possessed of a conviction that the lowering of carrier rates necessarily equates with rising benefits to the consumer. However, neither the Interstate Commerce Act nor the National Transportation Policy calls for carriers to provide the rock-bottom rates many consumers would advocate. The original Act contained no provisions which would encourage low rates. Today's statute clearly reflects a national intent for carriers to provide such offerings consistent, of course, with the cost of rendering the service. While low rates as desirable characteristics in American transportation now are inherently accepted, there was a 46-year span between enactment of the original Act to Regulate Commerce in 1887 and passage of the Emergency Railroad Transportation Act,2 which provided in Section 15a(2) of the Interstate Commerce Act a new rule of ratemaking that included the words lowest cost.

"In the exercise of its power to prescribe just and reasonable rates the Commission shall give due consideration, among other factors, to the effect of rates on the movement of traffic by the carrier or carriers for which the rates are prescribed; to the need, in the public interest, of adequate and efficient railway transportation service at the lowest cost consistent with the furnishing of such service; and to the need of revenues sufficient to enable the carriers, under honest, economical, and efficient management to provide such service."

Two years later in the midst of the depression the Hoch-Smith resolution3 expressed Congressional support for the Interstate Commerce Com-

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* Chairman, Interstate Commerce Commission.
1. 49 U.S.C. Sec. 1 et. seq.
mission to effect for agricultural products "the lowest possible lawful rates compatible with the maintenance of adequate transportation service."

On September 18, 1940, the Congressionally enacted National Transportation Policy became law. It also became a preamble to the Interstate Commerce Act. The National Transportation Policy did not specifically call for low rates but did validate the promotion of economical service and encouragement of reasonable charges.

Both for the benefit of the consumer and for carriers in competitive squeezes, the Interstate Commerce Commission has developed a long history of encouraging low rates in transportation, even to the extent of approving rates established by carriers at levels lower than their expenses on certain traffic. The Commission recognized a need for some noncompensatory rates and was upheld by the Supreme Court in *Baltimore & O.R. Co. v. United States*, 345 U.S. 146 (1953).

"***For not only are fair decisions as to vegetable rates vital to the welfare of farmers and whole sections of the country; the health and well being of the Nation are involved. Moreover, Commission power to adjust rates to meet public needs is implicit in the congressional plan for a nationally integrated railroad system. ***And so long as rates as a whole afford railroads just compensation for their overall services to the public the Due Process Clause should not be construed as a bar to the fixing of noncompensatory rates for carrying some commodities when the public interest is thereby served."

The latest Congressional direction on the subject of low transportation rates was expressed October 15, 1966, with enactment of the Department of Transportation Act.5

"Sec. 2(a) The Congress declares that the general welfare, the economic growth and stability of the Nation and its security require the development of national transportation policies and programs conducive to the provision of fast, safe, efficient and convenient transportation at the lowest cost consistent therewith and with other national objectives, including the efficient utilization and conservation of the Nation's resources."

The depth to which transportation rates can descend for the benefit of the consumer while, still providing adequate revenue for the viability of a

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national transportation system, cannot be precisely prescribed by Congressionale dicdt nor established by a formula conceived and ordered by the Interstate Commerce Commission.

Some consumer advocates may disagree, but most of the participants in the transportation community—both carriers and shippers—would probably concede that rate levels are not necessarily the most accurate way of measuring benefits to the consumer. By any measurement, evolution is occurring in the Interstate Commerce Commission’s interest in, appraisal of, and attitude toward the ultimate consumer—as an individual rather than in the collective.

During the decade of the 1960’s the Interstate Commerce Commission, as well as other government agencies at Federal, state and local levels, came into closer contact with individual consumers. The Commission’s involvement developed in three principal areas: railroad passenger service; small shipments; and household goods movements.

The Commission’s new involvement with consumers, as represented by those who rode passenger trains or thought that such train service should be available for emergency use, arose with enactment in 1958 of Section 13a of the Interstate Commerce Act. This action placed the Commission in a scorching hot seat, fired by the ire of consumers who wanted passenger trains retained and railroads who wanted to be rid of them.

Section 13a delegated to the Commission a limited power beyond that of the state commissions to act on railroad proposals for train discontinuances. The intent of the law was to permit railroads to terminate nonessential trains no longer capable of sustaining themselves. As first proposed to Congress, Section 13a’s sole standard for discontinuing a train was whether it was operating at a deficit. On the recommendation of the Commission, Congress added another standard—the public’s need of the service. Measuring each train-off proposal against both of these standards, the Commission has prohibited the discontinuance of over 600 trains. Our concern in this area has been relieved in large measure with the creation of a new corporation designed to administer the Nation’s intercity rail service—Amtrak.

In accordance with the Rail Passenger Service Act of 1970 the Commission was no longer involved in ruling upon railroad proposals to discontinue passenger train service, except for commuter and shorthaul operations and non-Amtrak carriers which remained under Section 13a. The Rail Passenger Service Act of 1970, however, did assign to the Commis-

sion continuing responsibilities in rail passenger service including adequacy of service, equipment and facilities. In addition, the Commission was directed to prepare an evaluation of the results of the basic system’s operations at the end of the one year. The Commission’s review, issued October 30, 1971, generally called for provision of subsidies or government guaranteed loans to assure continued operations of the Nation’s intercity passenger service.

The Commission’s report indicated, and consumers concerned with rail passenger service doubtless would overwhelmingly agree, that Amtrak operations were beset by serious scheduling problems and many trains habitually ran behind schedule. With few exceptions, Amtrak inherited old equipment showing the ravages of time and use, and old passenger stations generally in need of repair.

While the Commission will have no direct participation in the operation of the Nation’s railroad passenger train service under Amtrak aegis, it will have an input in the interest of consumers through its authority to prescribe regulations for safe and adequate service, equipment and facilities. This authority filled in a jurisdictional gap over the quality or adequacy of rail passenger service which the Commission found it lacked in the so-called “Sunset adequacies” case. In this proceeding, the Commission found it had no power to require adequate standards of service on passenger trains.

A second special concern to the Commission has been the small shipper. Because of advancing technology, changing distributive patterns and new marketing concepts, the small shipper at times has found his transportation sources inadequate. As cost accounting became more sophisticated in the 1960’s many carriers found that certain small shipments were unprofitable or marginally profitable to transport, because they required irregular pickups or deliveries at small out-of-the-way communities or in highly congested urban areas with unusually high operating costs. Carriers tended to seek out the more profitable and ignore the less profitable traffic. At the same time, shippers of truck loads and high density commodities complained about having to subsidize the less profitable business by paying rates that were out of proportion to the cost of handling their traffic.

In 1968, the Commission formulated a program which involved a request for legislation authorizing it to require establishment of motor car-

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7. Section 801.
rier joint rates and through routes on an intramodal and intermodal basis, the exercise a more emphatic look at carriers' service fitness, and a close scrutiny of small shipment rates. Court actions to correct carriers' service failures were to be accelerated. Court fines ranging up to $1,400 were obtained against a number of individual motor carriers for failing to provide adequate and reasonable service.

The Commission also issued a regulation9 compelling motor common carriers of property to provide transportation service to the fullest extent of their operating authority and ability. New rules10 were proposed, requiring motor common carriers of property to maintain daily records of service. These records would show the reason for the failure of each request not being fulfilled. Tariffs would be required to provide for services conforming with carriers' operating authorities and filing of tariffs which restrict the scope of authorized operations would be forbidden.

The Commission also has investigated the status of freight forwarders,11 leading to a recommendation to the Congress for legislation which would allow forwarders to enter into negotiated arrangements with railroads for an experimental period of three years. This would enable forwarders to utilize more effectively the services of railroads and to expand their service to more shippers at more points.

The Commission generally has come to the conclusion that one of the most successful advancements in improving small shipment service lies with obtaining legislation for ordering through routes and joint rates by motor carriers. If the Commission were empowered to require the carriers to establish through routes and joint rates it could then order interline service to small shippers. This would be a major step toward solving many of the problems confronting the small shipper and the consumer located in off-lying communities.

The volume and pitch of dialogue between consumers and the Interstate Commerce Commission are loudest and highest in the area of household goods movements. This can be expected in a society in which roughly a fifth of the population moves each year. The transportation involves intensely personal aspects—the movement of life-long physical possessions that carry a value to the shipper that no amount of insurance can cover properly. The problem is compounded by a rule-of-thumb operation for

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11. Investigation into the Status of Freight Forwarders, 339 I.C.C. 711, Ex Parte No. 266.
family moves in which half of them are compressed into three warm weather months. Throughout the year, moves tend to be made in the ten-day period around the first of the month. Keeping vehicles productive during slack times and retaining competent help on a full-time basis are serious challenges to the carriers.

The Commission has sought to impress upon both carrier and shipper a clear understanding of their respective rights and obligations. This effort extends to rendering informal guidance toward the settlement of loss and damage claims, although the Commission lacks authority to compel settlements.

In 1970, the Commission ordered into effect a series of comprehensive rules,\(^\text{12}\) following a number of unsuccessful challenges in court that attempted to overturn the protection afforded by the new regulations. Carriers must present each customer with a copy of those rules prior to a move. One of the traditional problem areas confronting both shipper and carrier of household goods has been in the area of estimates. The new rules pierce the darkness previously enveloping the estimate of the cost of a household goods move. Under these rules, standard forms are available for estimates. When actual charges are more than estimated charges, the shipper can now obtain release of the shipment on payment of the estimated charges plus no more than 10 percent. The carrier must extend 16 days of credit on the balance when the charge exceeds the estimate by more than 10 percent. This eliminates storage and re-delivery charges which once plagued the consumer when full payment could not be made at the time of delivery. Overestimates and underestimates of more than 10 percent must be reported to the Commission and explained by carriers. Especially important to consumers are the rules requiring the performance of transportation during the period agreed upon by the carrier and the householder. If there is a delay in either pickup or delivery, the carrier must now notify the shipper. Reasons for the delay must be explained. The parties must then agree upon an alternative date when the service will be performed.

The rules now require a new delivery receipt which is prohibited from having any language releasing the carrier from liability. This protects the customer from being required to sign away his rights in order to obtain possession of his goods.

Household goods movers, as well as all regulated carriers subject to the Commission's jurisdiction, are now the subject of an investigation\(^\text{13}\) into


\(^{13}\) *Rules, Regulations, and Practices of Regulated Carriers With Respect to the Processing of Loss and Damage Claims*, Ex Parte No. 263.
carriers' handling of loss and damage claims—a constant source of irritation for consumers.

Earlier mention was made of the difficulty in determining the precise quantitative level to which rates can sink for the benefit of the consumer, vis-a-vis the upward rate levels that carriers need to retain their viability. Still, some facets of the Commission's broad range investigations into across-the-board rate increases sought by carriers are moving closer to this elusive point. As an example, in a recent ruling upon general rate increases sought by the Nation's railroads the Commission generated and subsequently spun off separate proceedings looking into the entire railroad freight rate structure, the rate base and the rate of return. In the principal investigation, the Commission has made special provision for the participation of consumers and private nonprofit organizations appearing on behalf of consumers who may lack the financial resources to prepare and serve all of the statements normally required for proceedings of this nature.

Auxiliary proceedings within the basic investigation of the rail freight rate structure include Ex Parte No. 270 (Sub-No. 1)—Investigation of Railroad Rate Structure, Export-Import Rates and Charges, and Ex Parte No. 270 (Sub-No. 2)—Investigation of Rail Freight Service. Within the latter investigation, the Commission has asked shippers to file with their nearest I.C.C. Regional Office a "Railroad Freight Service Report" whenever deficiencies occur. Within 30 days after filing such a report by shippers, the carriers involved must file a reply indicating the corrective action taken. Twice yearly the Commission will issue a statement of the number and kinds of complaints filed against each railroad, along with a summary of the actions taken.

Apart from this examination of individual service deficiencies confronting individual consumers, the Commission earlier called upon railroads to report corrective action taken for broad scale service failures.

Beyond the realm of the formal proceeding, which has been the customary medium for the agency, we have recently inaugurated a new program to reach consumers. The Commission has stepped off in the direction of issuing informal public advisories directly from the Office of the Chairman. To help consumers know their rights, three public advisories were issued in areas where we have detected that the public needed to know

15. Investigation of Rail Freight Rate Structure, Ex Parte No. 270; and Net Investment—Rail Rate Base and Rate of Return, Ex Parte No. 271.
16. See Footnote 15, supra.
more about the position of the shipper. Each of these advisories—and there will be more—concern motor carriers. The first was designed to inform the average family contemplating a household goods move on the methods of assuring that it pays no more than is necessary for the weight of the shipment. The second advisory alerted consumers on their right to obtain decent small shipment service.

The most recent advisory provided a means for consumers to bring to the Commission’s attention their appraisal of the quality of service provided by household goods carriers. This was a first for the Commission—a deliberate attempt to reach the consumer and to place in his hands a postage paid questionnaire by which he could inform the Commission of his views concerning his move. The volume of responses already has given indications of becoming overwhelming. Nevertheless, every response has been promptly acknowledged.

Translating these observations, as well as the many other consumer impressions the Commission is obtaining from other aspects of regulation, into formal adjudicatory channels is presenting an unusual challenge.

By and large, the rulemaking proceeding has offered the most promise. While it is difficult to separate those proceedings of special concern for the consumer from those relating to the broad public interest, the following list provides an indication of recent and current action in this area (beyond those earlier mentioned):

<table>
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<tr>
<th>Case Number</th>
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<tr>
<td>Ex Parte No. 55 (Sub-No. 4)</td>
<td>Implementation of National Environmental Policy Act of 1969.</td>
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<tr>
<td>Ex Parte No. 263</td>
<td>Investigate processing of loss and damage claims of regulated carriers.</td>
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<tr>
<td>Ex Parte No. 272</td>
<td>Investigate problems encountered by shipping public on c.o.d. or freight-collect shipments.</td>
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<tr>
<td>Ex Parte No. 278</td>
<td>Investigate discriminate practices of carriers.</td>
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<td>Ex Parte No. MC-1 (Sub-No. 3)</td>
<td>Rules governing credit period following freight delivery.</td>
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<td>Ex Parte No. MC-55 (Sub-No. 3)</td>
<td>Procedural discovery rules.</td>
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<td>Ex Parte No. MC-85</td>
<td>Support of programs for reuse and recycling of waste materials.</td>
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<td>Ex Parte No. MC-86</td>
<td>Implementation of the Postal Reorganization Act.</td>
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<td>Ex Parte No. 269</td>
<td>Adequacy of service regulations under Railroad Passenger Service Act of 1970.</td>
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<td>Ex Parte No.</td>
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<td>No. 35343</td>
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<td>Ex Parte No. MC-5 (Sub-No. 1)</td>
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<td>Ex Parte No. MC-19 (Sub-No. 7) (Sub-No. 12)</td>
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<td>Ex Parte No. MC-19 (Sub-No. 14) (Sub-No. 15) (Sub-No. 18)</td>
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The interests of consumers, the attitudes of consumers and the confrontation of consumers with established governmental bodies through class actions and individual initiative will probably be viewed by sociological historians as the manifestation of some unique psychic phenomenon emerging from this age, and a fair analysis will have to be left to those skilled in such disciplines. For the moment, the practical effect is demonstrably observable. The Interstate Commerce Commission is reaching out to the consumer as never before. The end result will be improvements in the regulation of carriers for the benefit of the public interest—as well as individual consumers.
"YOUTH FARES—CHAPTER TWO"

BY

WHITNEY GILLILLAND*

Over the past two years the problems of discount fares have taken on new and urgent aspects, and a great deal of public interest has been evidenced. The domestic youth fare case is presently in its third round

* Vice Chairman, Civil Aeronautics Board.
* About midway of these events my curiosity as to the views of the public, which might be reflected in the incoming correspondence, again got the better of me and I renewed my examination of the mail which, mindful of 1969, was increasing. I will give a few samples. I found that some favored the youth fares, as one from Buffalo who put it this way:

"... the additional business... should be beneficial. ... Besides, keeping youths on the planes decreases hitchhiking...."

But others viewed the matter differently as one from Cleveland:

"She and I both think we are nice people but we dislike... being told... we should pay... 2 1/2 times the price a youth pays..."

And this from New Jersey:

"Where is my equality?"

And this from California:

"We are paying through our grindstone-honed noses for the right of the young to turn up its collective nose at our lack of global insight."

And this from Washington:

"... You see, Dad... you cannot afford the trip... so give me $200 and I'll go."

And this from New York:

"Unresponsive as your agency has always been to the wishes of the people, I still want to let you know that there are two seething people at the above address."

And another from New York:

"The... reduced rate is a typical example of the 'Corporate State' doing anything short of murder to reap a profit..."

And this from Philadelphia:

"It seems... that the airlines have a tendency to think backwards."

And this from Evanston:

"Every time I read the ads... about youth... fares to Europe I get mad..."

And this from Brooklyn:

"This is the first time in my life that I have ever written a letter while feeling so angry."

And this from Seattle:

"Frankly this just burns me up."

And this from Islip:

"I am ready to man the barricades to correct this offense and I call 'to arms the citizens of middle age."

And this from New York:
before the Board, and an international youth fare case is in its preliminary stages. I will, accordingly, address the subject of youth fares and expand it to other discounts. It may be observed to begin with that in 1969 about 42 percent of domestic air transportation was performed at discount rates of one kind or another.

In the interval the industry has experienced a good deal of buffeting, a buffeting nourished by the introduction of the wide-bodied jet. The Board has likewise had its share. There have been those who would constrain us, others who would merge us, others divide us, others add to our powers, and still others would terminate our functions altogether.

The Board's authorities to regulate domestic fares on the one hand, and international fares on the other, are by no means precisely the same.

A primary test applicable to both is that of unjust discrimination, i.e., that of even-handed treatment of customers. The Board may order a formal investigation of any tariff, domestic or international, which on its face appears to fail this test.

Another primary test but applicable only to domestic tariffs is that of reasonableness. This is the economic test and, very broadly stated, is whether the fare will make a reasonable contribution to earnings. The Board may order a formal investigation of a domestic tariff which on its face appears to fail this test, but it has no authority to do so with an international tariff.

Furthermore, it may suspend the effectiveness of a domestic tariff for

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"I write this letter to express my anger at the arbitrary, capricious and outright monopolistic-minded attitude of your organization."

And another from New York:

"After I complete this letter I am going to try to compose my emotions and write a list of grievances . . . in preparation for consultation with the local chapter of the ACLU."

And still another from New York:

"I find this . . . a violation of my civil rights."

And this from Massachusetts:

"It is your job to regulate fares. Why don't you do it?"

And this from New Jersey:

"May I remind you that your job is political and that my contemporaries and I are active registered voters. . . ."

And from Boston:

"Youaugentlemenaredelictinyourdutyandyoushouldallresign without delay. . . ."

And this from Pittsburgh:

". . . the discriminatory age limits imposed by the CAB violate the Constitution. . . . Besides, who needs the CAB anyway? . . . the CAB seems to me a parasite on the body of mankind. . . ."
a time during a period of investigation, but may not do so in the case of an international tariff.

The youth fares before the Board in 1969, all of them domestic, provided discount rates for those under 22 years of age. They were intended as promotional and many of them were aimed at more economical distribution of traffic. They were of two classes—standby fares at 50 percent discount subject to some blackout periods, and reservation fares at 33-1/3 percent discount. The Transcontinental Bus System filed a complaint. On this first round the Board was of the opinion that investigation was not required, and so ruled. On appeal, however, the court reversed, saying that absent justification on a record the fares appeared to be unjustly discriminatory. Accordingly, the Board sent the case to an examiner to make a record but who, based thereon, indeed found the fares to be unjustly discriminatory. Thus the case reached the Board for consideration on the second round.

The Board's correspondence file at once began to accumulate letters in record-breaking quantity. The very numerous authors were by no means commonly motivated. nor did they express a like view. But whatever the view, it was usually expressed with emphasis, ornamented with colorful language, and sometimes the Board was unfavorably described.

On review of the examiner's decision on this second round the Board tentatively reversed him upon the issue of unjust discrimination, but returned the case to him primarily to reexamine the question of reasonableness, i.e., the economic test, about which the Board had doubts.

By this time a series of events had begun tending to sidetrack major focus on the subject of youth fares. This came about because the industry was approaching the bottom of the deepest economic trough it has entered in the 45 years of its existence. Costs were outstripping revenues, earnings were in the red, there was talk of insolvencies, bankruptcies, and other calamitous things. In some instances there were doubts as to whether services could continue.

The hard pressed carriers became much more interested in the potentials of a nominal upswing in the fares of the passengers they already had, than in the advocacy of ventures of uncertain profitability. As one carrier official put it to the Board: "... what we are talking about today is what we can do to keep ourselves alive, until we can do the right thing, which I believe everybody recognizes is desirable."

great proliferation of new tariff filings seeking increased revenues.

The Board dealt with this state of affairs in two stages. First, following upon thorough staff studies tested under industry criticism, and amid a great deal of legal controversy, the Board allowed some general fare increases over a broad range, carefully allocated among different kinds of services. Among other results was substantial narrowing of the youth fare discounts.

The second was the launching of the Domestic Passenger Fare Investigation, perhaps the most exhaustive, thorough, comprehensive, and capacity taxing formal investigation the Board has ever undertaken on any subject, which put not only fare levels and structure in issue but nearly every one of the many ramifications of the regulation of domestic passenger fares. The investigation has now essentially reached its final stages. In the course of it further increases have been allowed, and, depending in some degree on any post price freeze, more are possible.

Meanwhile, however, the examiner had again performed his duty with the domestic youth fare case; this time agreeing with the Board in its tentative view that the fares were not unjustly discriminatory, resolved the question of reasonableness affirmatively, and returned it to the Board where it was incorporated in the Discount Fares Phase of the Domestic Passenger Fare Investigation, and awaits final decision in the third round. That is essentially the present state of the matter regarding domestic youth fares.

While these events were transpiring another series began destined to renew attention to youth fares and with greater intensity. They arose in international transportation.

Until the early 1960's the endeavors of the U.S. supplemental carriers, i.e., carriers who hold no scheduled route authority, and are expected to confine their activities to charters, had not been profitable. This may have been due in part to the uncertain nature of their status which was supported only by exemption orders. About that time the Congress enacted a new law which authorized the Board to formally license them. Thereafter these carriers progressed and by the early 1970's had attained a very considerable share of the transatlantic passenger market. In 1970 there were nearly 2 million charter passengers between the United States and Europe. More than two-thirds of them were transported by charter carries, U.S. and foreign.

It is not for me now to express an opinion as to whether or not this

has been newly developed traffic of a particular kind and stimulative of the entire market, as it is considered to be by the supplementals, or whether it is a part of normal growth and highly diverted from the scheduled route carriers, as viewed by them. It is not the facts, but what people think, which motivates action. It may be observed that there is more than one type of action that can behave like a boomerang. The scheduled carriers began to cast about for ways and means for action.

A very great deal of the appeal of the charters undoubtedly lay in low cost to the passengers. The North Atlantic route carriers took action by a multiplicity of discount fares agreed to in IATA, excursion, GIT, affinity and incentive group fares, with variations in depth of discount, required numbers, length of stay, seasonability, peaking, and in other aspects, which, when normal fares are added, and to the distress of many travel agents, has reached a present effective total of 48. Since the last IATA agreement, however, the scheduled carriers continued to cast around and some of them began to take particular interest in the fact that many of the charters are filled with youths.

There were two barriers to the scheme which one or more of the European carriers developed. One was the existing IATA agreement concerning discount fares. That could be gotten around if the carrier's government would direct the introduction of a nonconforming fare. The other was that although the Civil Aeronautics Board had not been given jurisdiction over the reasonableness of international rates, or power to suspend tariffs, it did have jurisdiction over unjust discrimination, power to investigate, and power at the end of the investigation to take some action. But the European carriers or their U.S. representatives had followed the course of the domestic youth fare case with interest, and had taken note of the fact that the examiner, and the Board, albeit tentatively, had already held that youth fares were not unjustly discriminatory. International youth discount fares then, it may be surmised, appeared to offer a particularly attractive opportunity to improve competitive position.

There then began a series of filings of transatlantic student fares and youth fares at discounts more than fifty percent below economy class, and usually with age limits extended considerably above those applicable to domestic youth fares, albeit they all required nominal reservation periods.

The first of these occurred in mid-spring. It applied to the New York-Belgium market, and was made effective May 27, 1971 at a basic price of $200 round trip. This tariff was observed and caused concern to carriers who did not serve this market, lest their traffic in other markets be diverted. Accordingly it was followed by others variously covering services
to Amsterdam, Paris, Frankfurt, London, Glasgow, Zurich, Copenhagen, Oslo, Stockholm, Belfast, Shannon, Helsinki, Prague, Tel Aviv and Moscow. Many of them were extended to other U.S. points, and to other points in the respective countries in Europe. Fares at similar distances were the same as the Belgian fare, but adjusted upward or downward if distances varied materially. This great proliferation of such sharply reduced selective discount fares began to cause concern in official circles lest the carriers had considerably overreached, and the Board took an initial step by cautioning that student discount fares, which many of these were, as distinguished from discount fares available to all youths, had long been considered to be unjustly discriminatory.  

In June, one of the European carriers filed a youth fare tariff New York-Rome at $199—which on a distance basis was much lower than any theretofore filed. There were no advance reservation requirements, and the fare was for year-around application. Furthermore, it was a short-notice filing, i.e. the carrier proposed to place it in operation immediately, and it proceeded to advertise, sell tickets, and transport passengers. The Board had neither obligation nor disposition to permit effectiveness before the expiration of the statutory period of thirty days. Accordingly, it rejected the short-notice filing and turned the matter over to its Bureau of Enforcement.

This lack of welcome caused the carrier to become unhappy. In one of its several efforts to persuade the Board to change its mind it said—that the Board’s rejection, in relation to its fundamental problem, was “like trying to destroy an enormous iceberg with a two-inch screwdriver.” Furthermore, it said, considerably, “the effect . . . is clearly contrary to the interests of the youthful American traveler.” Both of these propositions, of course, may be so.

These transatlantic youth fares were not, in their turn, overlooked by the charter carriers. The National Air Carrier Association promptly filed a complaint asserting that the youth fares are unjustly discriminatory and asking an expedited investigation. This was quickly supplemented by the United States Department of Transportation, likewise asserting that the youth fares are unjustly discriminatory and asking for an investigation. Quite likely these complaints in their turn attracted the attention of the route carriers, many of whom had filed the youth fares primarily for competitive reasons.

About this time the members of the International Association of Air

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*4. Letters from students.
Transport Airlines met at Montreal in the hope of creating some order. But the fare structure which finally evolved, and was acquiesced in by the majority, is essentially the current structure to which would be added an off-season group inclusive tour fare, a youth fare at $195 basic, and as a principal new ingredient an advance purchase fare, called APEX, likewise at $195 basic. This last, at least, "shares the wealth," if there is any. But the package would appear to add to the already complex nature of the structure. But not all of the carriers agreed and it now appears that as of February 1, 1972 an open rate situation may exist over the North Atlantic.

On September 15, 1971 Lufthansa filed tariffs for February 1, 1972 effectiveness. That package does possess the virtue of simplicity. It embraces regular economy fare New York-Germany at $420 or $116 less than present services, a 14-45 day excursion fare at $210 basic, a 21-day, 5-passenger group inclusive tour fare at $180, and youth fare at $195 basic. But it is reported that the carrier, in announcing the fares, frankly acknowledged that profitability is not expected during the first year of operations. If this is so it means that a great deal of new traffic, at least new to Lufthansa, must be developed in order to bring the operations into eventual profitability. The Lufthansa fares were matched by other carriers and stimulated other innovative filings. KLM has offered a senior citizen fare at youth fare levels.

According to the Aviation Daily, on September 22, the German supplemental carrier, Atlanta Airways, announced a round trip New York charter rate at $135 for February 1, 1972 effectiveness, and that the North American manager stated that the services will probably have to be subsidized from other services to Spain and the Mediterranean. The Daily also recently carried a line to the effect that the transatlantic situation has become so chaotic that the going rate for under-the-counter tickets is said to be as low as $45 one way.

Evidence of fallout from the transatlantic situation on scheduled route carriers elsewhere commenced long ere this, i.e., scheduled carriers serving other markets began to perceive the potential diversionary impact. For effective date in August, Aeronaves de Mexico filed youth fare tariffs U.S. Mexico at about one-half the economy rate. These were quickly followed by other carriers.

Evidence of the fallout has also begun to appear in the domestic markets and has nourished a second reversal in carrier interest in the characteristics of new tariffs. A multiplicity of new and varying discount fares have been filed, some have been suspended, and many have gone into
effect. As put by the Board's eminently capable director of the Bureau of Economics, Mr. Robert J. Sherer—"We've got a lot of swinging deals on file here." Typical supporting language included in a new carrier filing is as follows: "The current and expected additional reductions in promotional fares on the North Atlantic creates substantial new competition for the U.S. domestic travel market. Domestic promotional fare offerings must be available to meet this competition."

That there is an effect upon the fortunes of the domestic carriers can hardly be doubted for many a potential passenger is likely to be diverted from a domestic trip, if he can cross the Atlantic at a lower price. Furthermore, he is quite likely to be diverted by a discount rate of another domestic carrier established to hold its market against the competitive influence of the international markets. It seems much more than possible that this state of affairs will continue, and the dominoes to tumble, and with accelerating rapidity, until and unless means are found to bring it under control.

On September 1, 1971 the Board did indeed enter an order for a formal investigation into the question of whether or not the international youth fares are unjustly discriminatory.5 This is the beginning of round one. In doing so it made mention of the fact that the New York-London fare represents discounts of 62 and 58 percent, and the New York-Rome fare discounts of 72 and 66 percent, below present economy levels, whereas the domestic youth fares now in effect represent discounts of but 20 and 33 percent. It observed that the international youth fares involve significant differences from domestic youth fares, that they encompass a broader age span, and are subject to different levels in relation to normal fares. This is a more ambitious proceeding of its kind than the Board has undertaken before, and it will undoubtedly be highly controversial. But if the fares prove to be unreasonable, i.e., uneconomic, as it appears they may be, the Board is without statutory authority to strike them down on that ground, nor can it suspend them during the period of investigation. On October 18 the Board ordered an investigation of the KLM senior citizen fare similar to that of the youth fares.6

The Board at this point has completed no evaluation of the economic impact of either the Montreal or Lufthansa proposals, and pending that I can express no firm opinion concerning them, much less of other proposals which they may trigger. On the other hand I am in no position to say that the situation is not fraught with danger which extends not only to

5. CAB Order 71-9-3.
6. CAB Order 70-10-71.
the carriers but to the public. Although the North Atlantic carriers made a subsequent effort to patch their differences in a conference in Lausanne; that conference broke down on October 30.

What is urgently needed is that the Board's authority to deal with international rates be expanded sufficiently to permit it to come adequately to grips with the situation. This is a power possessed by the aeronautical authorities of virtually all other governments. The historical method of dealing with international rates by the United States has lain in the Board's veto power over IATA agreements. This power has never been adequate, has several times failed in its exercise, and as it pertains to the problems which now confront us, exists not at all.

In calling hearings for October 19 on a bill to give the Board an expanded role, Senator Howard W. Cannon, Chairman of the Commerce Subcommittee on Aviation of the United States Senate among other things said:

"Only with fares that are fully compensatory and economical can carriers maintain the safety and quality of services that has established aviation as the superior form of public transportation throughout the world."

The first witness was the CAB Chairman, Secor Browne. His major emphasis was this:

". . . the need . . . is to put the United States on a basis of equality . . . with foreign governments."

The regulation of rates is a miserable business at best. The passengers don't like fares and would much prefer to do without them. Furthermore, if there were no fares the carriers would be relieved of a tremendous administrative burden and there would be appreciable savings in costs. But thus far no one has come forward with any plan whereby air transport services can be provided without fares. Until someone does we may expect to continue to have them. Fares should be adequate, they should be reasonable, and they should be even-handed. The Board will continue to do its best with such tools as it has to see that they are. We could use some more.

POSSIBILITIES AND PROBLEMS OF PREVENTING OIL POLLUTION OF THE OCEANS

LAWSON A.W. HUNTER*

INTRODUCTION

Since the industrial revolution, pollution of the oceans has continued at an ever increasing rate. But, the size of the oceans means it is difficult to understand what effects pollution is having on nature's delicate balancing mechanisms. The result has been that parties advocating particular ocean management policies tend to issue emotional, rather than objective statements of views. This has been true with the problem of oil pollution of oceans. In this article we will attempt to present an alternate method of assessing a particular policy for controlling oil pollution. The policy or objective we will discuss is the prevention of oil pollution. Since we will concern ourselves only with prevention of oil pollution, there are necessary limitations on the scope of the discussion. For example, there will be no consideration of cleanup measures, their effectiveness or shortcomings. Similarly, the problem of liability for pollution will not be considered. In a more general sense, the distribution of the costs of pollution will also lie outside the scope of the discussion.

This article will deal only with the specific problem of oil pollution arising from the shipping industry. This encompasses spills from oil tankers normal ship operations, and harbour and dock handling of tankers and other vessels.

Cost Effectiveness

The costs of oil pollution fall into three main categories. First there are economic costs. Such costs would arise from the loss of a valuable commodity, i.e. petroleum products. There is the cost of the total loss or damage of tankers or ships due to collisions or strandings. There is also the cost of clean-up operations and the research and administrative work necessary for effective remedial action. Commercial fisheries and the resort or tourist industry may also suffer an economic loss. A second category is the ecological or biological cost. This may include harm to marine organisms with resultant effects on commercial fisheries that in the final analysis may adversely effect human life where the contamination works

upward through the food chain. The third category is the aesthetic cost made manifest in the loss of a pleasant environment due to unsightly beaches. [And, it should be added, there may be an economic loss to resort areas.]

The economic costs can be dealt with more easily than the ecological or aesthetic costs. Economic losses can be distributed throughout an entire enterprise over a period of time through such devices as insurance and compensation funds. Economic costs are easily analyzed by the use of cost effectiveness models and in that way can determine a proper course of action to combat oil pollution. If the costs of preventive measures within the same distributive and time parameters are less than the costs resulting from not taking such action, then rationality indicates that preventive measures are the least costly and most beneficial approach. This would be true regardless of the weight given in the analysis to the ecological and aesthetic costs of oil pollution.

The ecological and aesthetic costs are much harder to deal with because of their unquantifiable nature. These costs relate to the preservation of an enjoyable environment for man's existence and well-being. They may in the long run affect the very existence of man either collectively or individually. If their occurrence is highly probable to a degree requiring action then such costs must be given very great weight. At some point these costs may outweigh the economic costs.

To attribute a cost to the ecological effects on marine life, water, food and possibly mankind is by far the most difficult task. Short term ecological effects are easier to deal with than long term effects because they are usually reflected in economic costs, for instance, loss of income to commercial fishermen or lost revenue in a resort area. But how do you attribute a cost to long term effects? The first step is the delineation of the possible long term hazards. This is where the scientists, marine biologists and chemists come into the picture. It is on the basis of their research and expertise that the decision as to the weight such hazards receive in the analysis must be made. The decision here is essentially political.

The foregoing discussion is a consideration of some of the inputs and variables that would go into an analysis of what course to follow in dealing with oil pollution of the oceans. It assumes that there are only two possible responses to the problem: (1) preventive action and (2) remedial action. This assumption eliminates the possibility of taking no action. It is submitted that this is reasonable in the present political setting where there is obvious concern over the problem of oil pollution. It is not assumed, however, that the course of action decided upon must be wholly preventive or wholly remedial. The two may interact. If remedial action is deemed to be the primary purpose, the remedial measures decided upon
may be, in fact, preventive measures. This merely shows that remedial actions may have a preventive purpose or that the remedial purpose can utilize preventive measures. Also, if preventive action is determined to be the primary concern, remedial action will still be necessary for preventive measures have as their purpose the minimization of pollution. Total abatement is very unlikely. This factor may mean that the only important question to be answered is whether the costs of oil pollution of the oceans are high enough to necessitate a course of action which is primarily preventive.

It is not possible presently to decide whether prevention should be the primary objective in dealing with oil pollution. But because of the importance of this question, the rest of the paper will emphasize the problems related to prevention of oil pollution. The costs of oil pollution of the oceans will be considered in more specific terms. This will be particularly true of the economic costs and the ecological, long term costs. Very little can be said about the aesthetic costs which would be beneficial. The result of this discussion will not be to decide whether prevention should be the primary objective, but only to clarify some of the factors to be considered. The economic costs will be essentially post-pollution costs. The ecological costs will deal with possible outcomes or results of continued oil pollution in the long term as determined by scientific research.

Economic Costs

It is possible that the results of a cost effectiveness analysis of the strictly economic, calculable costs of oil spills would show that preventive action resulted in a marginal benefit overall. In effect such an analysis would not take into account any costs attributable to aesthetic or ecological losses other than those directly resulting in an economic loss from a particular pollution incident. Examples of such losses would be drops in fishing revenues or decline in tourist trade. Such an analysis should take into account all of the economic costs of the particular system being analyzed. These costs fall in three categories.

1. Government costs resulting from clean-up operations, rehabilitation, compensation schemes, research and administrative expenses.
2. The costs to ship owners and operators and cargo owners such as insurance premiums, ship repairs and replacement, cargo loss and liability to governments or private individuals.
3. The costs to private individuals such as fishermen, waterfront property owners and the owners of resort and commercial establishments.

At the present time the domestic legislation of most nations results in
the costs of oil spills falling, at least partially, into all three categories. However, as international agreement is reached on the liability question and as more nations adopt comprehensive and sophisticated legislation to handle the distribution of costs of oil pollution, the burden of these costs will probably shift toward the owners and operators to the virtual exclusion of private individuals and government costs. How the costs of oil pollution are to be distributed is a complex political question. Regardless of the distribution scheme adopted, all the internal costs must be considered in an economic cost-benefit analysis and not just those absorbed by the owners and operators of ships and their cargoes.

Returning to the consideration of a purely economic cost effectiveness


3. An example of this is the latest Canadian legislation in the area. Bill C-2, An Act to amend the Canada Shipping Act, Oct. 19, 1970 (first reading), Third Session, 28th Parl., 19 Eliz. II, (1970). Under this legislation the owner of the ship and the owner of the pollutant are jointly and severally liable (c) for the costs and expenses of and incidental to the taking of any action authorized by the Governor in Council to repair or remedy any condition that results from the discharge of a pollutant in waters to which this Part applies that is caused by or is otherwise attributable to that ship, or to reduce or mitigate any damage to or destruction of life or property that results from or may reasonably be expected to result from such discharge, to the extent that such costs and expenses can be established to have been reasonably incurred in the circumstances, See Appendix, page 73. (d) for all actual loss or damage incurred by Her Majesty in right of Canada or a province or any other person resulting from the discharge of a pollutant into waters to which this Part applies that is caused by or is otherwise attributable to that ship. See Appendix, page 73. The owner of the ship and its cargo are also liable for any action taken “to destroy or remove a ship or to destroy or remove the cargo or other material on board a ship . . . to the extent that such costs and expenses can be established to have been reasonably incurred in the circumstances . . . ” Bill C-2, S. 743(2).

In addition the legislation establishes a fund to be used to compensate fishermen for loss of income due to the discharge of a pollutant. The fund can also be used to allow recovery of claims above the maximum amount directly recoverable from each separate incident. The income of the fund is basically a tax of up to 15¢ on every ton of oil imported to or exported from Canada. Bill C-2, S-757.
analysis, it should be noted that such an analysis can be categorized into different systems. Each system would be subjected to operational research techniques of its internal operation and the external costs of other systems would be excluded. For example an analysis of the costs of preventive measures whose aim was the elimination of operational pollution. Another possible model would separate the oil tanker trade from the rest of the shipping business for the purpose of analysis.

This is not to say that oil pollution of the oceans arising from tanker and ship operations cannot be viewed as a single system. It can and for reasons cited below probably should be if a realistic picture is to be drawn.

For the moment let us assume that we are going to separate problems of accidents from those of operation for the purpose of cost-benefit analysis. It seems likely that the results of an analysis of an accidental problem would more likely show the marginal utility of implementing preventive measures to curtail such catastrophes than would an analysis of an operational problem. The direct expenses and costs of accidents are much greater than those associated with operational problems. The legal mechanisms for making this type of polluter liable are also more sophisticated. It is possible that preventive measures to control operational pollution would also show a marginal economic return. In fact this is the situation with the Load-on-Top technique of tank cleaning and ballasting where the oil companies have found that the value of the oil they recover and utilize through the use of this technique is greater than the cost

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4. H. Raiffa, *Decision Analysis*, 295-297 (1968); also Stratton and Silver, supra note 1, at 327.

5. Accidental problems would result from collisions, strandings, groundings, explosions or any other case where extensive damage was done to a vessel with the result that a major oil spill occurred in a fairly localized area.

6. Operational problems could be chronic pollution resulting from the normal operation of the ship eg. discharge of oily ballast water or bilge. They would also arise from spills resulting from onshore facilities for the handling and storage of oil and its transfer to and from ships. These two types of operational problems could be analyzed separately as well.

7. Costs resulting from catastrophes such as the “Torrey Canyon” fall into all three of the cost categories outlined above, i.e. governmental, owner-operator and private individuals.

8. Many of the legal problems confronted when trying to recover from those responsible for chronic operational pollution are not present when an accidental problem occurs. There is no difficulty in establishing or locating the parties responsible. Accidents are more likely to occur in national waters where domestic legislation can establish liability and the means of enforcement of judgments is more effective than in an international jurisdiction. Operational spills are likely to occur anywhere in the ocean. There is also the added problem of establishing the identity of the polluter. Tracing and tagging systems and techniques are being developed to overcome this problem.
involved in recovering it.\(^9\)

The fact that a purely economic or internal cost benefit analysis would less likely show the desirability of preventive action to control operational pollution illustrates the weaknesses of such a narrow analysis. The total amount of oil pollution from chronic operational spills is much greater than that from accidental spills.\(^10\) The long term effects of operational pollution may be much more serious than those from accidental spills also. The result may be that the main purpose of such systems analysis or cost-benefit analysis is to prove to the ship and cargo owners and operators that it would be better to prevent pollution from their own self-interest.

There is no doubt that if sufficient reliable data were available a cost effectiveness analysis could be used to determine whether on purely economic costs it would be worthwhile to implement preventive measures to control or eliminate oil pollution.\(^11\) It could be used to test the utility of particular isolated preventive techniques such as improved navigational aids or new training programs. It can only be used, however, if there is accurate data. This necessity has led one group of experts to conclude that “this problem is not susceptible to precise cost-benefit analysis.”\(^12\)

Several types of data would be required. There would be the cost of implementation and regulation of preventive action that would include equipment and administrative costs. There also would be the costs related to spillage as damage to ships, insurance premiums, clean-up costs, and private liability actions. For proper data input one would have to know the effectiveness of the preventive measures and be able to generalize


\(^11\) Stratton and Silver, supra note 1, at 325; R.I. Price, Anti-Pollution Measures—IMCO Subcommittee on Ship Design and Equipment, 8 Marine Technology, 1, 7 (January, 1971).

\(^12\) Secretaries of Interior and Transportation, A Report to the President on Pollution of the Nation’s Waters by Oil and Other Hazardous Substances (1968) [hereinafter cited as President’s Report]; where the report says: It is reasonable to seek a comparison between the costs of preventive measures on the one hand and the costs associated with cleanup and damages on the other. If such a comparison were possible, it would permit us to distinguish on a quantitative economic basis between those preventive measures which warrant investment and those which do not. As with so many other pollution or safety problems whose occurrence is unpredictable, whose location cannot be pre-determined, and whose magnitude can vary markedly, the conclusion that must be reached is that this problem is not susceptible to precise cost-benefit analysis.
pollution costs over a given time period. This would involve not only arriving at a figure of how much it would cost to clean up spills of various sizes but also estimating the number and size of spills likely to occur during the experimental time period. It would be necessary to estimate damage to ships, changes in insurance premiums, likely civil damage liability and many other cost factors. The uncertainty of this information would decrease the reliability of the outcome. But over a period of time if proper data banks were established, trends and stabilized norms should begin to appear which lessen the uncertainties. The United States Coast Guard is collecting much of the necessary information presently. A cooperative effort should be made by all involved parties to insure that all the relevant information is available.

Even if sufficient reliable information is not available to ensure a reliable outcome to its application to the entire shipping and tanker business, the systematic collection of any information and its application to a realistic model would be a valuable addition to our knowledge and insights of the problem of oil pollution of the oceans.

Ecological Costs

One of the most difficult aspects of the oil pollution problem is the long term economical effects of continued pollution. Not only are the biological effects of oil pollution uncertain, but it is very difficult to quantify those possible effects in concrete economic terms. Yet these effects cannot be ignored.

... the objective of heightened sensitivity in technology assessment should, whenever possible, be achieved by structuring the incentives of individual decision makers so that they are induced to alter their

13. There is already a dispute whether clean-up costs can be reduced to a unit cost/gallon or cost/ton figure. The U.S. Dept. of the Interior has stated that the cost of cleanup of oil spills is in the vicinity of $1.00/gallon of oil spilled. They recognize, however, that very small spills may have a disproportionately high cleanup cost. Hearings before the Subcomm. on Air and Water Pollution, 91st Cong., Senate Public Works Comm., 1012 (1969).

In a letter to Senator Edmund S. Muskie dated May 19, 1969, the American Petroleum Institute stated: From the amounts of oil spilled and the clean-up costs reported, it is clear that the size of the spill is not the dominant factor in determining cleanup costs. More important are the location of the spill and the type of oil involved. If beaches and boats must be cleaned, the cost will be much higher than if oil can be quickly contained and removed from the water. Moreover lighter products, such as gasoline, are less costly to cleanup than crude oil or No. 6 fuel oil.


15. Private parties such as insurance companies, oil companies and tanker operators must all cooperate if realistic information is to be obtained.
cost-benefit calculations to encompass wider concerns than have heretofore been given consideration. 16

The biological costs may result in: 17 (1) long term damage to coastal and inter- tidal zones where the great bulk of pollution occurs and (2) long term consequences to the marine environment and possible human life and health due to chronic pollution of the open ocean. Coastal Pollution—Spillage near land in shallow water constitutes the bulk of pollution arising from accidental spills since these spills usually result from strandings or collisions. A considerable amount of coastal pollution also results from terminal handling spills during loading and unloading in port. 18

Extensive research has been done on the biological consequences of pollution in this region. The results are anything but consistent. In some cases the effects have been disastrous, with immediate and persistent mortality of most animal and organic life. 19

The best researched example of a spill causing such disastrous consequences is The West Falmouth spill in September, 1969. 20 The studies 21 of this spill have shown an almost complete mortality of all living organisms in the area. The oil also penetrated the sediment up to 40 feet below the surface and spread through the sediment from an initial area of 500 acres to over 5,000 acres. There was a resultant mortality of bottom life as the oil spread throughout the sediment. Studies have also shown that the oil picked up by oysters, scallops and clams was stored in the lipids areas of these organisms. This oil was not discharged from oysters up to nine months after they had been removed to clean water. 22 Mussels which

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17. We will not discuss such costs as reductions in Commercial fishing revenue since such costs are part of the total economic costs of oil pollution.

18. Pollution in the coastal regions also arises from oil reaching the ocean but having originally been deposited on land or in watercourses.

19. For example, the wreck of the “Tampico” in Baja, California, Mexico in 1957 caused “a completely natural area [to be] almost totally destroyed suddenly on a large scale . . .” W.J. North, “Tampico,” A Study of Destruction and Restoration, 13 Sea Frontiers, 212-217 (1967). Similar results were seen in a spill of 4,000 barrels of No. 2 fuel oil into Great Bay, N.H. in 1969. Thomas A. Murphy, Environmental Effects of Oil Pollution, presented to session on Oil Pollution Control, American Society of Civil Engineers, Boston, 13 (1970).

20. On September 16, 1969 a barge spilled 4,000 barrels of No. 2 fuel oil into Buzzards Bay, West Falmouth, Massachusetts.


appeared unharmed by the spill failed to reproduce. The killing of plant life may have resulted in erosion and have caused the spreading of trapped oil.

These results are very disturbing both in the short run and the long run. The difficulty is, however, that not all coastal spills have shown the same results. The effects of the “Torrey Canyon” and “Arrow” catastrophes have not been nearly so pronounced. How can this inconsistency be explained?

No two spills will ever occur under exactly the same set of circumstances. Until we have a body of knowledge about all the different factors that determine the consequences of a spill, it will be impossible to attach standard results to coastal spills.

Several factors determine the ecological effects of oil spills in coastal regions. First, the type of oil spilled is very important. At West Falmouth the oil was #2 fuel oil. This oil consisted of 41 percent aromatic fractions which are known to be very toxic. Both the “Torrey Canyon” and “Arrow” spills involved crude oil. This may explain the lower degree of mortality in these spills. An offsetting factor is that crude oil has a greater smothering effect than #2 fuel oil which tends to evaporate. The general point is that the type of oil spilled greatly determines the results.

Environmental and climatic conditions also affect the results. If the spill is in a closed area, the results will be more pronounced. The same is true in an open area if the wind is onshore preventing the slick from dispersing at sea. Another factor is the roughness of the sea. High seas churn up the oil, emulsifying it and spreading it throughout the water column where it is retained for long periods of time. The condition of the sea may also have a bearing on how much oil is deposited in the sediment. Another factor determining the degree of sedimentation of oil is the amount of silt, sand and other suspended particles in the water contaminated by the oil. After oil is incorporated in the sediment its persistence will depend on the degree of biodegradation which takes place. Whether it will spread throughout the sediment depends on the

25. Crude oil contains all the fraction which No. 2 fuel oil contains but in much lower concentrations per unit volume.
26. Murphy, supra note 19, 10.
27. Id., 10-11.
29. Id., 15.
patterns of currents and sand movement in the particular area affected. Another very important factor is the water and air temperature at and immediately after the time of the spill. Oil, particularly crude oil becomes very viscous, almost solid at low temperatures.\textsuperscript{30} It thus is not easily emulsified.\textsuperscript{31} But it also may not be susceptible to biodegradation which may be very important in extremely cold areas such as the Arctic or Antarctic.\textsuperscript{32} Thus the entire behavior of oil, including its distribution in the water and bottom sediments may be greatly affected by air and water temperature.\textsuperscript{33}

It is obvious that the biological results of coastal pollution depend largely on the particular circumstances of the spill. With more comprehensive research it will be possible to predict the results and have a sound basis for predicting the seriousness of this type of oil spill.\textit{Open Ocean}—Pollution in the open ocean is primarily the result of operational pollution such as tank cleaning or bilge pumping. It also results from the dispersion of oil from coastal pollution.\textsuperscript{34}

To date very little research has been done on the consequences of chronic oil pollution in the open ocean. It is evident that the quantity of oil in the open ocean has reached the level where it is at least troublesome.\textsuperscript{35} But is it possible that its effects may be much more profound and serious? The world's oceans cover seventy percent of the surface of our planet and consequently play a vital part in the ecological systems necessary for the maintenance of life on earth.\textsuperscript{36} The massive introduction of foreign substances into the ocean may upset the delicate balance of nature's complicated systems. This is particularly true in the deeper parts of the ocean. These environments are relatively stress free. The disturbance of these environments may have grave, unpredictable consequences.

\textsuperscript{30} This may account for the relatively minor biological damage in the aftermath of the "Arrow" case. In the month following the "arrow" grounding the daily minimum temperature ranged from 0-30\textdegree{}F. Task Force—Operation Oil, supra note 23, 5-6.

\textsuperscript{31} Id., 29.


\textsuperscript{33} Temperature also affects the techniques available for clean-up. For example, mechanical collection by skimmers is by far the most efficient means of collecting semi-solidified oil; see generally, Task Force—Operation Oil, supra note 23.

\textsuperscript{34} In the "Arrow" case within a few days of the spill the oil contaminated the beaches of Sable Island which lies more than 100 miles southeast of Chedabucto Bay. Task Force—Operation Oil, supra note 23, 28.

\textsuperscript{35} Tar balls are present all across the Atlantic Ocean and throughout the Mediterranean. The beaches of Bermuda are so polluted that swimming is very unpleasant at best.

\textsuperscript{36} Well over one-half of all the oxygen in the earth's atmosphere is manufactured by oceanic phytoplankton. The resources of the potential sources of material for human society.
which could send shock waves along the entire hierarchical structure of the marine environment. Because these environments are relatively benign disturbances of minor proportions might be sufficient to set off a chain reaction. With the continued massive introduction of hydrocarbons into the open ocean it is inevitable that they will penetrate to the greatest depths of the ocean.

The serious effect oil can have in coastal regions has already been discussed. Yet coastal environments are by far the hardest of all marine environments. The organisms that live in these regions have developed great tolerances to stress over the centuries. Granted, the concentrations of pollutant that have greatly affected coastal regions are much higher than could be expected to occur in the depths of the ocean. But this factor has to be discounted by the greater tolerance levels of the marine life in shallow water areas.

The ocean is a closed biological system; inputs of any kind, if great enough, will affect the whole system. It is very likely that the quantities of oil presently being pumped into the oceans is large enough to effect the system. Some possible effects have been discussed. For example, certain organic compounds marine organisms. "Such chemical attraction—and in a similar way repulsion—plays a role in the finding of food, the escape of predators, in homing of many commercially important species of fishes, in the swecting of habitats and in sex attraction."

Concentrations below one part per billion may trigger a response. Pollution may interfere with these processes by blocking the receptor or by triggering false responses.

Another potential problem results from the known link between oil and cancer. The higher boiling crude oil fractions contain carcinogenic inducing compounds. If marine organisms retain sublethal amounts of these compounds in their tissues, they may be passed up the food chain and eventually become part of the human diet. Contaminated beaches pose an additional threat through skin exposure to the carcinogens.

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37. Blumer, supra note 10, 6.
38. Id.
39. Id.
40. Id., 4-5.
41. The scientific community is in dispute over the possible dangers of cancer inducing hydrocarbons. One commentator feels that the levels of these compounds likely to end up in the human diet through the marine food chain is less than man is commonly exposed to in the atmosphere. However, this does not deny the fact that carcinogens in the environment should be kept at as low levels as possible. A.E. Martin, Water Pollution by Oil—Some Health Considerations, Presented at Avienmore Symposium on Oil Pollution, Institute of Petroleum, (May 1970).
Sublethal amounts of oil, if incorporated into organisms, can result in reduced resistance to infection and the eventual death of the organism.\footnote{Blumer, supra note 10, 12; see also Arthur Bourne, The Sea Bird Wreck, 44 New Scientist 292, (Nov. 1969).}

The lack of adequate research on the potential consequences of chronic oil pollution, particularly in the open ocean, makes it impossible to determine the seriousness of the problem. This in turn makes it very difficult to assign a weight to these consequences in a cost effectiveness analysis of the problem of oil pollution. This difficulty should not mean a discounting of these possible consequences, however.

\ldots [O]ne has only to consider how long DDT was in use before untoward consequences were observed, or how difficult it has been to establish with any degree of certainty a causal relationship between cigarette smoking and lung cancer, to realize that direct evidence of the public health hazards of marine pollution may not be forth coming for a very long time. It is all the more important in these circumstances that any suggestive evidence should be treated seriously so that it can be confirmed or dismissed. It would be the height of irresponsibility to ignore the whole problem simply because existing evidence is vague and inconclusive.\footnote{Public Health and Pollution, Marine Pollution Bulletin, 97 (July, 1970).}

There are two underlying assumptions of the discussion to this point: (1) The technology of oil pollution now makes it possible to reduce and control oil pollution caused by the shipping industry through the introduction of preventive measures. (2) It is politically realistic to speak of implementing effective preventive measures and enforcing their use.

**Preventive Technology**

As a starting point it is important to understand the scope and meaning of "technology" or "techniques" as words of art. The concept these words express is broader and more abstract than to mean simply machines or science and engineering. In a technological society technique has been defined as "the totality of methods rationally arrived at and having absolute efficiency (for a given stage of development) in every field of human activity."\footnote{Jacques Ellul, The Technological Society, XXV (1964).} This definition of technique encompasses not only scientific and engineering methods but also procedural and organizational methods. These two methodological approaches (scientific and procedural) may work complementary roles in a particular technology. Or they may be
separated at least in the sense that the difficulties in reaching "absolute efficiency" arise almost exclusively from one side. For example, engineering may have produced fool-proof navigational aids but until they are implemented through organizational techniques they remain virtually useless. So, in discussing the use of such navigational aids as part of preventive technology, the technique is completed only through organizational efforts.

It is important to clarify another matter at this point. The discussion of preventive technology in this section will deal only with the scientific and organizational aspects of preventive measures where each is viewed as a closed, independent subsystem. Thus, for example, it will deal only with the internal organizational aspects of establishing an effective navigation system. Such matters could be the coordination of ship-shore facilities, the hierarchy of authority and responsibility among personnel within the system or maintenance and inspection schemes to ensure maximum reliability of the equipment. It will not be concerned with the external political problems encountered in adopting the system, whether they arise privately within an oil company, nationally when a legislature contemplates regulatory legislation, or internationally through conventions on international safety or pollution.

Given the definition of "technique", the exclusion of external political problems does not seem warranted. Such problems obviously play a very important role in the broad development of preventive technology. Since they will be discussed in a later section of the paper, it was decided to exclude them at this point.

The impetus for research into preventive technology of oil pollution from maritime transportation arose primarily in the aftermath of the "Torrey Canyon" disaster in 1967. For the first time many nations saw the consequences of an oil-based technology. National and international interests presented proposals for checking on pollution including feasibility studies. Although research is still continuing, it is now possible to consider the results of some of the work done, on a theoretical and, in some cases, a practical basis.

45. The "Torrey Canyon" went aground off the southwest coast of England on March 18, 1967 releasing over 100,000 tons of Kuwait crude oil into the ocean. See generally Zulu Seawork Capabilities Reports, Oil Spill, D-1-D-17. (1968).

46. A Special Session of the Council of the Inter-Governmental Maritime Consultative Organization (IMCO) met at the request of the United Kingdom Government in London on May 4-5, 1967 to consider international action to be taken in light of the "Torrey Canyon" disaster. As a result of that meeting the IMCO Committee on Maritime Safety was directed to undertake studies of the preventive, curative and legal aspects of oil pollution.
Safe Sea Routes and Traffic Separation

It is inevitable that a rapidly increasing volume of petroleum products moving over the oceans in increasing numbers of ships and tankers travelling via unassigned and less-than-safe routes will result in more collisions.\textsuperscript{48} strandings and, it follows, overall oil pollution.\textsuperscript{49} This is especially so in waterways where traffic is congested.\textsuperscript{50} Areas where collisions are likely to occur have been labeled accident “black spots.”\textsuperscript{51} As part of its general program of research initiated after the “Torrey Canyon” IMCO studied the possibilities of assigning routes to ships and tankers and separating traffic in congested areas. The conclusion they reached was that “... generally speaking separation of traffic is the best way to reduce the risk of hull damage to tankers and therefore of pollution.”\textsuperscript{52}

The first such routes were approved and recommended by IMCO in June of 1967. Since that time more routes have been approved covering many of the more congested world traffic patterns. National government


\textsuperscript{48} S.E. Calvert, O.B.E., Human Factors and the Collision Problem, 22 J. of Inst. of Nav. 48 (1969), states that “... the number of vessels involved in collision every year [is] . . . 7 percent of the world fleet.” In a Danish study the question what would happen to collision risk in a narrow fairway such as the Danish Sound if traffic density for both crossing and passing traffic doubled was posed. Two important facts emerged:

“(1) Generally speaking, Masters of ships appeared to be able to cope efficiently with the two-ship collision situation but could become confused when they were confronted with a triangular three-ship situation.

(2) If traffic across and through the fairway doubled, the occurrence of the dangerous triangular three-ship collision situation increased by the factor of 8.”


\textsuperscript{49} In 1968, the year after the “Torrey Canyon” “... at least seven tankers ... lost a total of 16 million gallons of crude and fuel oils to the oceans ... [T]his combined loss represented about one-half the cargo carried by the Torrey Canyon.” K.E. Biglane, A History of Major Oil Spills Incidents, Proceedings of Joint Conference on Prevention and Control of Oil Spills, sponsored by the A.P.I. and F.W.P.C.A., New York, 5, 6 (1969). [hereinafter cited as New York Conf.]

\textsuperscript{50} One such waterway is the Dover Strait between England and mainland Europe. It is said that “... half the collisions in the world took place in an area between the English Channel and the Elbe ...” Captain T. Dilling, Separation of Traffic at Sea, 191, 194, Report of Proceedings, Int’l Conf. on Oil Pollution of the Sea [hereinafter cited as Rome Conference] (1968).

\textsuperscript{51} Id., 195.

\textsuperscript{52} Id., 197.
authorities in several countries, particularly Great Britain, the U.S.S.R. and the United States have become active in the field.\(^5\)

There is one important characteristic of the IMCO routes: they are suggestive only, not compulsory.\(^4\) Part of the reason for this is that IMCO as an international organization has no authority to impose regulations;\(^5\) it can only make recommendations. Another reason is the long standing concept of freedom of the seas and the right of the Master of a vessel to choose his own course.\(^5\) In addition some commentators have noted that safe sea routes might become more costly by lengthening the voyage of the ship.\(^7\) Owners and operators of the world’s maritime fleet also have undoubtedly recognized this problem. It is questionable whether the routes can remain voluntary and in addition achieve the most effective results. In a study of the first two years of routing in the Dover Strait between England and the Continent the author found that in comparing the five years before routing with the two years after, “… collisions per fog day have… been reduced by 60 percent…”\(^8\) Spot checks of the same route have shown that the routes have not been followed in a significant number of cases.\(^9\) If the collisions resulting from voluntary routing are too frequent to be acceptable, then routing may have to be compulsory.\(^6\) The involvement of several national government agencies in promoting domestic routing schemes, often for different purposes than the international routes,\(^6\) invites conflict which will not be easily resolved.

There is no doubt that routing schemes can be very effective in reducing collisions and other potential pollution hazards. But the practice of voluntary compliance may be a serious drawback to their potential effectiveness. If so, compulsory schemes may be necessary to ensure compliance.

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53. Wepster, supra note 48.
56. Dilling, supra note 30, 193 where he says, “No one would suggest that a Master must be bound at all times to follow a pre-set navigational pattern, come what may.”
57. President’s Report, supra note 12, 88.
59. Id., 443-446.
60. On January 18, 1971, two tankers collided in San Francisco harbor with serious oil pollution resulting even though there are routing schemes in force in San Francisco harbor.
61. In addition to avoiding collisions, schemes are now being developed for routing deep-draught vessels, for routing to prevent coastal pollution and routing around off-shore drilling rigs. Wepster, supra note 48, 100.
Navigational Aids

The "Torrey Canyon," "Ocean Eagle," and "Arrow" catastrophes were all the result of navigation errors. These often are human errors, which might have been avoided had satisfactory navigational equipment been available and in working order. Today it seems inconceivable that sophisticated navigational aids are not available, and mandatory. The scientific technology exists, but the equipment is not installed or used in many vessels. There are minimum international safety standards which are far below what modern technology could provide. It is argued that sophisticated equipment is expensive and no doubt that is true. But it is certainly cheaper than the costs of an accident. Their use might also result in insurance rate and other cost reductions.

Another problem is that often even the navigation equipment that is installed is not operating or serviceable when needed. In the case of the "Arrow" apparently the equipment was not properly maintained, nor were there qualified crew members capable of using or maintaining it during voyage.

The conclusion seems to be that the scientific technology of navigation is more than adequate. It is the human and regulatory aspects of navigation that are the major technological problem to be overcome.

Crew and Officer Training

"The obvious and not too surprising conclusion...is that human error is the principal villain in pollution." There may be navigational error such as in the case of the "Torrey Canyon," "Ocean Eagle," or

62. Ludwigson, supra note 1, 12.
63. Judgment, Royal Commission of Pollution of Canadian Waters by Oil and Formal Investigation Into Grounding of the Steam Tanker "Arrow" (1970) 41.
65. Ludwigson, supra note 1, 13.
66. Report of the Task Force-Operation Oil (clean-up of the "Arrow" Oil Spill in Chedabucto Bay) volume 1, 28 (1970); see also Judgment, Royal Commission supra note 63, 19-34.
67. In the case of the "Arrow" she had been in for repairs and was issued a certificate on Jan. 29, 1970 by the American Bureau of Shipping classifying her as Al (e) oil carrier; the highest rating given to tankers by the American Bureau of Shipping. On February 4, 1970, less than a week later, she went aground off the coast of Nova Scotia, Canada; supra note 63, 8.
68. Task Force-Operation Oil, supra note 66, 28.
"Arrow."

Confusion, in dangerous situations due to lack of sea-going experience and proper education, can result in faulty judgments and accidents. Such errors become more likely as traffic increases, particularly in heavily travelled routes. One commentator, after studying the statistics of collisions at sea and talking to seamen, has come to the conclusion that presently "the problems of a mariner faced with a risk of collision are not very different from those of a player in a game of chance."

Human errors also result in oil pollution during the loading and unloading period when a valve may be left open or a tank allowed to overflow or a coupling not carefully checked. Most human errors can be traced to lack of experience and education. The problem is how to overcome these deficiencies. Ship owners and operators strive to keep their operating expenses at a minimum which may lead their vessels to be understaffed or staffed by an inferior crew. The standards of training and education necessary to obtain a certificate of standing as an officer are the perogative and responsibility of the flag state of the vessel. Efforts at standardization of crew qualifications on a multinational basis have been unsuccessful.

Another problem relating to the staffing of ships is the determination of the minimum acceptable composition of the crew in terms of numbers and skills.

The problem of human error is undoubtedly the most difficult of all causes of pollution to control and regulate, particularly because of the

70. Ludwigson, supra note 1; see also supra note 63.
72. Calvert, supra note 48, 48 where he says "... the official enquiries held after a collision have a close family resemblance to the 'post-mortem' after a game of bridge, with this difference that the unlucky, or the less skillful guessers, face legal penalties, and sometimes professional ruin."
73. These types of operational errors are truly human errors. The major cause of operational pollution, (tank cleaning, ballast discharge, bilge pumping, etc.) is not accidental but clearly intentional.
74. Complacency can also be a major cause of pollution and a serious human weakness. Pollution resulting from a complacent attitude on the part of the crew is not the result of a faulty judgment because often there is no judgment at all.
75. The International Labor Organization and the IMCO established a joint committee to consider the problem of training and qualifications of officers and crew but the "initial work has elucidated that international standardization of certificates for masters or officers would raise considerable difficulties." Good, supra note 54, 271.
76. Highly computerized systems on new supertankers has resulted in a reduced complement of crew on these behemoths.
77. As noted above; Task Force—Operation Oil, supra note 66, much of the navigation equipment on the "Arrow" was inoperable at the time of her grounding and there were no crew members capable of repairing it on route.
independent standards established by each flag state and the ability of ship owners and operators to serve only their own purpose in hiring crews.

**Tanker Construction**

The world tanker fleet is growing at an unprecedented rate and mammoth ships of over 200,000 d.w.t. are becoming the major element of the fleet. The Japanese Transport Ministry has approved the construction of a 477,000 d.w.t. tanker, more than 100,000 tons larger than the previous record-holder. The growth of the tanker fleet both in numbers and size presents serious problems in terms of pollution probabilities. The potential damage from the loss of a 477,000 d.w.t. tanker, four times the size of the "Torrey Canyon" is staggering.

Pollution of catastrophic dimensions results primarily from danger situations such as collisions or strandings. In danger situations, ship construction plays a large part in avoiding and evading disaster. At least five factors are involved in characterizing a ship's response capabilities. These are (1) maneuverability, (2) stopping and backing powers, (3) prime mover, multiple units or multiple screws, (4) controllable—pitch propellers and (5) anchors, remote release, stern anchors, etc. Serious doubts have been raised about the stopping power and maneuverability of the new mammoth tankers. The size of tankers has increased tenfold in the past twenty years but their power plants have only increased threefold. In addition, "... the responses of a mammoth tanker to rudder signal or other disturbances are so slow that a human being cannot perceive them.

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78. The discussion of Tanker Construction will only consider the aspects of tanker construction technology relating to accidental pollution problems such as collisions or strandings. There are aspects of the technology dealing with operational pollution but they will be discussed in a later section of the paper.

79. "The world tanker fleet grew by another 8.2 million deadweight tons during the first half of 1970, bringing its capacity up to a total of 140.3 million d.w.t. Mammoths of over 200,000 d.w.t. continue to dominate, with 90 in service at the end of June and another 215 on order." *The Booming Tanker Business*, Petroleum Press Service, October (1970) 362. The same article noted that as of June 30, 1970 there were orders for 63 million d.w.t. of new tonnage, almost one-half the then existing capacity of the fleet. Of this tonnage on order over 80 percent is for vessels in the 200,000 d.w.t. range and larger.

80. Id., 362.

81. Price, supra note 11.

82. "... [T]ank sizes have grown at a far greater rate than the installed power. Hence, the stopping ability has been reduced significantly, with the bitious reduction in ship maneuverability." *Oil Spillage Study: Literature Search and Critical to Control and Prevent Damage*, Battelle Memorial Institute, 7-6 (1967).

early enough to take corrective measures." Another danger is the increased likelihood of strandings due to the greater draught of mammoth tankers. The 477,000 d.w.t. tanker on order in Japan has a draught of 92 feet. At the end of the second World War few ships had a draught of greater than 36 feet. The danger exists "because of the limits in the accuracy with which the depth of the sea in areas remote from the land can be measured." The problem is particularly acute in areas such as the southern North Sea where there is heavy traffic in water levels rarely over 20 fathoms. The international shipping community has recognized the problem and a special subcommittee of IMCO was directed to study the possibilities. The results have not been at all satisfactory. The subcommittee concluded:

... at the present stage of technological development there appeared to be few practical means for improvement in the design, construction and equipment of ships compared with the current practice which would significantly reduce the degree of risk of collision or stranding. The Subcommittee agreed to continue its study and to collect data on certain matters which might lead to improvements in manoeuvrability of ships, such as high power lateral thrusters, auxiliary braking devices, multiple screws and rudders, controllable pitch propellers, optimum manoeuvring operations, steering gear power systems and special instrumentation, including low velocity measuring devices.

The Subcommittee felt that more effective results would be achieved by improving navigation rules, and members were invited to collect data on manoeuvring characteristics of large ships which would be useful for the improvement of navigation rules."

Apart from the ability of a tanker to avoid or evade a danger situation, the construction of the vessel might be such that pollution would be prevented or minimized once a danger situation was unavoidable. The construction techniques which would achieve such a result deal with the structural strength of the vessel, or its tank alignment more so than with

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84. The Booming Tanker Business, supra note 79, 363.
86. Id. He also states that the danger is aggravated "by the fluctuations known to occur in predicted tidal levels as well as changes in the level of the sea-bed itself which might be caused by the migration of sand waves over it."
87. Price, supra note 11, 5.
the ship’s response capabilities. For example double hulls reduce the probability of pollution from damage sustained in stranding. A protection against pollution in a collision situation would include structural barriers at the side of the vessel in the form of ballast tanks. This solution reduces cargo space but at the same time eliminates the need for carrying ballast in cargo tanks which is a major cause of pollution. A method of reducing the potential amount of pollution from a grounding or collision is to establish a maximum size of cargo tanks with reinforced bulkheads between tanks. In this regard IMCO has recommended a “freeze” on the size of tanks in oil tankers.

It would seem that there are technological and engineering means of reducing the threat of pollution. However, no real international action in the form of standards has been taken. The IMCO subcommittee studying ship design felt they could not recommend measures until they knew what quantity of oil pollution society was willing to accept as the consequence of a single accident. This is a strange position in which to be left. They also felt that the public clamor over oil pollution would lead governments to become involved in the question of tanker and tank size as a social problem. Therefore, they felt “(a) solution based solely on considerations of naval architecture could . . . prove to be unacceptable.”

The lack of political consensus and economic analysis has again resulted in postponement of positive action.

Operational Pollution

The total volume of oil and oil products lost to the oceans each year from operational pollution is far greater than that lost through collisions and strandings. Of the oil lost through operations the largest amount results from discharging ballast, tank cleanings and bilge pumping into the open sea. After a tanker discharges her cargo she must take on ballast during the return voyage for reasons of safety and stability. Sea water is pumped into her empty cargo or fuel tanks. It is usually necessary for a tanker to fill one-third to one-half of her tanks with sea water on the

89. Swift, Touhill, Templeton, Roseman, supra note 89, 51.
90. Price, supra note 11, 7; The recommended size of tanks is 30,000 cubic metres for wing spaces and 50,000 cubic metres for centre tanks.
91. Id.
92. Id.
93. Blumer, supra note 10, 1.
94. Keeping Coasts Clean, supra note 64, 196; J.E. Moss, Character and Control of Sea Pollution by Oil, Petroleum Institute, (1963).
ballast voyage. The sea water is contaminated with the residue of oil left clinging to the walls of the cargo tanks after discharge of the cargo. This residue is estimated to be 0.4% of the total cargo of the tanker. If the ballast is discharged without cleaning the tanks, about 15 percent of the residue left clinging to the tanks is discharged with it. If the tanks are cleaned, as they must be periodically, then the potential pollution is the entire 0.4 percent of the residue. At the ocean oil transport load of 1970 this would have amounted to 6 million tons.

What possibilities are there for controlling this enormous potential pollution? The potential exists only because oil is transported over the ocean. At the present time, however, it is not feasible to suggest an alternate mode of transportation. The resource and sources of petroleum are not distributed evenly over the earth so that transportation from one place to another becomes less necessary. The consumers of oil and petroleum products are similarly not evenly distributed over the globe and the principal consumers areas presently have limited regional sources, requiring transportation by the seas.

It is perhaps rational to discuss the type of oil products being transported over the oceans. In 1967 over three-quarters of the petroleum travelling the oceans was crude. This is a sharp reversal from pre-1945 practice when refineries were normally built near the source of oil rather than near the consumer. It is generally assumed that crude oil and persistent oils are much more dangerous to the environment than non-persistent refined products. If this is true, one possible method of

95. Kirby, supra note 47, D-50; This amount is reduced in modern tankers which have expensive inner epoxy coatings on their tanks.

96. Moss, supra note 95, 49; Frederick Zachariasen, Oil Pollution In the Sea: Problems for Future Work, Institute for Defense Analyses 4, (1968).

97. Blumer, supra note 10, 1.

98. Kirby, supra note 47, D-48; This figure does not include the trade within territorial waters, for example along the east coast of the United States where the percentage of refined products may be much higher.

99. Kluss, supra note 9, 2.

100. Persistent oils are crude oil, diesel fuel and heating oil, the heavier fractions of crude generally speaking. Non-persistent oils are the refined lighter fractions that are more volatile and tend to evaporate more quickly.


102. Although persistent oils cause greater problems than do non-persistent, some non-persistent have a very high toxicity; Blumer, supra note 10.
reducing oil pollution would be a change of the situs of refineries, reversing the post-1945 trend. In this way the petroleum products travelling the oceans would be primarily of the nonpersistent, less harmful variety. Of course, it is very unlikely such a change would ever take place. The location of refineries in the consumer area was not done for economic reasons, alone but as protection against instability in producing countries and national security.

What can be done in the face of this tremendous potential of operational pollution? The solution that has been advanced, particularly by the oil companies, is the adoption of the Load-on-Top (LOT) technique of ballasting and bulk cleaning. This technique was made compulsory by 1969 amendments to the 1954 Oil Prevention Convention. These amendments have not as yet come into force.

There is no doubt that LOT substantially reduces operational pollution. But its overall effectiveness must be tested before it can be accepted as the final solution. There are shortcomings in the LOT system. First is the fact that only about 80 percent of the world's tankers presently use the technique. The amount of salt water contamination may be so great that refineries cannot accept the residue. Some refineries are unwilling to accept the residue in any event. Because LOT is based on a separation principle, if the voyage is not long enough, it is ineffective. The most toxic components of oil are soluble in water, thus the so-called clean water which is discharged after separation is not completely harmless. The technique cannot be used if the cargo being carried by the tanker changes...

104. In recent months, however, producing countries have begun to realize the power of their position and there has been talk from Middle East governments that they will soon insist on refined products be exported from their countries instead of crude oil.
105. Kluss, supra note 9, 7; Kirby, supra note 47, D-56.
106. For a description of the mechanics of the technique and its effects, see Kluss, supra note 9; also Oil Pollution of the Sea, 10 Harv. Int'l L.J. 316, 351 (1969); and Kirby, supra note 47.
108. Boos, supra note 107, 170.
110. Brummage, supra note 9, 188.
111. Boos, supra note 107, 170.
112. Blumer, supra note 107, 170.
113. Id. It should be pointed out, however, that the water soluble components are the most volatile components also. Thus they tend to go off into the atmosphere if they are near the water-atmosphere interface.
from heavier, persistent oils to lighter non-persistent oils.\textsuperscript{114} Separation while the tanker is en route is never as successful as when done on land due to the constant rolling and pitching of the ship.\textsuperscript{115} A major problem is that tanks are not always cleaned. If the vessel is carrying the same type of product on successive voyages there is no need to clean the tanks on the ballast voyage. In fact it has been estimated that tanks are cleaned on only 20 percent of the trips.\textsuperscript{116} What this means is that on ballast voyages where tanks are not cleaned, the discharged ballast is contaminated with about 15% of the oil left clinging to the tanks after discharge of the cargo.\textsuperscript{117} This is obviously a major source of pollution. A final limitation of the LOT technique is that the receiving facilities on shore may be inadequate or, in many cases, non-existent.\textsuperscript{118} This is particularly true at repair yards.\textsuperscript{119}

It seems obvious that the LOT system has serious technical and regulatory drawbacks. The provision for adequate shore reception facilities would eliminate a considerable portion of the problem.\textsuperscript{120} But it would still not be a closed system where all flushing of tanks at sea was prohibited.\textsuperscript{121}

Operational pollution has not been eliminated as of now. But it is technically possible to do so as many nations are beginning to realize.

\textit{Implementation}

In the preceding section we discussed the technology of preventive measures for the control of oil pollution of the oceans from ships and tankers. From a purely technological perspective, effective preventive possibilities do exist. But their mere existence does not mean that they can be implemented in the real world where non-technical matters weigh in the decision

\textsuperscript{114} Brummage, supra note 9, 185.
\textsuperscript{115} Moss, supra note 95, 21.
\textsuperscript{116} Zachariasen, supra note 97, 4; Moss, supra note 95, 49, estimates that tanks in the crude oil trade are cleaned about two times a year.
\textsuperscript{117} Zachariasen, supra note 97, 4.
\textsuperscript{118} Receiving facilities are usually available at the refineries of major oil companies, but this is not always the case at other refineries. Also, oil companies have not always accepted the residues of tankers which they do not own or which are not under charter to them; Moss, supra note 95, 31, 70.
\textsuperscript{119} It has been estimated that 4 percent of all oil pollution resulting from the operation of tankers is chargeable to cleaning tanks in preparation for repairs at shipyards, Moss, supra note 95, 73.
\textsuperscript{120} A combined LOT system and shore reception facilities program called the Clean Seas Code has been proposed by the oil companies; Kirby, supra note 47.
making process.

Action to control oil pollution can be taken on three different institutional levels. First international action may be the result of multinational agreements.\(^{122}\) Secondly action may be taken by nations, unilaterally, to control pollution in their territorial and inland waters.\(^{122}\) Thirdly, private individuals or groups involved in or affected by oil pollution may take action of their own, apart from any governmental involvement.\(^{124}\) Each of these centres of activity must be involved in any scheme to control and prevent oil pollution of the oceans. Each of the three levels of activity also have very different situations and problems complicating consensual agreement on a plan of action. These problems must be solved if an effective global scheme for the prevention of oil pollution is to be a reality.

The difficulties of international action are greater than those encountered on the national or private level of activity if merely because of the complexity of the political process in an international forum. Reaching international accord means agreement by many political bodies, with often diverse interests. It seems only reasonable that an international consensus will be harder to reach and will likely be a compromise in any event, possibly jeopardizing the effectiveness of the solution agreed upon. International agreement must take into consideration the dichotomy between maritime and non-maritime nations\(^{125}\) as well as the interests of developed and underdeveloped nations.\(^{128}\) In addition to national and private interests, international action will also have to accommodate the interests of other multinational interest groups.\(^{127}\) The equitable distribu-


\(^{123}\) This control may be legally extended to include the contiguous zone; see Robert H. Neuman, \textit{Oil On Troubled Waters: The International Control of Marine Pollution}, 2 Journal of Maritime Law and Commerce, 349, 357 (1971).

\(^{124}\) Neuman, supra note 123, 349.

\(^{125}\) Developed nations create the bulk of the pollution and it is they who are most concerned now. But when they seek to establish international regulation the result deprives underdeveloped nations of the freedom of action they would otherwise have. Such regulation may also result in a direct economic cost which underdeveloped nations cannot afford.

\(^{126}\) Many groups are now concerned with oil pollution, e.g. NATO's Committee on the Challenges of Modern Society, the Intergovernmental Oceanographic Commission (IOC) UNESCO, FAO and the United Nation generally.

\(^{127}\) For example, to adopt a closed LOT system would require shore-based tank and separator facilities along all shipping routes. The distribution of the cost of such facilities need bear little relation to the volume of traffic through a particular port or by a particular coast.
tion of costs of adopted preventive action may be a difficult problem.\textsuperscript{128} Finally, the compulsion for action may be less at an international conference than in a domestic setting because of the unaccountability of the participants and the convenient rationalizations for inaction. All of these problems are potential stumbling blocks to international action.

The political process involved in national legislation is probably less complex than the international processes. One result of this may be that national action to control oil pollution turns out to be too extensive and restrictive.\textsuperscript{129} There is certainly a role and need for domestic action to control oil pollution in territorial waters and ports, but its scope may overlap with potential international jurisdiction. National legislation should complement international action to present a united front against a common problem. Impatience with slow international political action can lead to over-reaction on the part of a concerned nation which may result in further delays of international consensus.

A controversial area which affects international, nation and private interests is the use of flags of convenience by much of the world's tanker fleet. Rather than discuss the specific implementation problems of international, national and private decision making bodies, the circumstances surrounding the use of flags of convenience serve as a good model to illustrate the conflicting interests and problems raised by the three-tiered decision-making apparatus involved in oil pollution of the oceans. Through a partly descriptive and partly analytic discussion of flags of convenience hopefully these problems will come to light.\textsuperscript{130}

\textsuperscript{128} Neuman, supra note 123, 349.

\textsuperscript{129} The discussion will center on the advisability of the use of flags of convenience and their role in a scheme for the prevention of oil pollution. However, it is submitted that the problems faced in making this decision are similar to those encountered when dealing with oil pollution on an international, national or private level only more aggravated in the sense that they all come to focus on a single problem in the case of flags of convenience. In any event the three interests, international, national and private, are very much involved in the use of flags of convenience.

\textsuperscript{130} One definition of a flag of convenience is:

"...the flag of any country allowing the registration of foreign-owned and foreign-controlled vessels under conditions which, for whatever the reasons, are convenient and opportune for the persons who are registering the vessels." B. Boczek, Flags of Convenience 2 (1962). See also D. Bowett, The Law of the Sea 55-59 (1967).

Flags of Convenience countries are often called the Panibhon countries, a contraction of Panama, Liberia and Honduras, which have traditionally been the most popular flags.
Flags of Convenience\textsuperscript{131}

“Freedom of the Seas” is one of the fundamental principles of the law of the sea. However, only ships that have a “nationality” can exercise the rights of navigation implicit in the freedom.\textsuperscript{132} The Panlibhon countries argue that the granting of nationality to a ship is the unrestricted prerogative of all sovereign nations.\textsuperscript{133} Other nations feel that the right to grant nationality must be exercised in the “interests of all,”\textsuperscript{134} taking into account generally accepted international rules.\textsuperscript{135} This dispute culminated with the passage of the following provision at the Geneva Convention on the Law of the Sea in 1958:

Each State shall fix the conditions for the grant of nationality to ships, for the registration of ships in its territory, and for the right to fly its flag. Ships shall have the nationality of the State whose flag they are entitled to fly. There must exist a genuine link between the State and the ship; in particular, the State must effectively exercise its jurisdiction and control in administrative, technical and social matters over ships flying its flag.\textsuperscript{136}

The requirement of a “genuine link” between the vessel and the state granting nationality was first used by the International Court of Justice in the \textit{Nottebohm Case}.\textsuperscript{137} The vagueness\textsuperscript{138} and ambiguity\textsuperscript{139} of the test has turned the seeming victory of the nations favoring restrictions on the granting of nationality into a rather empty one. Certainly it has not halted the flow of registrations under flags of convenience.\textsuperscript{140}

The growth of tanker fleets under Panlibhon flags in recent years has been phenomenal. This is especially true of the Liberian fleet. In 1939 there were no merchant ships of over 1000 gross tons plying the world’s oceans under the Liberian flag.\textsuperscript{141} As of June 30, 1970 Liberia had a tanker ship fleet of 34,461,000 dead weight tons ranking first and accounting for

\begin{footnotesize}
\begin{enumerate}
\item[131.] Boczek, supra note 131, 2; also Comment, \textit{Oil Pollution of the Sea}, 10 Harv. Int'l L.J. 316, 330 (1969).
\item[132.] Boczek, supra note 131, 39.
\item[133.] Id., 2.
\item[134.] Meyers, supra note 55, 2.
\item[137.] Boczek, supra note 131, 3.
\item[139.] The growth of flags of convenience fleets is discussed below.
\item[141.] Boczek, supra note 131, 14.
\end{enumerate}
\end{footnotesize}
one quarter of the entire world fleet.\textsuperscript{142} In addition, as of December 31, 1968 there were tank ships under construction or on order with intended Liberian registration totalling 16,617,000 d.w.t.\textsuperscript{143} This total accounts for approximately 30 percent of new tanker construction.\textsuperscript{144} Growth of other flags of convenience fleets have been less spectacular, but the group has been joined by new members who have relaxed their registration requirements. Most notable of this group is Greece. The Greek fleet doubled in the two years between 1968-70 after registration requirements were relaxed. The Greek fleet is now the sixth largest in the world.\textsuperscript{145} It is obvious that the efforts of the 1958 Convention were fruitless.

But what are the attractive features of Panlibhnon registration? Economic reasons are cited by tanker owners are the primary reason for the development and continued use of flags of convenience.\textsuperscript{146} Flags of convenience countries are for the most part under-developed nations for whom taxes collected from their fleet is an easy revenue source.\textsuperscript{147} Even so, the fees charged by these countries are substantially lower than those charged by other maritime nations.\textsuperscript{148} There are other reasons, also why these flags are convenient for operators.\textsuperscript{149} The ships can be owned by foreigners. They can be manned with foreign crews, free from trade union intervention. They can be repaired in foreign shipyards. In essence the operators has "a great measure of freedom to arrange his affairs as he thinks fit."\textsuperscript{150} The dangers of lack of regulation have been pointed out with regard to crew and officer training and in times of slackening freight demand.\textsuperscript{151} There may be similar dangers with regard to oil pollution. The effective

\textsuperscript{142} DeGolyer and MacNaughton, Twentieth Century Petroleum Statistics 97 (1970).
\textsuperscript{143} The Booming Tanker Business, supra note 79, 362, 364.
\textsuperscript{144} Id.
\textsuperscript{145} Id.
\textsuperscript{146} The Role of Flags of Necessity, American Comm. for Flags of Necessity 27-35 (1962). American shipowners use the term "flags of necessity" as an alternative to flags of convenience implying the economic necessity of registration under such flags. Liberia calls them "flags of attraction."
\textsuperscript{147} Boczek, supra note 131, 58. The Liberian government receives one-seventh of its total revenue from registration fees and taxation of its registration fleet.
\textsuperscript{148} Boczek, supra note 131, 56-57; Meyers, supra note 55, 57, n.1.
\textsuperscript{149} Meyers, supra note 55, 57, n.1.
\textsuperscript{150} Id.
\textsuperscript{151} Study on the Expansion of the Flags of Convenience Fleets and on Various Aspects Therof, Maritime Transport Comm., Organization for European Economic Cooperation, 9 (1958) [mimeographed], official Records of the Conference, Geneva Conference on the Law of the Sea (1958) vol. 11 (AI Conf. 13140) 34-5, where Professor Francois stated:

"... a system under which any state can grant its flag to all ships applying for it is in fact the acme of freedom. That conception of freedom is, however, incompatible with the interests of the international community..."
control and prevention of oil pollution requires proper regulations and their strict supervision. If the claims made against the Panlibhon are justified, then flags of convenience do present a stumbling block to the control of oil pollution of the oceans. We shall now attempt to investigate the behavior of these nations in regard to oil pollution control.

The question of whether the Panlibhon countries effectively regulate their fleets according to recognized International norms has been discussed many times. The prevailing opinion seems to be that they do live up to their obligations. Such small states do face added difficulties in trying to regulate a large fleet, however. Since their fleets do not make regular stops at ports of their home country, regulation and inspection must be carried out abroad through consular offices and appointed agents. The administrative costs of maintaining inspection services around the world may be relatively high. Although academic opinion seems to believe that Panlibhon countries are no worse than other maritime nations in the regulation of their fleets, a study has never been done to prove or disprove this assertion. It would be very helpful if some empirical work were done in this area.

If it is not possible to state definitely what standards are maintained by the Panlibhon countries, we can look at specific examples of their efficiency.

In three major strandings in three different countries from 1967-1970 all the tankers were of Liberian registration. All three cases were the first major oil pollution incidents to occur in these countries. The conclusion reached by the government commission established to study the “Arrow” case in Canada was:

We are well aware of the fact that no form of transportation can be 100 percent safe but from the record available to us the standard of operation of the world’s tanker fleets, particularly those under flags of convenience, is so appalling and so far from the kind of safety which science, engineering and technology can bring to those who care, that the people of the world should demand immediate action.

152. Boczek, supra note 131, 264-272; Bowett, supra note 131, 55-59; Meyer, supra note 55.

153. The Liberians do maintain such a system of consultate offices.

154. A comparison to standards set by other maritime nations may not be very useful, for that comparison does not question what the standards should be.


156. Task Force—Operation Oil, supra note 66, 3.
This conclusion was partially based, no doubt, on the evidence given at the official inquiry into the stranding of the “Arrow.” At the hearing it was established that even though the “Arrow” had been inspected less than a week before the stranding and given the highest rating for oil tankers, almost none of her navigation equipment was functioning at the time of the stranding.\textsuperscript{157} In addition she was not equipped with the relatively inexpensive Decca radio equipment which could have prevented the collision. Such equipment is most valuable and effective close to land where the “Arrow” made most of her voyages. The conclusion seems to be that not only was the “Arrow” not equipped with satisfactory navigational aids but the relatively unsophisticated aids she did have were not effective.\textsuperscript{158}

The above case deals with equipment standards and the efficiency of the inspection of that equipment by Panlibhon countries. Another area we might investigate is the compliance of Panlibhon tankers to voluntary international agreements. In June, 1967 IMCO established safe sea routes for selected congested shipping lanes. One such route was established in the south North Sea and Dover Strait. Compliance to the suggested routes was voluntary since IMCO has no power to prescribe rules.\textsuperscript{159} In a study of the first two years of operation of the scheme Liberian vessels were involved in the largest number of collisions.\textsuperscript{160} Of the eleven tankers observed not complying with recommendations, nine were of Liberian registry.\textsuperscript{161} Although these statistics are incomplete and hence inconclusive, they do indicate that a problem may exist. Further study should be undertaken.

Another area of international concern is the action taken by flag states after one of their vessels has been involved in a major catastrophe. Little publicity is given to such hearing, presumably since news of the clean-up and damages are deemed more newsworthy. Although one can question the usefulness of such hearings, they are one means of establishing standards of conduct of officers and crews. They also can establish standards of safety and navigational equipment necessary on ships.\textsuperscript{162}

Liberia held a hearing into the “Torrey Canyon” incident. The results

\textsuperscript{157} Id., 28; see also Judgment, Royal Commission, supra note 63, 19-34.
\textsuperscript{158} The “Torrey Canyon” presents a similar but less striking example regarding navigational aids. See House of Commons, Rep. from the Select Comm. on Science and Technology, Sess. 1967-68: Coastal Pollution (1968).
\textsuperscript{159} See section above on separation of Traffic and Safe Sea Routes.
\textsuperscript{160} Beattie, supra note 58, 443. One Liberian vessel hit the South Goodwin light vessel.
\textsuperscript{161} Id., 446.
of the hearing have been severely criticized. One question the “Torrey Canyon” hearing raises is the relationship between the owners and operators of the Panlibhon fleet and governments of the flag state. It has been suggested that the Board of Inquiry in the “Torrey Canyon” case was established to relieve the owners of responsibility, using the master, who was found responsible, as the scapegoat.163 The heavy dependence of Liberia on the American controlled portion of their fleet164 and the fact that the board was composed entirely of Americans165 suggests that the Liberian government may have instigated the hearing at the behest of the American owners rather than from a sense of international responsibility. In any event the fact that the board was entirely American does not speak well for the competence, responsibility and freedom of action of the Liberian government.

The whole relationship between flag states and owners has become more complex than originally envisaged when flags of convenience developed after World War II. At that time the primary concern of the owners was economic. This is still largely so. But over the years international concerns have demanded greater regulation of safety and pollution standards. This had added an entirely new facet to the relationship between flag states and owners.

To protect their right to use flags of convenience the owners must ensure that the flag states maintain the minimum acceptable international standards without seriously interfering with the profits and benefits they extract from the use of those flags.166 These two purposes are to a large degree inconsistent. To ensure that minimum standards are maintained, the owners have several avenues open to them. They can pressure the flag states to take action to maintain an air of responsibility.167 The flag states will also want to maintain at least minimum standards for fear of losing their fleet to another state. But the standard to be maintained is always the lowest common denominator. The owners can also take matters into their own hands, either individually or as a group. They would most likely take this step in areas where they had little faith in the administrative ability of the flag state and in areas where they could be self-supervising and self-regulating. Examples of this type of action on the part of the

163. Id., 53.
164. Meyer, supra note 55, 57, n.1. Nearly 50 percent of the Liberian fleet is American owned.
165. Oudet, supra note 162.
166. Id., 41.
167. The “Torrey Canyon” hearing may be an example of this.
oil companies are the introduction of LOT\textsuperscript{168} and the establishment of TOVALOP.\textsuperscript{169}

The major oil companies who own a large percentage of the tanker fleet have been very active at antipollution conferences and seminars. It would be unfair to condemn their effort as useless or ill-intended. But because of their vested interests in the petroleum industry, their motives must be questioned. It is questionable whether they should be expected to take the public interest into consideration when formulating their policies and attitudes. Without further empirical study it is not possible to condemn the owners and operators for acting from self-serving motives only. But in any case, and particularly because of the increasing convergence between owners and flags of convenience, it will not be sufficient to allow them to be self-regulating. Their interests are basically economic in nature and need not jive with objective decisions concerning oil pollution policies. An impartial third party serving a broad spectrum of social concerns would seem essential to generate the necessary effective regulation of pollution and safety standards.

Conclusion

The analysis developed in this paper has dealt essentially with prevention of oil pollution. Possible inputs to a cost effectiveness approach to the problem, have been considered. We have also dealt with the technology of prevention and the problems of implementation in a political sense. Is it possible to come to conclusion as a result of this analysis?\textsuperscript{170} Because of the gaps in information and understanding it is not possible to present a cohesive operational model as a solution. Instead an attempt will be made to come to some conclusions about the generalities of the political problems likely to be encountered in implementing an effective solution.

It is easiest to discuss these problems by dealing with the three levels of political involvement separately. These three levels are international, national and private.

Private\textsuperscript{171}

The position of oil companies and tanker operators already has been

\begin{flushleft}
\textsuperscript{168} Kirby, supra note 47.
\textsuperscript{169} Supra note 124.
\textsuperscript{170} The conclusions will assume that prevention is the chosen approach.
\textsuperscript{171} In the "private" category we shall consider only oil companies and associated tanker owners and operators.
\end{flushleft}
discussed.\textsuperscript{172} There is no doubt these parties can and should play an essential role in the solution to the problem of oil pollution. However, their intense involvement in the industry should keep decision makers wary of possible prejudices. It can be argued that oil companies to date have not always viewed the pollution situation objectively. A complication is that, quite often, because it is their business, they are the only ones who can make an objective appraisal of a problem since they have the facts, figures and research.\textsuperscript{173}

There are cases of clear conflict of interest, however. A notorious example is the use of detergents after the “Torrey Canyon” disaster. The detergents used were more poisonous than the oil spilled. It just so happened that the detergents available were manufactured by the major oil companies themselves.\textsuperscript{174} Two points can be postulated from this example. Firstly, it is inconceivable that the oil companies did not know that their detergents were toxic.\textsuperscript{175} It would be interesting to know what else their research has revealed about oil pollution and prevention. Secondly, the use of detergents has always been advocated as an important clean-up method by the oil companies. This would seem to indicate that their primary concern is getting the oil out of sight so there will be no adverse public reaction. Yet the great scientific dangers of this approach are well documented.\textsuperscript{176}

Another indication of their lack of concern for prevention of pollution is their interest in liability. Oil companies have been very active both domestically and internationally at conferences dealing with liability. Their most startling unilateral move was the establishment of a voluntary international indemnification scheme known as TOVALOP.\textsuperscript{177} On the surface, the establishment of the fund appears the action of a conscientious company.

\textsuperscript{172} See section on Flags of Convenience.
\textsuperscript{173} Most major oil companies have giant laboratories and spend millions of dollars of sophisticated research. Yet the results of this research are classified, not available to the public sector. Very often the results of this research might be beneficial to prevent pollution, yet it cannot be used. The conclusion is not necessarily that their research should be public, but that public agencies will have to become more intensely involved in research and rely less heavily on oil companies for their data.
\textsuperscript{174} This is still largely the case today.
\textsuperscript{175} It did not take long after the “Torrey Canyon” for the oil companies to manufacture new less toxic detergents once there was a public and official outcry against the results of the “Torrey Canyon.” Even if they were unaware of the toxicity of the detergents that surely shows the lack of concern they have for the ecological aspects of oil pollution and its clean-up.
\textsuperscript{176} Blumer, supra note 10, 8, 9.
\textsuperscript{177} TOVALOP stands for “Tankers Owners Voluntary Agreement Concerning Liability for Oil Pollution.”
tious industry legitimately concerned with the by-products of their enterprise. But there may be another side to the coin. Firstly, why could the tanker industry not insure through the ordinary insurance industry or why did they not wish to do so? It can be argued that they felt by establishing a self-insurance scheme they could make a financial saving. This could be done in one of two ways: (1) The premiums insurance companies charge reflect their attitude toward the danger of losses. Thus, after suffering monumental losses in cases like the "Torrey Canyon," insurance companies are likely to be wary of the tanker industry. They could tie their rates to safety standards on board the tanker, crew standards, etc. The tanker owners may feel either that the insurance companies have overestimated the risks of accidents or that it would be cheaper for them in any event not to install extra equipment and run a self-insurance scheme. The results of such an approach would be to suffer insurance losses rather than install preventive equipment. (2) The tanker owners might have felt they would have more control over the amount of damages allowed through TOVALOP than they would if they insured with independent insurance companies. This could also result in a financial gain for the industry.

It would be untrue to say that oil companies show no concern about pollution. But their concern is chiefly the result of their reliance on the consumer's good will. Their approach seems to be, as pointed out above, that as long as the oil is out of sight there is no problem. Granted they have done research and implemented changes that may reduce pollution. But these changes always have a financial flavor to them. The only improvement voluntarily adopted by the tanker operators to reduce operational pollution is the LOT technique and it was not adopted until it was determined to be financially advantageous. Their efforts to reduce accidental spills, of course, have a saving to them if successful.

Since tanker owners only use the transportation facet of the world's oceans, it is perhaps understandable that their concerns would not extend beyond paring costs or maintaining good public relations. But it is precisely this one-sided approach, this lack of genuine concern for long-term ecological costs to all of mankind which must be overcome. The participation of tanker owners is essential to the eventual reduction of oil pollution of the oceans, but their advice and concern must be appraised objectively and independently.

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178. LOT was known as a possible technique long before it was adopted by the major oil companies in 1963.
National

National governments can take action in two ways to control and prevent oil pollution. They can strictly supervise and regulate the ships flying their flag. The rules they apply to their fleets, though they may be promulgated unilaterally, are more likely to reflect international standards. Secondly, they can adopt laws to protect their sovereign territory from pollution. Such rules might be an extension of sovereignty for pollution purposes over portions of the ocean as Canada did in the Arctic. Domestic laws might also prescribe rules for ships entering territorial waters. But in this area the influence of international rules will also be evident. A small country adopting strict anti-pollution laws is unlikely to induce compliance by the entire world tanker fleet. The unilateral insistence on such rules might also have detrimental economic effects on the adopting country through higher shipping rates or higher costs for petroleum products.

Domestic legislation is important in the international anti-pollution effort, but it must go hand-in-hand with international developments to have any serious impact.

International

The international control of oil pollution is an extremely complex problem. International efforts to date have achieved a measure of success. But neither international, national, or private efforts have stopped or reversed the ecological deterioration of the oceans. Part of the difficulty has been a lack of direction; a failure to determine objectives. Surely the first step must be a clearer definition of the desired goal. To date there has been a kind of schizophrenic split between all-out prevention and improved clean-up techniques. One is reminded of the proverbial horseman jumping on his horse and riding off in all directions at once. Defining objectives, however, is not an easy or quick process, particularly in an international setting. How should it be approached? It has been suggested earlier in this paper that systems analysis and cost effectiveness are tools which should be applied to the oil pollution situation. Assuming such analysis is undertaken, how is it transformed into the real world? This is the crucial question and it would be presumptuous to project a fixed answer.

179. Neuman, supra note 123.
180. For example, see the bill C-2 supra note 3.
181. Implicit in such an analysis are certain cost allocations which will be basically political decisions.
However, certain comments can be made about the problem. It seems obvious that those concerned with the ocean oil pollution in all countries should be confronted with the facts and the analysis. The United Nations is convening a world wide conference on environmental problems in Stockholm in 1972.\textsuperscript{182} The conference could be very beneficial, but it must tie in all the concerned groups such as IMCO, ILO, FAO and WHO. General statements of principle or objectives can be useful if they are utilized by appropriate groups as the foundation for concrete action.

A problem of major concern is the proper sort of organizational structure to deal with oil pollution of an international scale.\textsuperscript{183} At present, IMCO is the primary international agency studying the oil pollution area.\textsuperscript{184} But IMCO has organizational and political drawbacks. It has no real regulatory powers; it can only make recommendations to its members. It seems likely that effective regulation is the most important aspect in the effort to control pollution. IMCO also is very limited financially\textsuperscript{185} and, as a result, cannot undertake ambitious research and planning projects. IMCO is certainly not independent of the shipping industry in general and relies heavily on research done by private and public organizations. It is questionable whether such an organization could ever be effective in controlling pollution regardless of the expressed position of the international community of states. Thus, a new organization or a reconstituted IMCO may be required. A model for such an organization could be the International Civil Aviation Organization (ICAO) established by the Convention on International Civil Aviation.\textsuperscript{186} ICAO is much more independent than IMCO and has strong regulatory powers.\textsuperscript{187} One of its aims is the international standardization of safety and technical matters.\textsuperscript{188} ICAO has also played an active role in crew training and accredita-

\textsuperscript{182} A preparatory conference may be held in the United States before the Stockholm Conference with the hope of reaching some common conception of the problem before Stockholm and in that way facilitating the work of the conference.

\textsuperscript{183} It is not assumed that such an organization would deal solely with oil pollution of the oceans. It would very likely have a much broader jurisdiction covering several aspects of maritime trade, transport and safety.

\textsuperscript{184} More recently NATO has become concerned with environmental problems.

\textsuperscript{185} IMCO has the smallest budget of any of the specialized agencies of the United Nations, only $1 million per year.


\textsuperscript{187} ICAO has no authority over the territory of a signatory, but its standards and procedures are obligatory in the air space over the oceans between members. A. Spooner, \textit{The Role of ICAO in the Technical Development of International Civil Aviation}, Proceedings of Symposium on Civil Aeronautics Safety, Stockholm, (1966) 9.

\textsuperscript{188} Id., 8.
tion. ICAO has the authority to adopt international standards and recommend practices which are binding on members.

General speaking ICAO seems like a much more effective organization than IMCO. Granted, there may be logical reasons for their different structures. Historically speaking, the shipping industry has enjoyed great freedom and lack of regulation, probably as a result of the freedom of the seas concept. The aviation business was embryonic in 1944 when the Civil Aviation Convention was signed. The entire aircraft business was subject to safety problems at that time. Also, because the safety of airplanes was uncertain, and the loss of human life was possible in accidents, international regulation and control might have been easier to accept. Whether such arguments can be sustained today as reasons for not controlling the international shipping industry is dubious.

If international consensus could be reached on the establishment of such an independent, watchdog organization to control pollution of the oceans, many of the policy and organizational problems would be overcome.

189. Id., 15.
190. Supra note 17, article 37.
COST STANDARDS APPLICABLE TO INTERMODAL MINIMUM RATE REGULATION

BY RICHARD O. BAISH & JONATHAN A. PACE

1. Introduction to the Problem

The Supreme Court's decision in American Lines v. Louisville and N.R. Co., 392 U.S. 571 (1968), hereinafter referred to as the "Ingots Molds" case, by its very lack of a satisfactory answer,¹ has brought into focus one of the most persistent problems in the Federal scheme of transportation regulation—that of determining how far, ultimately, the Interstate Commerce Commission can allow competitive ratemaking to influence the market's allocation of traffic among the regulated modes. The debate has been cast in terms of which of two levels of carrier costs—"variable costs" or "fully allocated costs,"—is the appropriate base for a standard against which to measure the legality of carrier proposed rates. The problem ultimately goes back to basic ambiguity in the language of the National Transportation Policy³ and § 15 a (3) of the Interstate Commerce Act.⁴ Section 15 a (3), added by the Transportation Act of 1958,⁵ requires that:

... rates of a carrier shall not be held up to a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the national transportation policy declared in this Act.

The relevant portion of the National Transportation Policy declares that it is the policy of Congress "... to provide for fair and impartial regulation of all modes of transportation subject to the provisions of this act, so administered as to recognize and preserve the inherent advantages of each..." Nowhere in the Act are "inherent advantages" or a procedure for ascertaining same defined.

It is, of course, the second clause of § 15 a (3) which gives rise to the

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¹ "It is difficult to escape the inference that the Court has... simply postponed decision of a difficult issue." Mr. Justice Harlan, in concurrence, at 392 U.S. 597, n.2.
² The terms "variable" and "fully allocated," the meanings of which will be fully explored below, were adopted in preference to the older, more familiar usages of "out of pocket" and "fully distributed" by the I.C.C. Docket No. 34013, Rules to Govern the Assembling and Presenting of Cost Evidence, 337 I.C.C. 298, 305, finding No. 2, (July 30, 1970).
³ 49 U.S.C. preceding Section 1.
⁴ 49 U.S.C. Section 15a(3).
problem by incorporating into the § 15 a (2) criteria a due consideration for the preservation of "the inherent advantages" of each of the regulated modes. Were it not for the second clause, the I.C.C. would supposedly be barred in its inquiry from considering the effect of a proposed rate on the rates of any other carrier, including the question of whether the proposed rate would destroy the "inherent advantages" of other carriers. In this paper we will examine lower cost as an "inherent advantage" within the framework of the regulated intermodal competition. It should be emphasized that our concern is with the appropriate level of cost by which to measure inherent cost advantage. As the Commission has recognized, "costing" must be distinguished from "ratemaking," a process in which cost is just one factor, along with inherent service advantages and with the preservation of a system of transportation adequate for the nation's commerce, the Postal Service, and for the national defense.

Precise economic definitions of "variable costs" and of "fully allocated costs" are not possible. These terms, developed in the practical business of costing, were for years used loosely and without an official definition. Variable cost ("out of pocket" cost) was defined by the District Court in the "New Haven" case as "... a rough approximation of the long-run marginal .. cost of carriage." It has generally been identified with the economic concepts of "marginal," "incremental," or "avoidable" cost. Generally these terms refer to the theoretical costs of one additional unit of production. If a company produces N units at a cost of X dollars, then the additional cost above X dollars which would be incurred in the production of N plus 1 is the "marginal cost" of that unit. Obviously, this economic concept cannot be applied to real world rate making. To do so, assuming that the rate charged for each unit equalled that unit's marginal cost—the theoretical point at which efficient resource utilization is maximized—would require that a separate rate be set for each pound added to a carload, and each carload added to the train, an unworkable situation. Variable cost involves an approximation of the marginal cost of rendering an additional service over the "intermediate-long run" (defined by the I.C.C. as 5-10 years). Another way of putting the same proposi-

6. 49 U.S.C. Section 15a(2) establishes the criteria for the exercise of the I.C.C.'s minimum rate-making powers as regards railroads.
7. 49 U.S.C. Section 15(1), 316(e), 907(b), 1006(b).
9. Other specific objectives of the National Transportation Policy.
11. Supra, note 2, finding 3, at 309.
tion is that the variable cost of a service is the cost which the company would *avoid* over a 5-10 year period were it *not* to render the particular service.

"Fully allocated costs" ("fully distributed costs"), on the other hand, were defined in the "Ingot Molds" decision as "... out of pocket variable costs plus a revenue-ton and revenue-ton mile distribution of constant costs. ... that indicate the revenue necessary to a fair return to the traffic ...". It is the variable cost of the service plus a pro-rata of the company's fixed costs. While "variable cost" by its terms, exclude costs which are "fixed" over the 5-10 year intermediate-long run because they cannot be attributed to any particular unit of production, the "fully allocated" cost concept assigns this unit a pro-rata share of such fixed costs. The concept recognizes that fixed costs of production must also be covered by total revenues if the company is to remain solvent. In the absence of any better way of assigning the contribution each unit of production must make towards fixed costs, this concept assumes that the contribution of every unit must be equal to the contribution of every other unit.

The generalization in which we shall indulge in this paper is that the railroads are always the proponent of the variable cost level and that motor carriers and barges invariably favor fully allocated cost as the only appropriate standard. The conflict is explained by inherent differences in the cost structures of the railroads on the one hand, and the barges and motor carriers on the other. Basically, the railroad industry is characterized by high fixed costs and chronic excess capacity (which means that additional traffic can be carried at a relatively small increment to total costs.) This is because railroads, unlike the other modes, have to provide themselves with rights-of-way, trackage, signals, sidings, turntables, etc., permanent structures which must be in place before the first carload of revenue generating goods can be carried.

In comparison, the fixed costs of the other modes are relatively low. Although motor carriers and barges pay the usual user taxes and tolls, they are, in effect, subsidized by the provision of public rights-of-way in the form of highways, improved natural waterways, and canals. These represent "public costs" to the extent that that proportion of the cost of providing and maintaining them attributable to the carriers exceeds carrier contributions in the form of user taxes and tolls. To that extent "... they distort the true economic picture with respect to both relative and

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total use of national resources in the production of transportation."\textsuperscript{14} None the less, and despite the vehement protests of the railroads,\textsuperscript{15} the I.C.C. has not, thus far, included these public costs in the computation of the fully allocated costs of either the motor carriers or the barges.\textsuperscript{19} The reasoning is that to the extent that the provision of highways and waterway improvements subsidize these modes of transport, that must be taken to have been the intent of Congress in authorizing construction and in assessing tolls and user taxes.\textsuperscript{17,18}

A proposed rate which is below the level eventually accepted by the I.C.C. will be rejected as "destructive competition."\textsuperscript{19} This is because any rate which returns less than the costs of rendering the service can only be rationalized as an attempt to destroy the competition. To make up for the loss suffered on the competitive service, the carrier must "discriminate" against shippers on other, non-competitive runs where demand is relatively inelastic. Once the competition is extinguished, rates must come up again.\textsuperscript{20} It is thus axiomatic in any rate setting proceeding that rates can never be allowed to be set below the marginal cost of carrying the traffic. Our question is whether the reference to the National Transportation Policy in § 15 a (3) further requires that a rate also return its pro-rata share of fixed costs. What has been said above demonstrates that it makes a very real difference, as between the regulated modes of transpor-

\textsuperscript{14} Supra, note 8 at shs. 89, 90.

\textsuperscript{15} American Association of Railroads, Exceptions of the Railroads to the Report and Order Recommended by Hearing Examiner Jair S. Kaplan, in Docket No. 34013 Rules to Govern the Assembling and Presentation of Cost Evidence, (March 1, 1967), 78-83.

\textsuperscript{16} Supra, note 11. See also: Grain in Multiple-Car Shipments—River Crossings to So., Division 2, 318 I.C.C. 641, 682-684, and on reconsideration by the entire Commission, 321 I.C.C. 582-593 (1963).

\textsuperscript{17} Supra, not 14.

\textsuperscript{18} See generally, Dearing, C. L. and Owens, "National Transportation Policy," The Brookings Institute ( ), 248-249.

\textsuperscript{19} New Automobiles in Interstate Commerce, 259 I.C.C. 475 (1945), modified, 263 I.C.C. 771 (1945); at 259 I.C.C. 534.

\"Whether a rate is below a reasonable minimum depends on whether ... the carrier would be better off from a net revenue standpoint with it than without it.\" as quoted in Fulda, Competition in the Regulated Industries; Transportation, Little Brown and Company, Boston (1961) at 346 n. 18.

\textsuperscript{20} 49 U.S.C. Section 4(2), relating to water-rail competition prohibits railroads which have reduced rates in competition with barges from thereafter raising rates without the permission of the I.C.C., which shall have first found that "such proposed increase rests upon changed conditions other than the elimination of water competition." Fulda, ibid, quotes Skinner and Eddy Corp. v. United States, 249 U.S. 555, 567 (1919), "... was designed to prevent railroads from killing water competition by excessively low rates;" 340, n. 8.
tation, which of the two levels is adopted as the base below which rates may not fall.

II. Background

A. Judicial and Administrative Decisions Concerning the Applicable Cost Standard

The question as to the cost standard utilized to determine a low-cost carrier has had a long and inconclusive history. Assuming that the low-cost carrier has an "inherent advantage" which should be protected by the National Transportation Policy, it becomes crucial for the rate setter to define a standard for deciding which of two competing modes is "lowest" in cost. As has been pointed out, if "variable costs" are used, the railroads become the low-cost carrier. If "fully allocated costs" are used as the standard, the water and motor carriers are the low-cost carriers.

One of the first cases to consider this issue was *New Automobiles in Interstate Commerce*, 259 I.C.C. 475 (1945). In *New Automobiles* the railroads were attempting to lower their rates in order to compete with trucks. The Cost Accounting Section of the I.C.C. computed five "costs" for the railroads in carrying new automobiles. Two of these were "out-of-pocket" and "fully-distributed" costs. For the trucks the only cost standard employed was "fully-distributed." In the end the I.C.C. decided that a rate for the railroads was compensatory, above out-of-pocket costs, and that in this circumstance the rates on one mode should not be held up to protect the rate structure of a competing mode. The I.C.C. stated that "whether a rate is below a reasonable minimum depends on whether it yields a proper return; whether the carrier would be better off from a revenue standpoint with it than without it; whether it represents a competition that is unduly destructive to a reasonable rate structure and the carriers; and whether it conforms to the National Transportation Policy. . . ."

However, the I.C.C. did not follow *New Automobiles* consistently. For example, in *Petroleum Products from Los Angeles to Arizona and New Mexico*, 280 I.C.C. 509 (1951), Division 3 disallowed railroad rate reductions to meet competition of the motor carriers. The Division seems to have accepted the argument of protestant truck lines that they are specialized carriers and that unless they are allowed to recover more than their fully-distributed costs they will go out of business. The Division said, "In the situation presented where two modes of transportation are competing

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for the same traffic and both are necessary to meet the needs of shippers. rates of both modes must be reasonably compensatory and so related that they will not be unreasonable, unfair, or destructive, but will promote adequate, economical, and efficient service by each mode and preserve the inherent advantages of both." 22 Two years later the Commission allowed similar rate reductions to meet potential pipeline competition. 23

In 1957, Schaffer Transportation Company v. United States was decided by the Supreme Court. In this case Schaffer, a trucking firm, wished to compete with the railroads for granite being shipped from Vermont. One of the arguments of the trucking firm was that it could provide lower rates. The Commission disregarded this evidence as not relevant. The Court overruled the Commission saying, "The ability of one mode of transportation to operate with a rate lower than competing types of transportation is precisely the sort of inherent advantage that the Congressional policy requires the Commission to recognize." 24 No cost comparisons were discussed, however.

Such decisions by the I.C.C. prompted at least one court to say that "the Commission had, in a line of cases through the early 1950's, often cancelled reduced rates, though they were fully compensatory. While the Commission has traditionally contended such cancellations were not ordered to protect other modes, the Congress felt otherwise . . ." 25 A year later the Transportation Act of 1958 was passed. It provides:

In a proceeding involving competition between carriers of different modes of transportation subject to this Act, the Commission, in determining whether a rate is lower than a reasonable minimum rate, shall consider the facts and circumstances attending the movement of the traffic by the carrier or carriers to which the rate is applicable. Rates of a carrier shall not be held up to a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the national transportation policy declared in this Act. 26

Even after the passage of the Act, the Commission continued to deny

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certain railroad rate reductions in order to protect competing carriers.\textsuperscript{27}

The first case reaching the Supreme Court concerning an interpretation and application of Section 15a(3) of the Interstate Commerce Act was the \textit{I.C.C. v. New York, N. H. and H. R. Co.}, 372 U.S. 744 (1963), referred to as the \textit{New Haven} case. In \textit{New Haven} the railroads had proposed reduced rates for trailer-on-flatcar service to meet the rates offered by coastal water carriers. These rates generally equaled or exceeded the railroads' out-of-pocket costs and in many instances the railroads' fully-distributed costs. The I.C.C. cancelled the rates on the grounds that the water carriers would be destroyed and that they were an integral part of the national transportation system and should be protected. The Court stated that the Commission had not determined which mode had an "inherent advantage" as to rates. The Commission had not held up railroad rates to protect the other mode's inherent advantage, but rather had felt the reduced rates must be disallowed because of the requirements of the National Transportation Policy.

The Court then discussed the legislative history behind the passage of Section 15a(3) and concluded that "there can be no doubt that the purpose of this provision was to permit the railroads to respond to competition by asserting whatever inherent advantages of cost and service they possessed."\textsuperscript{28} The purpose of the Act was to do away with the paternalism of the I.C.C. in maintaining shares of the traffic for each mode under its jurisdiction.

The Court continued by saying that a rate was not destructive simply because it diverted traffic from another mode. The Court felt that these rates should be disallowed as not consistent with the National Transportation Policy only if they impaired an inherent advantage of the water carriers. Here the Court indicated that the water carriers may have just such an advantage as both their out-of-pocket and fully-distributed costs were less than that of the railroad. But the Court emphasized that the Commission had not determined which carrier had an inherent advantage as to rates. The Court said, "It may be, for example, that neither a comparison of 'out-of-pocket' nor a comparison of 'fully-distributed' costs . . . is the appropriate method of deciding which of two competing modes has the cost advantage on a given movement . . . These and other similar questions should be left for initial resolution to the Commission's informed judgment."\textsuperscript{29} Thus the Court remanded the case to the Commission.

\textsuperscript{29} Id. at 760-1.
The I.C.C. has compared the cost standards to determine which mode has an inherent advantage in varying ways. If a rate reduction is proposed to meet unregulated competition, the Commission allows it as long as it is above out-of-pocket costs and therefore compensatory. If both competing modes are regulated, the standard applied by the Commission is more complicated. The Brief of Respondent Railroads before the I.C.C. in the Ingot Molds case perhaps best sums up the rule of law then applicable in these situations as follows:

First, the Commission compares the fully-distributed costs of the two regulated modes to determine which enjoys the lower. See Grain From Idaho, Oreg., & Wash. to Ports in Oreg. & Wash., 319 I.C.C. 534, 560 (1963). If, upon such comparison, the mode proposing the reduction has the lower cost, the rate is lawful regardless of whether it clears fully-distributed costs provided it covers the proponent carrier's incremental costs. See e.g., Motor Vehicles From Kansas City to Ark., La., & Tex., 318 I.C.C. 301, 320 (1962). Where the comparison of the full costs indicates that the proponent of the rate reduction has the higher full costs, the reduction will, nevertheless, be lawful from a cost standpoint if the rate exceeds the higher cost carrier's own fully-distributed costs and does not force the lower-cost agency to go below its own fully-distributed costs in order to remain competitive. Agricultural Insecticides—Heyden, N.J. to Houston, Tex., 319 I.C.C. 493, 495 (1963). The Commission has also approved rates of the higher cost agency which, although not shown to be above its fully-distributed costs, exceed its own incremental costs and are higher than the lower cost agency's fully-distributed costs. Cereal, Coffee, Tea, Drugs, Related Art.—N.J. & Pa. to Tex., 319 I.C.C. 424, 426 (1963). But if the higher cost agency's rate is below its own fully-distributed costs and also below the lower cost agency's fully-distributed costs, the likelihood is that it will be disapproved... Grain From Idaho, Oreg. & Wash. to Ports in Oreg. & Wash., 319 I.C.C. 534, 561, 562 (1963).

The I.C.C. generally agrees with this statement.

The Ingot Molds case was the next leading case to address the issue.


The case was concerned with the movement of ingot molds from Neville Island and Pittsburgh, Pennsylvania, to Steelton, Kentucky. Almost all of the traffic had been moving by barge-truck service, and the railroads were proposing to lower their rates from $11.86 to $5.11 per ton, or the same rate as that charged by the barge-truck service. Division 2 of the I.C.C. found the fully-distributed cost to the railroads to be about $7.59 per ton and the out-of-pocket costs to be $4.69. The fully-distributed cost to the barge-truck service was $5.19 and their out-of-pocket costs were estimated to be approximately the same.

Commissioner Freas, writing for Division 2 of the I.C.C., stated, "We adhere to the utilization of fully-distributed costs as the standard for determining the inherent advantage of low cost in the situation presented." However, he went on to say that since protesters, the barge-truck service, had voluntarily set their rates below their fully-distributed costs, the Division would not assume that the railroads were impairing protesters’ inherent cost advantage by meeting that rate. As the railroads’ rate exceeded their out-of-pocket costs, it would contribute to the railroads’ constant costs and there would be the benefit to the public from the competitive rate setting.

The case then went to the full Commission. The I.C.C. reversed Division 2 and held the rates to be unjust and unreasonable. They stated that fully-distributed costs were to be used to determine which mode possesses an inherent advantage. Moreover, this advantage cannot be lost or impaired by the circumstance that the existing rate of the low cost carrier is below its fully-distributed costs. They felt that since the railroads had the lower out-of-pocket costs, they could drive the water carriers out of business. Finally, the Commission stated that any departure from using a fully-distributed cost standard should be undertaken in the broad rule-making proceeding of Docket 34013. Rules Governing the Assembling and Presenting of Cost Evidence.

Commissioner Freas registered a strong dissent to the Commission’s opinion saying in part: "As I see it, the majority has come full circle to the pre-Section 15a(3) days before 1958, and is once again indulging in the arbitrary allocating of traffic among various modes. It has done so by equating, in effect, fully distributed costs with a profitable rate."

The railroads sued to enjoin and set aside the order of the Commission. The Three-Judge District Court found for the railroads and set aside the

34. Id. at 763.
36. Id. at 87.
order. They held first that there was no rational basis for the Commission to use fully-distributed costs and, therefore, the order was arbitrary and, second, that Congressional intent was not carried out by the Commission's order.\textsuperscript{37} The Court said the Commission had asserted that merely because a carrier was able to get some return and by adding traffic maximize the contribution to its overall does not necessarily mean the carrier is more efficient. The Court asked why this is so and said the Commission had not answered this question. The Court also contended that the Commission had not rationally explained the distinction between regulated and unregulated competitive situations which enables it to utilize different cost standards. As to Congressional intent, the Court felt that Section 15a(3) was a codification of \textit{New Automobiles} and authorized exactly this sort of hard competition.

Both the District Court and the Commission relied on the \textit{New Haven} case. The Commission argued that in \textit{New Haven}, the Supreme Court had indicated a willingness to accept a finding of "inherent advantage" based on the lower fully-distributed costs. The District Court, however, relied on the language in \textit{New Haven} specifically disavowing any holding as to the applicable cost standard.

The Supreme Court, Mr. Justice Marshall for the majority, reversed the District Court. Interpreting its prior decision in \textit{New Haven}, the Court said the I.C.C. "could, after due consideration, decide that some other measure of comparative costs might be more satisfactory in situations involving intermodal competition than the one (fully-distributed costs) it had traditionally utilized. This is a far cry from saying that it \textit{must}." (Italics Court's)\textsuperscript{38} The Court noted that Congress had rejected language for the 1958 Act requiring the I.C.C. to consider only out-of-pocket costs.\textsuperscript{39} Moreover, one of the examples before the Congressional Committee examining the proposals for the 1958 Act was identical to this case.\textsuperscript{40} The Court felt that a reading of Section 15a(3) to require the Commission to compare out-of-pocket costs would render the terms "inherent advantage" meaningless.\textsuperscript{41} This is a clear indication that the Court would accept findings of inherent advantage based on comparisons of fully-distributed costs.

However, the Court then repeated its holding in \textit{New Haven} to the effect that the initial determination of the question of which cost standard should be applied was for the Commission. The Court stated that the

\begin{itemize}
\item \textsuperscript{38} American Lines v. L. & N.R. Co., 392 U.S. 571, 584 (1968).
\item \textsuperscript{39} Id. at 580.
\item \textsuperscript{40} Id. at 582.
\item \textsuperscript{41} Id. at 581.
\end{itemize}
Commission has not made such a determination as its decision in this case is temporary. The Court noted that "the I.C.C. has presently pending before it a broad-scale examination of the whole question of the cost standards to be used where comparisons of intermodal cost advantage are required." The majority felt the I.C.C. should be allowed to decide the question in that proceeding. Therefore, the Court affirmed the I.C.C.'s order.

Mr. Justice Harlan in his concurring opinion stated that he understood the Court's position to be that since the Commission has not decided the question expressly left open in New Haven, the Court need not decide it. He felt this question should have been resolved here instead of requiring new litigation.

The rulemaking proceeding pending before the I.C.C. is entitled Rules Governing the Assembling and Presenting of Cost Evidence, Docket No. 34013. It will be discussed in a later section of this paper.

B. A Review of Legal and Economic Opinion as to the Applicable Cost Standard

All of the commentators on this question are in agreement on one thing. That is: the issue as to which cost standard should be applied has been one of the most widely discussed and written about issues by transportation lawyers and economists in recent years.

Perhaps the best place to start a review of the recent legal and economic opinions on the issue is with the exhibits introduced into the Ingot Molds case by ten railroad economists. In the statement by William J. Baumol he asserts that, "It is important to realize that the discussion . . . does not represent the views of one or a few economists or even a narrow school of economic analysis; rather it can be stated without hesitation that it would receive the support of the vast majority of reputable members of the profession." He then summarizes his conclusions concerning the applicable cost standard. First, "the type of cost datum which is most pertinent and validly employed in the setting of price floors (minimum rates) is incremental or marginal cost." He states that concepts such as fully-distributed costs are artificial and arbitrary and lead to inefficient utilization of transportation facilities. Secondly, he states, "In determin-
ing any price floors for the services of a particular carrier, only the incremental costs incurred directly or indirectly by that carrier in providing that particular service are always pertinent."

In support of his conclusions Mr. Baumol proceeds to demonstrate how incremental cost pricing maximizes net revenue. The railroad will only know if a particular movement adds to its net revenue by comparing the incremental costs of that movement with its incremental revenue. This service should be provided as long as the revenue from it covers its incremental costs and returns something toward overhead or fixed costs.

Then he states, "If any floor on rates, other than that provided by incremental cost is artificially imposed by regulatory decisions, both the public and the business firms involved must necessarily be harmed. The public must suffer because of the lost opportunities to obtain goods and services whose value exceeds the added costs incurred. The participating carriers must lose because they are forced to forego opportunities to supply services which could have provided a contribution to profit and overhead. . . ."

Mr. Baumol argues that fully-distributed costs are objectionable on two main grounds. First, they are always arbitrary. By definition, one is trying to allocate or distribute a cost which is "fixed" or not allocable. Secondly, a fully-distributed cost calculation is irrelevant to whether a service will be profitable or not.

The other railroad economists agreed with the statements of Mr. Baumol. Richard B. Heflebower pointed out that the railroads have excess capacity. Given this fact, he argues that pricing on an incremental costs basis spreads this "burden" over more traffic, and secondly, the increased use of these facilities enlarges the social output from this excess capacity. He feels that the "inherent advantage" is with the carrier having the lower incremental cost.

The I.C.C. in its brief before the District Court in the Ingot Molds case argues that economic opinion is not nearly so unanimous as Mr. Baumol states. One of the economists they point to is Professor Joseph R. Rose. He has written two articles concerning this issue but in both he stated that "marginal costs" were the appropriate cost standard for pricing pur-

47. Id. at 5.
48. Id. at 9.
49. Id. at 10.
50. Id. at 16.
52. Id. at 9-10.
53. Supra. note 32 at 50.
poses. In his latest article Professor Rose opts for rates set by adding a uniform increment to marginal costs. He argues against rates which are discriminatory because of demand factors. But under this method the mode with the lower marginal cost would still set the rate floor.

F. K. Edwards, a former member of the I.C.C.'s Cost Finding Section, asserts that fully-distributed costs have no function in railroad ratemaking. He believes demand factors should set the rate. Additionally in "The Ingot Molds Case and Competitive Ratemaking," J. J. Coyle emphasized that the I.C.C. allows "out-of-pocket" rate setting to meet unregulated competition. He contends that there is no logical distinction between the unregulated and regulated competitive situations.

Some authors are even harsher in their criticism of the I.C.C.'s use of fully allocated costs to set minimum rates. David Boies, Jr., in his article "Experiment in Mercantilism: Minimum Rate Regulation by the Interstate Commerce Commission," says the I.C.C. uses its minimum rate-making power like a monopoly to keep transportation cartel prices up. He argues that any rate floor misallocates resources and also that were railroads allowed to reduce their rates, they would stay low even if some other carriers were driven out of business. He says one of the primary reasons for regulating the motor carriers in the first place was ease of entry and their intermarket mobility. This ease of entry would keep railroad rates low.

Mr. Boies then analyzes three arguments for use of fully allocated costs as a minimum rate floor. First, he presents the argument that a rate not recovering its fully allocated costs does not carry its share of the fixed costs, thereby causing some other traffic to carry a greater proportion of these fixed costs than it should. He meets this argument as do the railroad economists by noting that any recovery toward fixed costs is better than none. The absolute amount that other railroad shippers must contribute to covering fixed costs is less if some contribution is made by the added traffic.

59. Id. at 652.
Secondly, he presents the argument that the railroads with their superior financial strength would drive other modes out of business and then wield monopoly power. He counters this argument with the "ease of entry" factor and competition from other railroads. One railroad would not be able to drive another out of business and this would provide competition even if over different routes to the same region.\textsuperscript{61}

Finally, Mr. Boies presents the contention that making each portion of the traffic cover its fully allocated costs is a form of internal subsidization for the railroads. It allows them to service the unprofitable areas that they could not afford to serve if they only recover a small amount above their variable costs. He points out that in a situation like \textit{Ingot Molds} the railroads themselves are asking for rate reductions which would hardly be likely if they felt they were going to lose revenue by doing so. Obviously, if pricing at marginal or incremental levels maximizes profits as the economists argue, that would help the railroads service unprofitable areas more than pricing at fully allocated levels.\textsuperscript{62}

On the other hand, Professor Hampton K. Snell feels that pricing on a variable cost basis ignores the fixed costs which must be taken into account by the ratemaker. He feels the I.C.C. can fairly approximate a range of fully allocated costs for a particular service and that it should.\textsuperscript{63}

The author of "Rate-Making Under Conditions of Regulated Intermodal Competition: The Status of Incremental Cost Pricing," 55 Va. L. R. 691 (1969), does not seem too critical of the I.C.C.'s comparison of fully allocated costs. His main point, however, is that a cost standard should not be determinative of an "inherent advantage." He argues that the issue is too narrowly drawn and that ratemaking should also take into account service advantages.\textsuperscript{64} Other law review comments have been favorable to the District Court Decision in \textit{Ingot Molds}, arguing for the out-of-pocket cost standard.\textsuperscript{65}

Finally, in any discussion of the prevailing opinion among legal and economic writers in this area, their predictions as to the outcome of this issue are important. At least two writers, Robert W. Harbeson and Joseph R. Rose, have felt the Court has shown a preference for a fully-

\textsuperscript{60} Id. at 648-650.
\textsuperscript{61} Id. at 651-654.
\textsuperscript{62} Id. at 655-660.
\textsuperscript{63} Snell, Hampton K., Professor in Bus. Adm., The University of Texas at Austin. From discussion during presentation of this paper in seminar, The University of Texas Law School, Nov. 11, 1971.
\textsuperscript{65} Comment, 45 Texas L. R. 1429; Comment, 81 Harv. L. R. 905.
distributed cost standard. Mr. Harbeson has said, "Barring a change in the statute the Court has thus in practical effect, if not technical form, made some version or modification of full cost the applicable general standard, subject to exceptions, in the regulation of intermodal competition." It is felt that if the I.C.C. determines that fully allocated costs should be compared to determine the low cost mode, the Courts will accept its decision.

III. As to the Present State of the Rule-Making Proceeding Before the I.C.C.

In the "Ingot Molds" decision, Mr. Justice Marshall referred to the proceeding then being conducted by the I.C.C. to determine appropriate formulas and rules for the presentation of cost evidence in minimum rate hearings. An unwillingness to prejudice the eventual outcome of that proceeding provided impetus for the decision to defer to the Commission and may explain the ambiguity between that decision and certain previous decisions, notably "New Haven", in which the Court displayed a readiness to overturn Commission decisions which had rejected proposed carrier rates. The Court recognized that the initial choice between variable and fully distributed minimum cost levels properly lay with the Commission and that until the Commission should, by the proceeding then in progress, be able to make a decision in this most complicated and technical matter, it would be premature for the Court to interject its own choice.

Mr. Justice Marshall had reference to Docket No. 34013, Rules to Govern the Assembling and Presentation of Cost Evidence, initiated by the Commission on its own order on April 16, 1962. The assumption was of course that No. 34013 would eventually result in a choice between the variable and fully allocated cost levels, an assumption which the Commission shared. On October 10, 1966. Hearing Examiner Jair S. Kaplan

68. Supra, note 38.
69. Supra, note 55 at 1032.
70. Statutory authority for the order and proceeding—49 U.S.C. Sections 12, 17, 204, 304, 404 and 5 U.S.C. Section 553.
71. Coal from Southern Mines to Tampa and Sutton, Fla., 318 I.C.C. 371, 393 (1962); Grain in Multiple-Car Shipments—River Crossings to So., 321 I.C.C. 582, 597 (1963); Animal Feed—Kansas City, Mo., to Chicago, 325 I.C.C. 147, 154, 156, 157 (1965); Aluminum Extrusions from Miami to Chicago, 325 I.C.C. 188, 193 (1966); Drugs and
entered his Report and Order in No. 34013. The Association of American Railroads ("AAR") strongly excepted on the threshold, arguing that it was "... evident that the recommended report would have the Commission depart from a proceeding addressed to the procedural handling of factual cost evidence, and enter upon a totally new undertaking concerned with rate-making criteria." The proceeding had been directed by the order of April 16, 1962, and amendments, to the development of formulas and rules pertaining to the introduction of cost evidence so that minimum rate proceedings might be regularized and a basis for the meaningful comparison of cost evidence achieved. With some justification, the A.A.R. contended that, contrary to the Administrative Procedure Act and requirements of a fair hearing the Examiner had changed horses in midstream in order to reach recommended finding 6 (which would use fully allocated costs to determine the "low cost" or "rate setting" carrier), and 7 (which would have protected the "inherent cost advantage" of the low cost carrier through the prescription of rate differentials equal to the difference between the respective fully allocated cost levels of the competing modes). The initial decision of the full Commission on the Report and Order was to accept the A.A.R.'s contention, and to refer the question of the appropriate minimum cost level in intermodal rate competition for further consideration under Docket No. 34013 (Sub.-No. 1). Cost Standards in Intermodal Rate Proceedings. This order was handed down on February 14, 1969. As of October 27, 1971, three years after the "Ingot Molds" decision, and better than nine years since the proceeding was begun, research has failed to uncover any further report on the matter.

On July 30, 1970, the Commission served its findings on related recommendations in the Report and Order. Finding (1) "Approval and adoption of specific cost formulas, with a view toward giving prima facie validity to formula-based costs found not shown to be necessary or desirable." accepting the Hearing Examiner's recommended finding. dealt with a proposal to use specific formulas developed by the Commission's Cost Finding Section ("CFS"). Finding (1), essentially a procedural matter, is of only collateral interest to our discussion.

Findings (2) and (3) are of direct relevance to the matter at hand. These

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72. Supra, note 15 at 3.
73. Id.
74. Supra, note 2 at 300.
75. Id.
findings, accepting the recommendations of the *Report and Order*, and concurred with by the A.A.R., involved a redefinition of the two cost levels so as to exclude elements which were not properly costs and the adoption of a "variability factor," or time frame, by which variable and fully allocated costs could be distinguished. The effect of these two findings was to introduce into the question some badly needed precision.

(2). The terms "out of pocket costs" and "fully distributed costs" as used in Commission proceedings, required to be changed to "variable costs" and "fully allocated costs" respectively, and the non cost elements of profit, income taxes, and, for railroads, the passenger and less-than-carload deficits, excluded therefrom.

The basis for this change was the "... distinction between the broad function of ratemaking and the more limited fact finding function of costing ..."76 Excluded from variable costs and fully allocated costs alike were provisions for "pure economic profit" which previously accepted formulations of "out of pocket" and "fully distributed" costs had made. The provisions for profit are certainly appropriate in the ratemaking process but in fact have nothing to do with costs. The distinction must be made, however, between pure economic profit and a return on equity investment. The investment of equity capital has a cost in the same way that the investment of debt capital has a cost.77 The interest charged on borrowed money is obviously the true cost of using someone else's capital. Likewise, the opportunities for investment which the investor must forego when he uses his own capital is a true cost of capital; a cost equal to the interest he could have realized had he chosen to "rent" his money to someone else. The determination of such cost is a question of fact; a question of an entirely different nature than the rate making problem of the size of the profit or reward a regulated industry should receive.78 Also excluded from the computation of the levels of cost are the various State and Federal income taxes. Although they may appear as an expense, nonetheless they arise only after a net profit has been earned.

If income taxes, as such, were included in costs of operation, prosperous carriers with high net earnings would show relatively larger and improperly inflated costs, perhaps requiring increased freight rates, than carriers having none, or very small profits.79

While income taxes, like profits, are very relevant in the rate setting

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76. *Supra*, note 8 at sh. 84a.
77. *Id.*, at sh. 86.
78. *Id.*
79. *Id.* at sh. 87.
process, they are not properly cost items, and their inclusion as such has the practical effect of distorting cost comparisons.

Of course the losses incurred in passenger service are no longer the burden of the railroads, having been shifted by Amtrak to the Federal government. But the exclusion of losses resulting from passenger and less-than-carload services from cost computation retains validity not only as applied to less-than-carload deficits, but as a general costing principal. The railroads are required, in the public interest, to maintain certain services which, because of their unprofitability, they would otherwise discontinue. But the deficits incurred in rendering these unprofitable services should not influence the costs of other services upward in a manner that might effect the minimum compensatory level of rates that could be charged for those services. Losses and deficits are simply the opposite side of the coin from profits and gains. Both represent the difference between revenues and expenses—one being on the minus and the other on the plus side thereof.\footnote{ld. at sh. 88.} It is, therefore, no more proper to include net operating deficits in the computation of costs than it is to include net operating revenues.

(3) The determination of a variability factor for particular services found to require the selection of an appropriate time period sufficiently long to reflect adequately those changes in operations resulting in expenses which can reasonably be expected to vary with the performance of the particular service or services rendered.

As we explained above, incremental cost is the increment or addition to total costs incurred in the last individual unit of production. We indicated why a strict application of incremental costs is inappropriate to transportation ratemaking except in the very limited case in which the one-shot movement of one train-load, truck-load, or barge-load of freight from X to Y is defined as the unit of production. Thus the term “out-of-pocket” cost came into use as a practical expedient to describe the minimum level of costs that must be returned by a particular on-going movement if that movement is to pay its own way. It is relatively easy to identify the incremental costs of producing one more T.V. set or even the movement of one more train-load of steel from Pittsburg to Atlanta, but to determine what portion of the total costs of a transportation company are particularly attributable to one of many on-going movements is an entirely different matter. Given significant excess capacity, as the railroads have, a particular movement can exploit underutilized facilities, representing fixed costs, which would be in place regardless of whether the
movement was ever made. But these underutilized facilities, be they locomotive, cars, signals or even trackage, will, over sufficiently long periods of time, wear out and have to be replaced if the movement or movements that utilize them are to continue. Theoretically, all costs (with the possible exception of land for rights of way) are variable in the extreme long-run. Thus, if we are not to consider all costs as being 100% variable (the contention adopted by the motor carriers), we must settle on some time frame of shorter duration which will fairly and adequately reflect which costs are to be attributed to the particular movement and which are incurred in favor of the system as a whole. The precise determination of that point, involving as it does the most technical calculations (double regression techniques, etc.), and involving a large number of independent variables, is frankly beyond the scope of this paper. Nonetheless, the Examiner and the Commission agree that an appropriate time frame can be described under the particular circumstances of each case within the “intermediate long-run” of 5 to 10 years.

Findings (4) (5) and (6) of the Commission illustrate the present ambiguity on the rate floor question.

(4) The allocation of constant costs to particular services, for ratemaking purposes, results in the assignment of an equitable portion of such expenses to the particular services, and no single method found universally applicable to all transportation services.

(5) No single method of apportioning joint or common costs found universally acceptable, and any method of apportionment utilized for ratemaking purposes required to be designed to reasonably reflect the specific circumstances attending the transportation performed. [Joint or common costs are those costs other than fixed costs incurred in the two or more movements but not specifically attributable to any particular movement.]

Recommendation 5 of the Report and Order, treating with both fixed and joint or common costs, was to the effect that such costs be allocated throughout the system (or among those movements incurring common costs) on the basis of cars and car miles, trucks and truck miles, and barges and barge miles. The CFS had previously allocated constant costs on a ton and ton-mile basis; a basis which, according to the Hearing Examiner, discriminated against “heavier loading” commodities. “Thus, for example, under a ton and ton-mile allocation a car load of lead is assigned comparatively more constant costs than a comparative car load

81. Id. at sh. 95.
of feathers, though each use exactly the same instrumentality.” The CFS countered that the Examiner’s “instrumentalities of transportation” allocation would be on a “cost-of-service” basis (contribution to fixed costs by the unit of production varies directly with the unit’s variable cost), a basis which the Examiner had previously rejected in another form because it would, by implicitly assuming that costs are 100% variable, discriminate against higher variable cost commodities. Both the Hearing Examiner and the CFS agreed however that the allocation of constant costs to particular units should be made. The problem, as they saw it, was to evolve a “reasonably equitable and just method” of making such an allocation.

The A.A.R. rejected any basis for apportioning fixed costs as essentially arbitrary. Though all parties agree that total revenue must cover total costs if the company is to remain solvent, the A.A.R. contends that each railroad should be able to set rates for the individual movement at a level which will maximize the revenue realized from that movement and thus the movement’s contribution to constant costs. The point of revenue maximization—the rate that will draw the maximum revenue from a given demand—may very well be between the variable cost of the movement and its fully allocated costs no matter how constant costs are allocated. In such a situation, the use of a fully allocated cost floor for proposed rates would mean that less traffic would be called out by the rate, and thus less revenue generated towards meeting constant costs. Therefore, to the railroads, any basis of allocating constant costs must be not merely arbitrary, but irrelevant and even destructive.

(6) In appropriate circumstances (a) “fully allocated costs” found representative of the full expense level assignable to particular services; (b) relevant “variable costs” found indicative of the minimum level of expenses which must normally be recovered by a carrier in providing a particular service; and (c) “incremental or marginal” costs authorized for utilization as indicative of a minimum expense level for rate making purposes in appropriate short run situations.

This ambiguous finding is the most authoritative statement we have on the Commission’s position. The A.A.R. would of course contest (a) on the ground that under no circumstances is a fully allocated cost level appropriate as a rate floor. But (a) represents no expansion of the previous Commission practice in rate-setting. In effect, the Commission will con-

82. Id. at sh. 96.
83. Supra, note 2 at 312.
84. Supra, note 8 at sh. 94.
85. Supra, note 15 at 29.
tinue to make a determination as to the appropriate floor on the facts of
each particular case. 86 Though this is probably the most politic course for
the Commission to pursue until some decision on No. 30413 (Sub.-No.
1) is reached, it is most unfortunate that the Commission has failed in its
previous decisions to provide a clear indication of the basis on which it
will make that determination in future cases.

IV. Could the Railroads Case be Supported on the Ground that Adoption of their Standard of Costing would not Destroy all Trucking and all Barges?

The question assumes that the destruction of trucking and barges would
necessarily be a bad thing. In strict resource maximization terms, if the
railroads, or any other mode, were the most efficient carrier of all the
nation's traffic then the elimination of other, less efficient modes would
be not only inevitable (unless the government intervened to protect them),
but also desirable. The mode which could carry the nation's resources
most efficiently should be allowed to take traffic away from less efficient
modes. Otherwise shippers would have to pay more for transportation
than should otherwise be necessary, the difference representing a subsidy
to inefficiency.

There is, however, an inherent assumption about that most efficient
mode which is not borne out when one looks at the nation's real transpor-
tation needs. What we have assumed is that either all the nation's traffic
has the same service requirements, or else that the most efficient carrier
is the most efficient way to meet all the various services' requirements
which one finds in the nation's total traffic. In reality, of course, the
service requirements of particular categories of traffic are as varied as
those categories themselves. Congress, for instance, had the very peculiar
service requirements of farm-to-market agricultural traffic in mind when
it enacted the "agricultural exemption"87 to the Motor Carriers Act of
1935.88 The particular service requirements of agricultural traffic were so
distinct that Congress felt compelled to carve out, in effect, a whole
separate mode of transport—unregulated, interstate, for-hire truck-
ing—to meet them.

Likewise each of the available modes of transportation has its inherent
technological service advantages and disadvantages which are peculiar to
it alone. Again, Congress had in mind the particular advantages of water
carriage, (and the requirements of traffic in undifferentiated bulk com-

86. Supra. note 2 at 318.
87. 49 U.S.C. Section 303(b) (1952); 49 Stat 545 (1935).
modities) when it enacted the "bulk commodities" exemption to the
general regulation of water carriers. Barges were so well suited to the
carriage of undifferentiated bulk that Congress foresaw very little com-
petition being offered for this traffic by other modes. In this connection,
notice also that an inherent service disadvantage of water carriage—slow
speed—has comparatively little impact on their share of the traffic in
undifferentiated bulk. These are the sort of commodities that require large
inventories and thus large areas set aside for storage. Shippers actually
depend on having large quantities of undifferentiated bulk tied up in
transit at any one time.

The net result of this sort of traffic/mode differentiation by service
requirements/advantages is that significant categories of the nation's
total traffic are the exclusive preserve of one or another of the available
modes of transport. Rate competition in these categories is irrelevant
since there is no other mode with the capabilities to take the traffic away.

There is, of course, a great range of traffic for which the marginal
service advantages of any one mode may be overcome in the shipper's
mind by the lower rates offered by another. In this range are competitive
situations involving modes offering relatively similar service capabilities,
and situations in which the comparatively large service advantages of one
mode are balanced by the comparatively large rate advantages of another.
It is in this range that competitive ratemaking has significance in terms
of the allocation of available traffic among the various modes. Service
advantages of one or another of the competing modes lose that traffic
allocation function, and are instead treated as a "given" around which
rates are made.

In competitive ratemaking what the other modes basically fear is that
a variable cost floor for rates will enable the railroads to shift much of
the burden of the fixed and joint ("constant") costs of the system to other,
non-competitive rail movements which, because they need not meet rate
competition, are able to consistently return more that their pro-rata share
of constant costs. Thus the roads could lower rates in competitive situations
to the detriment of the traffic shares of the other modes and make up
the difference elsewhere.

The cost structures of the motor and water carriers cannot match this
ability to shift the burden of constant costs away from competitive move-
ments. A significantly larger percentage of their total costs are directly

89. 49 U.S.C. Section 903 (b), (c), (d) (1952).
91. Supra, note 19, at 184; Professor Fulda concluded that Congress had anticipated
correctly in the undifferentiated bulk commodities situation, but had not in regards to the
agricultural commodities exemption.
attributable to the movement of particular traffic and thus, under a variable cost floor, would have to be reflected in the rate set for that movement. Further, motor carrier and barge firms are typically much smaller organizations than railroads and thus cannot match the railroad’s backlog of non-competitive movements. If railroads are permitted to set rates generally at levels below fully allocated cost, the result will undoubtedly be a shift of some traffic away from other modes in competitive situations.

For a number of reasons, however, there seems to be no possibility that a variable cost floor for railroad rates will destroy the other modes. In the first place, each of the other modes (as distinguished from the individual firms making up each mode), has very significant categories of traffic in which it does not have to face inter-modal competition. The point to point capability of trucks for instance, gives them a nearly unbeatable advantage in the transport of general commodities over short (up to 200 miles) distances. It simply does not pay the shipper to have his goods hauled to the rail siding by truck, unloaded onto the boxcars, carried 200 miles, unloaded back into trucks, and hauled to the consignee. Whatever marginal savings he could realize on rail rates would certainly be less than the added costs of the extra handling and intermediate carriage.

A second reason (which is more in the nature of a constraint on the railroads to be satisfied with a rate which is somewhat higher than the level which would drive out the competition) is the fact that to set the rate at the lower level may mean that the railroad is giving up possible revenues which it may not later be able to make up. If the rate level at which revenue is maximized is at a level which would allow other modes to compete, then to force those other modes out would necessarily mean that the railroads had foregone possible revenue. The obvious thing to do would be to raise the rates after the competition had been eliminated in order to take advantage of the new seller’s market. This, however, the railroads could not do. Motor carriers and barges have one great advantage in that they possess the inherent technological flexibility to easily reenter a market which they have previously been forced to abandon. There being no physical barriers to reentry, higher rates would naturally tend to call the trucks and barges back into competition for the traffic (subject, of course, to the I.C.C.’s approval).

Further, there is always the possibility that once rates have been lowered to a level that eliminates competition, the Commission, in the exercise of its maximum rate power, will refuse to let them rise again. Section 4(2), 49 U.S.C. § 4 (2), (1952), specifically forbids railroads which have reduced rates in competition with water carriers from thereafter increasing rates unless the Commission has first found that “such proposed
increase rests upon changed conditions other than the elimination of water competition. 92

A final restraint on railroad rates set below the fully allocated cost level are the limitations on the railroads' ability to shift the constant cost burden to other rates. In 1960, CFS studies indicated that fully 72% of all tons carried by the railroads were carried at below fully allocated cost. 93 The remaining 28% of the traffic (one must assume a great deal to believe that now, eleven years later, the figure for non-competitive movements is even this large) must surely have a finite capacity to carry the constant cost burden.

For these reasons, it is highly improbable that the nation's water and motor carriers would be driven out of existence by the adoption of a variable cost floor. At most, such a rate floor would mean a shift of some percentage of the general range of traffic for which these modes compete. This marginal shift of traffic must be compared to the long-run trends in the carriage of inter-city freight. In 1940, the railroads carried 63.24% of the inter-city ton/miles; in 1960 the figure was 44.73%. The preliminary figure for 1968 indicates the percentage has further shrunk to 41.63%. The figures for motor carriers for the same years were 9.53%, 21.46% and 21.46%. Revenues have increased for the railroads during the 1940-1968 period by a factor of 2.5. Revenues of the motor carriers, in comparison, have increased by a factor of 13.7. Water carriers, though their share of the total intercity freight traffic has dropped from 18.13% to 15.55%, have increased revenues by a factor of 4.94. The shifts in traffic to the railroads which would follow the adoption of a variable cost floor certainly would not approach a level that would threaten the existence of either of the other modes.

V. Should Criteria be Established as to how High Above Out-of-Pocket [Variable Costs] the Railroads Should be Required to go in Competitive Rate-Making?

There are three basic rationales for establishing a minimum rate floor above the variable costs of the service:

A. That the rate for each service should be set at a level high

92. Id.
94. U. S. Department of Commerce, Statistical Abstract of the United States, 534, 535 (1970). The revenue figures on which the calculation of the factors was based are apparently not in constant dollars and thus reflect the general inflationary trend of the last 30 years.
enough to insure that service’s fair contribution towards the constant costs incurred in behalf of the entire system; this in order that there be no discrimination among traffic (some shippers, in effect, having to subsidize the traffic of other shippers).

(b). That 49 U.S.C. 15 a (3) requires that the rate for each service be set at a level high enough to protect the market share of a competing mode having an inherent fully allocated cost advantage.

C. That 49 U.S.C. 15 a (3) requires that the rate for each service should be set at a level high enough to preserve the viability of competing modes in the interest of national defense.

A. The first argument proceeds thus: Total revenues must cover total costs, including fixed and joint costs, if the railroad is to remain solvent. The appropriate question is how the burden of fixed and joint costs is going to be apportioned among the various services being rendered by the road. If the rates charged for some services are set at levels which do not return those services’ pro-rata share of these constant costs then, necessarily, the rates charged for other services must be set at a level above fully allocated costs in order to make up the difference. Thus, in effect, shippers being charged rates above fully allocated costs not only provide all the road’s profit, but must also subsidize the traffic of other shippers moved at rates less than fully allocated costs.

While this rate discrimination among shippers is bad enough, the railroads’ dependence on such discrimination is inherently destructive. The ability of the railroads to set a rate above fully allocated cost is a function of the demand or, in other words, the “value of [the railroad’s] service” to the shipper. The condition of demand which refers to its responsiveness to changes in price is known as demand “elasticity”. A demand curve for a particular service which would allow the railroad rendering the service to set rates at a level significantly above the costs incurred without significantly effecting the quantum of traffic called out by the rate is said to be relatively “inelastic”. Elasticity is a function of the shipper’s need for the service. If the shipper needs to move his freight, and has no other viable mode of transportation available to him, he can do relatively little to effect the rate charged. His demand for the service is inelastic with the result that the railroad can charge him significantly more than its fully allocated costs to carry his goods. It should be obvious that the key to demand elasticity is the availability of viable alternative modes of transportation.

There was a period in our history when the railroads faced little or no

95. Supra, note 92 at 338.
96. Rate-making on a demand basis is referred to throughout the literature as “value-of-service.”
viable competition on the great majority of their services. It was the exploitation of this monopoly position, of inelastic demand, that led to the original enactment of maximum rate regulation, to be enforced by the Interstate Commerce Commission, in 1887. But technology has radically changed the transportation picture in the last eighty-six years. The ready availability of alternative modes which did not even exist sixty years ago has meant steadily increasing competition for the nation's traffic and a corresponding decrease in the railroads' ability to exploit demand. Between 1940 and 1968 for example, the railroads' share of the intercity freight traffic in ton miles dropped from 63.24% to 41.63%. During the same period, the motor carriers' share has increased from 9.53% to 21.46%.97 Not only regulated motor carriers, but water carriers, pipelines, air freight, and private carriage now give the shipper a range of potential modes from which to choose.

The effect of this aggressive new competition on the railroads' ability to charge rates significantly greater than fully distributed costs is demonstrated by the fact that in 1960 only 28% of all freight carried by the railroads, measured in tons, returned at least the fully allocated costs of the movement.98 In other words, in 1960, 28% of the traffic subsidized the other 72% which was moved at less than fully allocated costs. How much further this shift of the burden can continue is open to question but it cannot continue indefinitely.

This argument against a variable cost floor, though persuasive on its face, is successfully rebutted when one considers the rationale for rates set at some level below fully allocated costs. Precisely because of the impact of the new alternative modes on transportation demand, it may very well be that only at some rate below fully allocated costs can net revenue, and thus contribution towards constant costs, be maximized. The elasticity of the demand for the service would be such that a higher rate would call out less traffic and would be actually disfunctional in terms of covering constant costs. The burden on those movements for which rates can be set above fully allocated costs would be greater, not less. Only demand can dictate that level above variable costs which will be the most efficient in terms of covering constant costs. The assignment of a prorata contribution to constant cost above variable cost ignores the realities of demand and the managerial discretion necessary to rational rate-making.

This still leaves the inescapable fact that some shippers will have to bear a relatively greater burden of the constant costs of the system than will others. But what has been said above should indicate that such is the result

97. Supra, note 93.
98. Supra, note 92.
of the varying elasticities of demand for particular services and not because the railroads have for some reason rigged rates that way. Such shippers are actually better off because rates are set without regard to fully allocated costs but solely with a view toward maximization of the revenue that can be generated toward constant costs.

B. The second rationale is based on the proposition that “inherent advantage” as applied to costs must mean “inherent fully allocated cost advantage.” The argument is that only fully allocated costs can accurately measure the total resources expended in the rendering of a particular service. The mode which utilizes the fewer total resources—which has the lower fully allocated costs—in the rendering of a particular service has the inherent cost advantage. The Commission is compelled by § 15 a (3) to a due regard for the objectives of the National Transportation Policy, among which is the “recognition and preservation of the inherent advantages” of each mode. Thus, in setting rates for a particular competitive service, the Commission is compelled to use the differential between the fully allocated costs of the competing modes as the floor for rates charged by the mode having the higher fully allocated costs. Only in that way, it is argued, can the “inherent advantages” of having the lower total cost be protected.99

The counter argument that Congress did not intend the use of fully allocated costs for determining rate floor is thus:

§ 15 a (3) provides that . . .

In a proceeding involving competition between carriers of different modes of transportation subject to this Act, the Commission, in determining whether a rate is lower than a reasonable minimum rate, shall consider the facts and circumstances attending the movement of the traffic by the carrier to which the rate is applicable. Rates of a carrier shall not be held up to a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the national transportation policy declared in this Act.

Were it not for the second clause of the second sentence, the obvious reading of § 15 a (3) would be that the rates for any particular mode are to be set without reference to their effect on the traffic carried by any other mode. This would imply the use of a variable cost minimum rate floor because a rate can only be non-compensatory, and therefore below “a reasonable minimum,” if it fails to return at least the costs incurred by that mode in rendering the service. The legislative history of § 15 a (3)100

99. Supra, note 8 at 111-115.
clearly indicates the prevailing mood of the Congress in making the 1958 amendment. The Senate Report on § 15 a (3)\textsuperscript{101} quotes the Senate Subcommittee Report as follows:

The subcommittee wishes to affirm the interpretation of the Commission given in the Automobiles case [\textit{New Automobiles in Interstate Commerce}] epitomized in the words quoted above. The subcommittee therefore believes it necessary to amend the act only so as, in effect, to admonish the Commission to be consistent in following the policy enunciated in the Automobile case thus assuring reasonable freedom in the making of competitive rates.

The source of the second clause in the second sentence is easy to find,\textsuperscript{102} but its precise meaning is cloaked in ambiguity. It was obviously adopted as a compromise to barge and motor carriers who were concerned whether the Commission, under § 15 a (3), should ever have the power to find unlawful reduced rates which would be above the proponent’s variable costs, but below its fully allocated. “Giving due consideration to the objectives of the national transportation policy declared in this Act,” refers to the provision in the National Transportation Policy for:

\ldots fair and impartial regulation of all modes of transportation subject to the provisions of this Act, so administered as to recognize and preserve the inherent advantages of each \ldots to promote \ldots and foster sound economic conditions in transportation and among the several carriers; to encourage the establishment and maintenance of reasonable charges for transportation services, without unfair or destructive competitive practices \ldots

Nowhere in the National Transportation Policy or anywhere else in the Interstate Commerce Act is a definition of how inherent advantages should be “recognized and preserved.” The first sentence and first clause of the second sentence of § 15 a (3) can only be explained, and are explained by the reference to \textit{New Automobiles} above, as incorporating into the Act, the Congress’ approval of variable costs as the appropriate floor for competitive rates. That clear indication of legislative intent should not be rendered nugatory by a reading of the second clause which would require that rates be set above the fully allocated level.

Neither argument has prevailed thus far before either the Commission or the courts. The picture of the Congressional intent which emerges before those tribunals from the language and legislative history of § 15 a

\textsuperscript{102} \textit{Supra}, note 99.
(3) is of a "something for everyone" sort of legislative compromise. Unable to find a middle ground on which the contradictory positions of constituent transportation modes could be reconciled, Congress simply drafted those positions into this amazing section, contradictions and all.

C. The argument that rates should be set at a level high enough to preserve the viability of competing modes for purposes of national defense proceeds from the prescription, in the last section of the National Transportation Policy, that the Commission should seek to preserve a system of national transportation sufficient for the national defense. "Congress unequivocally reserved to the Commission power to regulate the reasonableness of interstate rates in the light of the needs of national defense." 103 We cannot, therefore, assume that the reference to national defense is mere window dressing, without practical significance.

On the other hand, recognition of this broad consideration should not be applied in a manner that would nullify the more particularized mandates of § 15 a (3). 104 In the New Haven case the Court recognized the call a due consideration for national defense has on the rate-setter, but correctly decided that this broad consideration should be the ruling one only in those most exceptional circumstances in which the Commission can show, in fact, a relationship between a particular rate and the capacity of the nation’s transport system to adequately provide for the national defense. 105

VI. The National Transportation Policy should be interpreted as allowing the railroads to take traffic away from the other modes if they can do it by equal or cheaper rates while still making a reasonable profit.

In the preceding section of this paper we have discussed why it can be detrimental to a mode with lower variable costs to hold its rates up to protect another mode’s inherent advantage based on lower fully allocated costs. The railroads and any other carrier should be allowed to price their services on the basis of their variable costs. On the facts of the Ingot Molds case this would allow the railroads to take traffic away from the barge-truck service by equal rates while still making a reasonable profit. 106 That is, of course, only if the barge-truck rates remained the same. In this section we shall attempt to point out some of the policy reasons for the above interpretation of the National Transportation Policy.

105. Supra, note 8 at sh. 69.
106. Supra, note 35 at 80.
As the economists have argued, as long as the revenue generated by a particular service exceeds the variable costs of providing that service, the service is profitable. It will return some amount toward the fixed costs of the operation. The I.C.C. would say this service is compensatory. Further, it is contended that ratemaking according to a variable cost standard will maximize the revenue obtainable from a particular service. Maximizing such return reduces the amount of fixed costs which must be recovered from other traffic. Of course, the operation as a whole must recover its entire costs to remain profitable and prevent a deterioration of its plant. However, the best way to do this is to maximize its return on each part of its traffic. Thus, as in the Ingot Molds situation allowing the railroads to carry this compensatory traffic would maximize their return on this particular traffic and so help recover their fixed costs.

The I.C.C. accepts the argument that the reduction of rates in Ingot Molds is in the railroads' self-interest. However, they assert that the National Transportation Policy is not to be interpreted as allowing whatever is in the railroads' self-interest. It is argued that although the railroads would reduce the amount of their constant or fixed costs which must be recovered from other traffic, the amount of fixed costs that the barges must recover from other traffic for their operation to remain profitable would increase. As the barges carry less traffic they would have more difficulty in spreading their fixed costs to other traffic. In fact, their very existence may be threatened. This, the Commission says, is not the purpose of the National Transportation Policy. However, as we have said, the water and motor carriers have a very high percentage of variability of costs. They would not have much of a burden of fixed costs to shift to other traffic. It is only their existence in the carriage of this particular traffic that is threatened.

The National Transportation Policy, though, does not require the preservation of all modes of transportation. It does call for the protection of the inherent advantages of each mode, and therefore, the I.C.C. argues that it is protecting an inherent advantage possessed by the barge-truck service. Lower cost is an inherent advantage and the water carriers have the lower fully allocated costs.

This, we feel, is an incorrect interpretation of the National Transportation Policy. More precisely, it is an incorrect interpretation of the words "inherent advantage" for at least two reasons.

First, any interpretation of an inherent advantage based solely on a cost standard fails to take into account possible service advantages. Although

107. Supra, note 32 at 25.
108. Supra, note 35 at 82.
the I.C.C. in *Ingot Molds* held that neither mode possessed a service advantage, it was agreed that at equal rates, the railroads would carry all of the traffic.\textsuperscript{109} This indicates an advantage which should be considered in any ratemaking proceeding.

Secondly, from an economic standpoint, if costs are to be compared, the inherent advantage should lie with the carrier able to move the particular traffic at the least cost to society. Since constant costs remain whether a particular service is rendered or not, the better measure of the cost to society is the variable cost of rendering that service. The mode with the lowest variable costs consumes the least of society’s resources by rendering a particular service. The variable costs approximate the additional resources used to provide the service. Moreover, since the railroads are characterized by an excess capacity, allowing the railroads to carry this traffic best utilizes these facilities.

The advantage of the railroad here is in the fact that it is such a general commodity carrier. By pricing above variable costs it can recover its fixed costs from a large variety of traffic. The water carriers are more dependent on certain types of traffic to recover all of their costs. The I.C.C. contends that their existence as a competitor for this traffic would be threatened by the lower rates, but from society’s viewpoint, maintaining two modes because one has lower fully allocated costs is not economical. The mode with the lower variable costs could perform this service for less and get a return to its fixed costs. If either mode cannot recover its full costs, it would go out of business as can happen in any competitive situation. Holding the railroads’ rates up so that the water carriers can recover their fully allocated costs means society pays for the fixed costs of both modes on this segment of traffic. Society should not be supporting two modes where one could do the services for less. As pointed out before, where one mode possesses a distinct service advantage as the water carriers with some bulk commodities, it would continue to carry this commodity at higher rates covering its fully allocated costs. But where it does not possess an advantage the commodity would be carried by the mode with the lowest variable cost.

However, there are other policy considerations concerning the loss of one of the two competitors on any segment of traffic. Would the railroads then have monopoly power and raise prices? First, the I.C.C. has specific power under Section 4(2) of the Interstate Commerce Act to prevent the raising of prices by a railroad unless conditions have been changed by factors other than the end of competition by the water carrier.\textsuperscript{110} Second,

\textsuperscript{109} *Id.*, at 80.

\textsuperscript{110} *Supra*, note 20.
if the railroads were to raise prices, the barges could reenter the market. Both barges and motor carriers have relatively low entry costs and are highly mobile. They could readily reenter a market if the railroads raised prices. Obviously, in this situation the I.C.C. would have to allow certification to reenter the particular market quickly.

Finally, an interpretation of the National Transportation Policy to allow the railroads to take traffic while still making a reasonable profit should not and would not be applied in all cases. If, for example, national defense needs required the maintenance of a strong coastal barge service, the I.C.C. could keep the railroad rates up to maintain the coastal barges. However, as the Court indicated in New Haven, the I.C.C. would be required to articulate its reasons for doing so.

VII. Should Section 15a(3) Be Clarified by Amendment?

As should be apparent from reading the preceding chapters of this paper, Section 15a(3) of the Interstate Commerce Act is not so clear as to preclude differences of opinion concerning its meaning. The last sentence of the section reads: “Rates of a carrier shall not be held up to a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the national transportation policy declared in this Act.” The controversy has raged over the interpretations of the last phrase of this sentence. We have already noted that the Commission has consistently used this phrase to protect one mode’s “inherent advantage”. This inherent advantage has been lower cost based on a comparison of fully allocated costs. Moreover, we have stated that the Supreme Court has indicated a willingness to accept such an interpretation by the Commission. Therefore, the question is, “Can Section 15a(3) be clarified by amendment to bring about a comparison of variable costs to determine an inherent advantage?” Or perhaps better still, “Can Section 15a(3) be clarified to allow minimum rate-setting without intermodal cost comparisons at all?”

First, it should be remembered that in 1958 when this section was passed, the railroads had proposed an alternative amendment. This amendment, known as the Three Shall-Not, read:

In determining whether a rate, fare, or charge, or classification, regulation, or practice to be applied in connection therewith, results in a charge which is less than a reasonable minimum charge, as used in this Act, the Commission shall not consider the effect of such charge on the traffic of any other mode of transportation; or the

111. Supra, note 4.
112. Supra, note 41.
relation of such charge to the charge of any other mode of transportation; or whether such charge is lower than necessary to meet the competition of any other mode of transportation: Provided, however, That the provisions of this paragraph shall not be construed to prohibit any carrier subject to this Act from protesting or complaining in the event that a rate, fare, or charge is filed or made effective which it believes to be less than a reasonable minimum charge.\textsuperscript{113}

This amendment was vigorously opposed by the Commission. The present compromise section was adopted to prevent umbrella rate-making and protection of fair shares of the market. But, as noted by the Supreme Court in \textit{Ingot Molds}, one of the specific instances Congress mentioned as an inherent advantage was protection of the mode with the lower fully allocated costs.\textsuperscript{114}

At this time an amendment of Section 15a(3) to read as the Three Shall-Nots would still be open to criticism. Although it would seem that destructive competitive pricing, under variable cost, could be prevented as unreasonable with reference to the proposing mode’s costs only, holding a rate up for some of the other objectives of the National Transportation Policy would seem to be precluded by such a change. Since the Commission could not consider the effect of this lower rate on a competitive mode, it could not find that the rate might threaten the existence of another mode and therefore be against the interests of national defense. Furthermore, the advantage of an administrative agency is its flexibility. The Three Shall-Nots would bind the Commission and prevent them from considering “the effect of such charge on the traffic of any other mode of transportation” for any reason. The wording of the present Act allowing the Commission to consider the overall aims of the National Transportation Policy seems more desirable.

However, the possibility of clarifying the objectives of the National Transportation Policy should be considered. An additional sentence defining what Congress meant by the term “inherent advantage” would solve the problem. However, any attempt to define service advantages possessed by the modes of transportation in carrying certain commodities would be impractical. An inherent cost advantage defined as the mode with the lower variable costs would direct the Commission to compare the variable cost of two modes. This would resolve the issue as presented. Also any conflict between two objectives of the National Transportation Policy could still be solved with flexibility. Thus, if the mode with the higher

\textsuperscript{113} H. R. 6141, 84th Cong., 2d Sess. (1957).
\textsuperscript{114} Supra, note 40.
variable costs needed protection as its existence was in the interest of national defense, the I.C.C. could so hold. Protecting the lower cost mode's inherent advantage would be overridden by the needs of national defense.

We submit, however, that any such amendment specifically defining an inherent cost advantage should not be put forth until the I.C.C. and the courts have definitely decided that the inherent advantage will be with the mode having the lower fully allocated costs. That is, until Docket 34013 (sub-1) has been finally decided, the present broadly stated objectives of the National Transportation Policy should be left as they are.

by John W. Langford*

Introduction

On March 7, 1969, the Minister of Transport established a Task Force to examine the objectives of the Federal Department of Transport (D.O.T.). As the Task Force proceeded in its investigation, its area of inquiry widened considerably until, by December, 1969, when it was ready officially to report its findings to the Minister, the scope of the report included not only objectives in transportation for the Federal Government, but detailed suggestions for a radical reorganization of the federal transportation complex.1 Both sets of recommendations were submitted to the Federal Cabinet in early December and approved virtually in toto on 19 December, 1969. In January 1970, the Minister took the first steps in putting the Task Force’s recommendations to work. A group was established to draw up a detailed implementation plan and schedule.2 By the spring of 1970, its work was well underway. By its very nature, the process has been a lengthy one; in fact, by late 1971, there were still some aspects of the reorganization to be tidied up.

However, the implementation of the major features of the Task Force report have been completed and it is clear that the Task Force’s recommendations have led to important changes in the Federal Government’s role in the Canadian transportation complex and in the organization of the Minister of Transport’s portfolio. The latter development has assumed importance in Canada particularly because it is widely believed that the reorganization of the D.O.T. will be used as a model for altering the archaic organizational structures found in some other Federal Government departments. In the United States, the reorganization warrants some attention given the increasing concern with the organization of federal transportation planning since the establishment of the new Department of Transport in 1966. In the course of their investigation, the Task

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Force members travelled to Washington for briefings on some of the organizational pitfalls which the new D.O.T. was experiencing. There is some evidence that the Task Force members were quite strongly influenced by what they saw and heard.

**Background to the Task Force**

During the 1960’s there were two major waves of organizational change within the Canadian Federal Government. The first was a result of the recommendations of the Glassco Commission on Government Organization which reported in 1962-63. The Glassco Commission, like the Hoover Commission in the United States, based most of its recommendations on the premise that government should be more business-like. The catch phrase was “let the managers manage.” The impact throughout the Federal Public Service took the form of an organizational renaissance. Strangely enough, the D.O.T. was, except for a revision of financial management, the introduction of a PPB system and some moves toward decentralization and “management by objectives”, largely untouched by this first wave of change.

The Glassco message filtered through to the D.O.T. only on the rebound from the Central Agencies. In the atmosphere of change, the major heritage of the Glassco Commission, there was much pressure on the policy-making and advisory bodies at the top of the Federal hierarchy to adapt their structures to meet the demands for more rational and efficient decision-making. In the view of Gordon Robertson, Clerk of the Privy Council and Secretary to the Cabinet, “there was serious need for a systematic assessment of overall priorities of expenditure with a view to better long-term planning.”

This movement, which began under Prime Minister Lester Pearson, was continued with marked institutional results under Prime Minister Trudeau after his succession to power in 1968. The

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5. The Central Agencies are generally considered to include the Department of Finance, Treasury Board, the Privy Council Office, the Prime Minister’s Office, the Cabinet, and its Committees.
emphasis during this second wave of organizational change was on centralized planning and bureaucratic responsiveness to the demands of centralized planning. When senior officials of the Central Agencies (most notably the Privy Council Office and the Treasury Board) began to look over the numerous Federal Government departments with an eye to determining how well they were responding to the new emphasis on planning, the D.O.T. came in for some severe criticism.

The main criticism was that the D.O.T. lacked direction. Therefore, it was unprepared as an organization to do anything more than *ad hoc* planning in an era when strategic long-run planning was seen to be the key to successful government. In the fall of 1968, this lack of direction was perceived, in large part, as a problem of uncertain bureaucratic leadership at D.O.T. Headquarters. The solution, then, was the injection of new top-level leadership from outside the D.O.T. The man chosen by the Prime Minister and his advisers to become the new Deputy Minister of Transport was Gerald Stoner, a senior official at the Privy Council Office with strong views about the need for efficient central planning by government departments. Stoner accepted the new position on the understanding that he would have a free hand to examine the objectives of the D.O.T. and its role in the national transportation complex.

In February, 1969, Stoner moved to the D.O.T. and almost immediately set in motion a Task Force to have a close look at the Department. Rather than engage a consulting firm, the new Deputy Minister insisted that the Department, through the Task Force, should control the study and participate closely in it. It was Mr. Stoner’s intention at this point, to play a significant personal role in the investigation; in fact, the group was widely known as the Deputy Minister’s Task Force on Departmental Objectives. By the beginning of March a Task Force of seven members had been assembled. Four of the members came from within the D.O.T., including two line officers from Marine and Air Services, and two staff officers from Management Services and Personnel. There were three ‘outsiders’—the co-chairmen, one from Canadian National Railways (C.N.R.) and the other from Treasury Board, and the Associate Dean of the Faculty of Administrative Studies, York University.

The findings of the Task Force were to be significant indeed. As a result of its recommendations, the federal transportation complex was radically restructured to allow for cohesive centralized planning and decentralized semi-autonomous operations and administration. It is my intention to elaborate the process by which the Task Force arrived at its findings and outline the important changes which it recommended, focusing particular attention on those recommendations affecting organization.
The Task Force at Work

At the first meeting of the Task Force in early March, 1969, the Deputy Minister discussed the project briefly and the purpose of the Task Force were established:

1. to develop a comprehensive picture of Departmental activities by clearly identifying the Department's organizational structure to the divisional level and the principal functions of each segment.

2. to determine short (one year) and long-term (five to ten years) objectives of the Department through the use of such sources of information as Programme Review, the 'Management by Objectives' Programme, and discussion with Branch Heads and other appropriate senior officers.

3. to recommend an order of priority for departmental objectives.

4. to establish the nature of other government objectives to which the D.O.T. contributes.

5. to recommend priorities in allocating resources (i.e., money and man-years etc.) to meet these objectives.

6. to identify major problems facing the organization in meeting these objectives (i.e., lack of money, manpower, relationships with other agencies involved in transportation).

7. to recommend a plan for attacking these problems showing on a time-base what has to be done, who will be involved in doing it, and the nature of the resources required.

The Deputy Minister anticipated the completion within four months of a brief report which could be tabled in Parliament by the Minister. Although the Task Force itself was to have the major role in the preparation of the report, two other groups were to be active in the study. The Department's Management Council, composed of the Deputy Minister and his senior advisers, was to review and analyze the progress of the study every two to three weeks. In addition, an ad hoc Steering Committee chaired by the Deputy Minister with staff assistance from the Director of Operations Review and the Director General of Personnel was to review and analyze the progress of the study as often as two days weekly. It would appear that these two groups, in fact, played a fairly insignificant part in the development of the Task Force's ideas. However, the Deputy Minister, as an individual, was most influential.

In the discussion which followed the Deputy Minister's opening remarks at the first meeting, it became clear that one of the major problems within the Department was the lack of corporate planning at the top, despite the evidence of considerable planning at the Marine and Air Ser-
vices level. It is noteworthy that only by implication, at this point, was it suggested that a major restatement of departmental objectives would lead almost inevitably to the subject of new forms of organization through which the objectives might be achieved. In fact, in the view of most of the Task Force members, it was not until their work on the question of objectives had progressed for some time that the need for reorganization became clear. As a prelude to the establishment of the proper objectives of the D.O.T. in the national transportation complex, the Task Force set out in its second meeting to establish the existing roles of the Department and to relate them to transportation roles performed by other departments and other agencies at the Federal level. This investigation was soon expanded to include analysis of the interfaces between all the roles performed by agencies under the Minister of Transport in all modes, and all levels of government, the business community, and the general public. Basically, this matter occupied the energies of the Task Force until early April when the attention of the Task Force shifted to the question of the proper objectives for the D.O.T. given the present needs of the public and private sector. Much of the data for this part of the study was drawn from some two hundred interviews conducted mostly between mid-April and late July. A large percentage of the interviews were conducted with members of the D.O.T. and other agencies under the Minister of Transport. These interviews fulfilled the dual purpose of providing data with respect to objectives and operations, and giving the departmental employees, both at Headquarters in Ottawa and in the different regions throughout the country, a strong sense of participation in the Task Force’s work.

By the beginning of August, the Task Force was ready to begin writing up its conclusions about future departmental objectives. As this task began, it was already clear that the present organizational structure of the D.O.T. would not be compatible with the new roles envisaged for the Department. While the proper objectives for the department seemed clear, there were many issues with respect to organization that had to be worked out. The members of the Task Force spent almost the entire month of August attempting to find a suitable organizational mix to present to the Deputy Minister and the Minister.

The problem was vast. In the first place, it seemed clear that the organization of the D.O.T. was inadequate even in terms of the rather limited objectives of the Department at the beginning of 1969. The D.O.T. was formed in 1936 through the amalgamation of the Department of Marine, the Department of Railways and Canals, and the Civil Aviation Branch of the Department of National Defense. The structure of the Department
had altered little since that time, still consisting of three main units: 8

1. Air Services, responsible for licensing of Aircraft and personnel, safety regulations, investigations of air accidents, construction, operation and maintenance of air terminals and fields, telecommunications and meteorological observation and forecasting.

2. Marine Services, responsible for the Canadian Coast Guard Fleet, Arctic re-supply, inspection of commercial shipping, public harbours and wharves, secondary canals, small boats safety, navigation aids and oil pollution of water.

3. Headquarters, devoted to policy, research and administration.

In addition, certain Boards, Commissions, and Crown Corporations (namely: Air Canada, The Canadian Transport Commission, The National Harbours Board, Canadian National Railway, and the Saint Lawrence Seaway Authority) reported to Parliament through the Minister of Transport.

As operational units, the Air and Marine Services were first rate. The problem seemed to originate in Headquarters where the structure was extremely inefficient and corporate leadership lacking. This was accentuated by the complete absence of an effective information gathering system upon which to base a rational decision-making process. With the entry of the Canadian Transport Commission into the transportation research field in 1967, the research role of the D.O.T. was diluted and unclear. 9 In addition, there was a great deal of confusion surrounding the mixture of centralized and decentralized control of the operations of the Marine and Air Services. This difficulty was accentuated by the somewhat uncontrolled distribution of staff functions between different levels of management. Finally, Headquarters had not responded in an organized fashion to the changed demands of the Central Agencies (especially Treasury Board and the Public Service Commission) and this had lead to

8. For a general account of the organization and development of the Minister of Transport's portfolio see A. W. Currie, Canadian Transportation Economics, Toronto (1967).

9. On the role of the C.T.C. see J. W. Pickersgill, “Canada’s National Transport Policy,” Transportation Law Journal, February 1969, pp. 79-86. The question of which agency within the complex under the Minister's control should control transportation research was a complex one. The C.T.C. as a result of the National Transportation Act, 1967, had received a mandate to do research with respect to development and policy questions. However, there was some concern at the D.O.T. that if the C.T.C. were to exercise control over the vast area of research outlined in its initial programme, the D.O.T. would be unable to provide the necessary research support for its policy-making role without creating duplicate research facilities at the D.O.T. The Task Force indicated that it was aware of this problem and prepared to suggest an improved delineation of research responsibilities as part of their final recommendations.
various *ad hoc* lines of communication between these Central Agencies and various levels of management in the Department. In an attempt to somewhat alleviate the lack of coordination in policy-making, a Transportation Council was created shortly after Mr. Stoner’s arrival at the D.O.T. The Council was designed to meet weekly with a prearranged agenda, thus insuring that the Minister and Deputy Minister maintained close and continuous dialogue with senior officers of the department.\(^{10}\) However, in the eyes of both the Task Force members and the Deputy Minister, to add new and larger roles to the Department under such organizational conditions was clearly not a viable alternative.

Even while the Task Force studied Departmental roles and objectives prior to the August write-up, the organizational question had continually surfaced. In a statement of issues drawn up by the Task Force in late March, there was significant attention paid to organizational matters in the form of the following problems:

---the extent to which both the Harbours Board and the Seaway has to be brought into line operating services of D.O.T.
---the possibility of establishing several smaller corporate structures that identify with the air, land, and sea mode
---the nature of the true relationship between D.O.T. and C.T.C.
---in terms of what has been defined as policy development and transportation development
---the extent to which the clearer identification of the land mode activities in a specific organization within the department would create major emotional issues
---the advantages of making transportation development essentially a Headquarters corporate function rather than diffusing it throughout several organizations in the Public Service
---the impact of the consideration of equity in the field of personnel management on the corporate organization of the ministry
---the advantages of combining more extensive corporate decentralization with more intensive corporate planning and control.

That reorganization of the Department and most particularly the Headquarters, was on the Deputy Minister’s mind at an early stage is not in doubt. In mid-April, he sent to the Management Council and the Task Force members an advertisement from April’s *Fortune* Magazine containing a message which he felt was applicable to the organization of the

\(^{10}\) 'Transportation Council: Important Instrument of Policy Coordination' *Transport Canada*, May-June, 1969, p. 4.
D.O.T. The advertisement for Gulf and Western concludes: "We've put together a Company of Companies. Each one solid. Each run directly by men who know first hand every wrinkle of their market. That gives us at corporate headquarters the time to concentrate on what we know best. Help each company keep growing. Explore new markets. Reach out for new ideas." This was the direction which interested the Deputy-Minister, and in this advertisement could be seen the germ of the organizational ideas which came to dominate the Task Force Report.

The open-ended questionnaire used as the basis for the interviews did not reflect a specific interest in one form of organization but implicit references to organization were clearly central in three of twelve questions:

—What constraints or limitations do you find impede your making changes or improvements in the manner in which the work of your branch is carried out?

—What are the major managerial problems and issues facing the Department today?

—In your view what adjustments or changes in present practice or organization are required if we are to meet these problems squarely and successfully deal with them?

Other questions at least implied that the present organization would be incapable of dealing with projected issues or long-range planning, and solicited suggestions as to how these challenges might be met. However, it is worth noting that in communications with the key personnel in the D.O.T. and in answers to Parliamentary questions with respect to the Task Force functions, the increasing realization that reorganization would be a necessary corollary of a change in objectives was not clearly voiced, and was certainly not stressed by the Deputy Minister, the Minister, or the members of the Task Force. However, the felt need for reorganization gained momentum throughout this period.

This underlying preoccupation with organizational matters is also reflected in the Deputy Minister's interest, which he passed on to the Task Force, in the application to the Department of an integrated information system to facilitate decision-making in the context of centralized planning. The Deputy Minister enthusiastically recommended to the Task Force an article entitled "The Integrated Management Organization" which disputed the relevance of decentralized information systems to modern centralized decision-making. The entire information system of the corporation, regardless of its size, can be integrated or combined into

one giant system from which each person or each level of management and supervision in each function can get all the information he could possibly want." The article even recommends that the top executive determined to wed his management team to a computer-based information system, might assign a Task Force to study the feasibility of such a system.

The emphasis throughout is on efficient rational long-range planning as the primary need of a reorganized D.O.T. with a new and expanded objective. This demand reflects a basic attitude toward government which the Deputy Minister hoped to operationalize through the redirection and reorganization of the D.O.T. This basic belief was that modern government was not performing adequately. It promised much but delivered little. This is the theme of a chapter entitled "The Sickness of Government" in Peter Drucker's *The Age of Discontinuity* which the Deputy Minister recommended to the members of the Task Force. Drucker states that:

"... the best we get from government in the welfare state is competent mediocrity. More often we do not even get that; we get incompetence such as we would not tolerate in an Insurance Company. In every country there are big areas of government administration where there is no performance whatever—only costs. ... Modern government has become ungovernable. There is no government today that can still claim control of its bureaucracy and of its various agencies. Government agencies are all becoming autonomous, ends in themselves, and directed by their own desire for power, their own rationale, their own narrow vision rather than by national policy and by their own boss, the national government."  

Drucker goes on to argue that:

"the purpose of government is to make fundamental decisions, and to make them effectively. ... Any attempt to combine governing with 'doing' on a large scale paralyzes the decision-making capacities."  

The implication is that in a department like the D.O.T. with a large sphere of "operational" activities, the key to separating "governing" from  

13. Ibid., p. 111.  
14. Ibid., p. 112.  
16. Ibid., p. 220.  
17. Ibid., p. 233.
“doing” is to decentralize. This process was already underway at the D.O.T. prior to the establishment of the Task Force, but the argument was that it had not gone far enough. Drucker recommends decentralization as it is applied in business:

“The purpose of decentralization as a principle of structure and constitutional order is, however, to make the centre, the top management of a business, strong and capable of performing the central, the top-management, task. The purpose is to make it possible for top management to concentrate on decision-making and direction by sloughing off the ‘doing’ to operating managements, each with its own mission and goal and with its own sphere of action and autonomy.”

These were some of the novel and experimental ideas which were circulating among the Task Force members even prior to its initial attempts in mid-summer to prepare written recommendations concerning new objectives and structures for the D.O.T. The Task Force members devoted the entire month of August almost exclusively to the preparation of a preliminary draft of their report, with a view to presenting it for discussions between the Minister, the Deputy Minister, and themselves at the end of the month. The plan was then to discuss the recommendations with both the Transportation Council and the Management Council. Following this, the proposed new objective of the D.O.T. were to be informally evaluated by a group of “outsiders” from industry, the unions and the universities. The expectation of the Deputy-Minister at the end of June was that on the basis of all these consultations a draft report of 20 to 25 pages would emerge which he could then recommend that the Minister table in Parliament. After the document had been approved and released it would then be appropriate to implement quickly a number of the structural alterations proposed by the Task Force. The Deputy Minister reckoned that this would involve changes of people and functions as well as basic approach, and would take a minimum of three to four months to carry out.

With these expectations in mind, the Task Force began to synthesize its findings into a practical set of recommendations. By late August, on schedule, a 21 page draft was completed. Its primary focus was on objectives. The report forcefully argued that objectives had to be considered in the context of the rapidly changing and expanding “national

18. Ibid.

19. The following account relies heavily on the unpublished first draft of the Task Force Report.
transportation framework” which was defined as “all the way, terminal and vehicle activities found in all transportation modes of the public and private sector.” In the light of both the “national transportation work” and the Government’s changing attitude towards the management of the activities comprising the Federal sector, the report concluded that some reappraisal of the role of the Federal Government in the transportation field was clearly necessary. A key concept behind the proposed new objectives was ‘responsiveness’ to the requirements of all public and private sectors. Such requirements were likely to be continuously changing, and the transportation process should be capable of anticipating and reacting to meet such changes.

In an extremely succinct statement, the draft report recommended that the appropriate roles of the federal transport ministry could be found within the following objective:

I. **Corporate**—to establish and maintain responsiveness between the national transportation framework and non-transportation objectives of both private and public sectors.20

II. **Operational**—to provide, for any mode of transportation, such way, terminal and vehicular services, supportable by recoverable financing from the users or beneficiaries, that cannot or should not be offered by the private or other public sectors.

III. **Regulatory**—to support the socio-economic viability of the national transportation framework by balancing the technical advantages and social consequences resulting from changes in capability or usage of transportation services of the public and private sectors.21

IV. **Development**—to encourage and promote continuous improvement, innovation, growth or phase-out of modal and intermodal transportation.

The implications of this statement of objectives for Federal financial, regulatory and substantive policy with respect to transportation are most

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20. In the final Report, the ‘Corporate’ objective was altered to read:

I. **Ministry**—to ensure that national transportation policy influences and responds to the objectives and programs of the public and private sector.

21. This objective, in the final Report, became:

III. **Regulatory**—to balance economic, technical and social consequences resulting from changes in capability or use of transportation services and ensure that socially and economically viable standards of way, vehicle, terminal and operator performance are established and adequately maintained.
important. However, at this time, I intend to concentrate on the impact of the new objectives on the structure of Federal policy-making in Canada.

In the eyes of the Task Force members, the primary problems was the inadequacy of the present means of organizing the portfolio of the Minister of Transport. This inadequacy was basically two-fold. First, the new roles for the Minister implicit in the proposed objectives meant that the creation of new agencies would have to be considered. Second, if fulfillment of the new objectives was to be possible, the Minister would have to relate to the different agencies under his control in a way which would provide a cohesive, unified management system devoted to overall planning, development, policy formulation, programme co-ordination and evaluation. How could a Minister be expected to present balanced and cohesive transportation policy recommendations to Cabinet when his portfolio represented a mixed bag including a department (the DOT) headed by a Deputy Minister, the Canadian Transport Commission (a regulatory body), and various sorts of Crown corporations (namely Air Canada, the Canadian National Railway, St. Lawrence Seaway Authority, and the National Harbours Board) all of which reported to him?

The Task Force's initial reaction to the inadequacy of the present portfolio mix had been to widen the scope of its investigation to include not merely the D.O.T. but also all the agencies reporting to the Minister. Even early in the investigation the term 'ministry' kept recurring and it can be assumed that the use of this term was a reaction to the accepted practice of defining Government involvement in transportation merely in terms of the role of the D.O.T. and the C.T.C. In the draft report 'ministry' became 'Ministry'; the term took on a corporate meaning and included all those elements reporting to or through the Minister of Transport. These elements, according to the Task Force definition, could have varying arrangements with the executive or legislative branches of government with respect to personnel and financial control. The common factor would be the relationship to the Minister. He became the co-ordinating and directing force for all the elements of the Ministry.

This transition to a full-blown Ministry model was not made without inspiration. While the ministry idea seemed the best way to combine central planning with a corporate structure—an organizational form which attracted the Deputy-Minister—the Task Force members were without specific theoretical guidance in this matter until one of the mem-

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22. These issues will be analyzed in forthcoming publications by Edgar Dosman, Department of Political Science, York University, Toronto.
bers came across a paper by Hubert Laframboise. Referring to an earlier study done on the Department of the Secretary of State, Laframboise analysed and dissected a Ministry model even demonstrating by example how applicable it might be to the reorganization of the Minister of Transport’s portfolio. The draft report showed the marked influence of ideas expressed in the Laframboise article; but it remained for later drafts of the Task Force report to assimilate almost all of Laframboise’s ideas and to exceed his advice on some points. In the initial draft report the organization of the proposed Ministry of Transport (M.O.T.) emerged as illustrated in Figure 1.

In line with the Ministry model, the focus of the proposed organization centred on the Minister and the Deputy Minister. The latter’s role was significantly enlarged, in that the model placed him in a line role with respect to the operations of all agencies within the Minister’s portfolio. The D.O.T., under an Associate Deputy Minister, was designated as the staff support to the Minister and Deputy Minister. Its role would be to plan, monitor, coordinate and control the Ministry. The D.O.T.’s integrative role would be supplemented by the activities of the Transportation Council. The C.T.C.’s regulatory authority was to be expanded by bringing together under its control all aspects of federal transportation regulation. However, its research role would decline due to the establishment of a Canadian Transportation Development Agency which was intended to oversee all transportation research. The role of the new Ministry would be further enlarged and strengthened by the addition of the Canadian Surface Transport Corporation, the Arctic Transportation Corporation and Northern Transportation Limited. In all, there would be seven self-supporting, semi-autonomous corporations carrying on the operational

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24. As Figure 1 illustrates, Air Canada and the C.N.R. retained their position as Crown Corporations. The National Harbours Board, the St. Lawrence Seaway Authority and the marine operations of the D.O.T. were to be subsumed under the title of the Canadian Marine Transport Corporation. The non-regulatory operating functions of Air Services (except for the Meteorological Branch which became the Canadian Meteorological Service) were to be contained within the Canadian Air Transport Corporation. The Canadian Surface Transport Corporation was to contain the federal operational activities related to highways, bridges, pipelines and off-highway vehicles. In the north, where conditions substantially differ from the rest of the country, the Arctic Transportation Corporation would operate all federal way and terminal facilities. Northern Transportation Limited, a vehicle and terminal operation in the Western Arctic previously attached to the Department of Indian Affairs and Northern Development, was to become an element of the new organization.
PROPOSED ORGANIZATION 25 AUGUST 1969
duties of the Ministry. Control of each corporation was placed in the hands of a president and board of directors. The boards would be interlocking, including members from the D.O.T. and other boards.

Before the final Report was submitted to the Minister there were to be significant alterations in the proposed structures, but there would be no retreat from the basic organizational concept of the Ministry system. After lengthy consultations between the Minister, the Deputy Minister and members of the Task Force at the beginning of September, it was decided to accept the Task Force's original recommendations as the basis for further discussions both within and outside the Government. It appears that initial consideration was given at that time to taking the larger step of transforming the D.O.T. into a Ministry Staff organization. In addition, it was decided to discard the idea of organizing the different operational roles of the Ministry in the form of crown corporations. Except for Air Canada, Canadian National Railways and Northern Transportation Limited, the operational units were to be organized as semi-autonomous Agencies. Each operating Agency would have an Advisory Council providing the necessary interrelationship with the Ministry Staff, other Agencies, and outside interests. Finally, some questions were raised with respect to the best form of organization for the whole of the regulatory process. The basic issue of the wisdom of altering the existing division of responsibility for economic and technical regulation was never settled by the Task Force so that the CTC and the new operating agencies have continued in their respective roles up to the present day.

From this point until the presentation of the Final Report at the beginning of December, 1969, both the Minister and the Deputy Minister consulted repeatedly with the Task Force members predominantly on organizational questions. The process during this period was one of intense examination of the practical problems and advantages of alternative forms of the basic Ministry model. It remains, therefore, to examine the final recommendations for reorganization—most of which were accepted by Cabinet and implemented almost entirely over the following two years—and to compare this recommended structure with the Departmental system which it was designed to replace.

In organization and conception, the final Task Force Report did not stray too far from the model established by the initial draft report. Most

25. The proposed meeting between the Minister, the Deputy Minister and the group of 'outsiders' to discuss the recommendations contained in the Report never took place.

26. The following account draws heavily on the final draft of the Report entitled, Task Force Report on the Objectives and Structure for the Portfolio of the Minister of Transport. (unpublished)
of the crucial changes came as a result of the discussions held at the beginning of September. However, in quadrupling the length of the original document to 85 pages the Task Force members did much to flesh out the Ministry system in the context of its specific application to the Minister of Transport's portfolio, thus cutting down on misunderstandings and easing the way for implementation.

The key features of the revised Ministry system were still the combination of centralized planning and control, and decentralized, semi-autonomous administration and operation. As Figures 2 and 3 indicate, the system revolves around the Minister and Deputy Minister, and Associate Deputy Minister. These three were to be known as the Ministry Executive. The intention was to strengthen the Minister's executive function by providing him with strong support in planning, policy formulation and the top-level direction. This arrangement parallels and was indeed inspired by the division of the top management tasks in the U.S. Department of Transportation between the Secretary, Deputy-Secretary and Under-Secretary.

The Ministry Executive was to be supported by a Ministry Staff which would concentrate on general administration and planning and would provide a central point for coordinating the flow of information between the Ministry Executive, the operational units, and the Central Agencies of the Federal Government. It was intended that the Ministry Staff would be a small, highly qualified group with a wide range of capabilities in the areas of finance, personnel, legal, secretariat, public affairs and planning. In the light of the initial impetus for the establishment of the Task Force, it was clear that strategic planning was to be the core activity of the Ministry Staff. However, it was also to advise on programme targets and take over responsibility for the implementation of PPB systems in the Ministry. The Planning Unit, in one sense, would be designed to assume the objective-setting role of the Task Force on a continuing basis. The Transportation Council would continue to operate in the Ministry system, supplementing the liaison role of the Ministry Staff with executive co-ordination of all Ministry operations.

As a focal point in the new organization, the Ministry Staff was to occupy a powerful role with respect to other elements within the Ministry framework. The Canadian Transport Commission was to be seriously affected by its creation. It was recommended that the C.T.C.'s policy development role be transferred to the Ministry Staff Planning Unit on the grounds that policy development and regulation were not particularly compatible roles for one unit. This move was intended to help solve the
Figure 2

DEPARTMENTAL SYSTEM (PRESENT)

CANADIAN TRANSPORT COMMISSION

PRIME MINISTER AND CABINET

MINISTER

PARLIAMENT

MINISTER'S OFFICE

DEPUTY MINISTER

DEPARTMENT OF TRANSPORT

CROWN CORPORATIONS
CANADIAN NATIONAL
AIR CANADA
NATIONAL HARBOURS BOARD
ST. LAWRENCE SEAWAY

MINISTRY SYSTEM (PROPOSED)

CANADIAN TRANSPORT COMMISSION

PRIME MINISTER AND CABINET

MINISTER

PARLIAMENT

MINISTER'S OFFICE

DEPUTY MINISTER

MINISTRY STAFF

CROWN CORPORATIONS
CANADIAN NATIONAL
AIR CANADA
NORTHERN TRANSPORTATION CO.

ADMINISTRATIONS
AIR
AIRPORT AUTHORITIES
SURFACE
ARCTIC
MARINE PORT AUTHORITIES

CANADIAN METEOROLOGICAL SERVICE

TRANSPORTATION DEVELOPMENT AGENCY
jurisdictional problems alluded to earlier. In a further attempt to rationalize roles, it was recommended that certain regulatory functions being exercised by operational units within the D.O.T. be transferred to the C.T.C. 27

Certain other functions of the C.T.C.’s Research Division were also to be hived off and placed under the jurisdiction of the new Transportation Development Agency. The T.D.A. was to work very closely with the Deputy Minister and be effectively locked into the Ministry Staff by virtue

27. The Report recommended four additional regulatory roles for the C.T.C.:  
(1) the regulation of way and terminal charges levied by the Administrations  
(2) activity related to regulations arising from the operating standards developed by the Administrations  
(3) the inspection, certification and licensing of vehicles and vehicle operators in the air and marine modes  
(4) regulations with respect to noise and water pollution.
of the expectation that part of the work of the T.D.A. would arise from development objectives recommended by the Planning Unit. The T.D.A. was the Task Force's answer to the problems of both the general dispersion of transportation research and development, and the low level of resource allocation to research and development in the D.O.T. It was the hope of the Task Force that the T.D.A. would become a focal point for federal financial support of transportation research and development in Canada.

To improve operational effectiveness, several inter-departmental realignments were proposed, together with the restructuring of several components within the Transport portfolio. As recommended earlier, the Canadian National Railway and Air Canada were to retain their individuality as Crown Corporations in accordance with the guidelines established in their respective Acts. In fact, the integrity of Air Canada was to be increased by the Task Force proposal that it should report directly to the Ministry of Transport rather than through the C.N.R. However, the operating budgets of both corporations would continue to be examined within the Ministry, and the Minister would maintain a close and effective liaison with the Chief Executive Officers of both corporations in an attempt to introduce an element of integrated planning into the relationship.

The major interdepartmental realignment was the inclusion within the Ministry of another Crown Corporation, the Northern Transportation Company Limited.28 The shift from the Department of Indian Affairs and Northern Development was intended to associate this water-based carrier managerially with other aspects of federal transportation and to allow the extension of its operations into other modes. To tie these three Crown Corporations more tightly to the Ministry, the Report recommended that they be linked to other Ministry elements by means of interlocking board memberships.

The decentralized operational complex of the Ministry was to be most significantly altered by the establishment of four relatively autonomous operating Administrations to provide way and terminal services on a cost-recovery basis for specific transportation markets.29 As recommended in the initial draft report the two remaining Crown Corporations reporting to the Minister of Transport, the National Harbours Board and the St.

28. Other inter-departmental realignments of a less significant variety were also recommended, including the transfer of certain Department of Public Works functions to the M.O.T.

29. The four were: The Canadian Air Transportation Administration; The Arctic Transportation Administration; The Canadian Marine Transportation Administration; The Canadian Surface Transportation Administration.
Lawrence Seaway Authority, were to become integral parts of the new Canadian Marine Transportation Administration. But the Seaway International Bridge Corporation Limited—a subsidiary of the St. Lawrence Seaway Authority—was to be grafted on to the Canadian Surface Transportation Administration and not the Marine Administration. It was intended that the Ministry Staff Planning Unit would require strong representation from Administration planning groups, and would probably want to assign representatives to those groups to ensure close liaison and effective information flow in both directions. This integration of planning facilities, combined with staff rotation between Ministry Headquarters and Administrations, was designed to provide the broadest communication throughout the Ministry of multi-modal planning objectives and programmes. It was further recommended that horizontal coordination among the Administrations be strengthened by the creation of interlocking boards, chaired by the Chief Administrators and including as members personnel from the operating and Headquarters units and, perhaps, representatives of business, industry and special interest groups. The boards were to perform four important roles:

—recommend the annual capital and operating budgets of the Administrations to the Ministry Executive;
—approve broad policies for the Administrations compatible with delegated authority;
—advise the Administrator on problems; and
—provide for an interchange of information of importance to transportation among Administrations, local Authorities, and other outside interests.

Conclusion:

These are the major recommendations of the Task Force which bear directly on the reorganization issue. It is worth noting that the Task Force put forward many important recommendations concerning the objectives of the new Ministry, its financial and personnel management, its review procedures, and the exact division of labour between the four Administrations. While these are certainly worthy of analysis, they are beyond the scope of my effort to assess the significance of the Report for the organization of the transportation policy-making structure of the Canadian

30. Changing the status of Crown Corporations would require legislation because through the reorganization, authority would reside in the M.O.T. but by law, responsibility would still rest with the Corporations.
Government in Ottawa. Clearly the Report draws together most of the organizational issues which arose during Task Force's investigation and deals with them in practical and sensible terms. The only demand which goes unanswered is one voiced by the Deputy Minister. The Report offers no coordinated plan for the institution of an integrated information system to service the whole Ministry, although it does refer to improvements which might be made at various points in the present system. Nonetheless, with respect to the major organizational question, namely, the need for effective responsive centralized planning combined with decentralized administration, the Report provides challenging and detailed recommendations, most of which have been implemented in the two years since the Report was completed.
BOOK REVIEW


This book represents a valuable contribution to the study of the impact of a new transport medium on economic development using the development of railways in 19th century England and Wales as a case study. It can be considered a continuation of similar American studies, notably R. W. Fogel, *Railroads and American Economic Growth, Essays in Econometric History* and A. Fishlow, *American Railroads and the Transformation of the Ante-Bellum Economy*. The questions posed by those studies are similar to those asked today when a major change in transport technology or a significant addition to the transport capacity are considered. These questions are: what was the impact of the innovation on economic growth?, and what were the social returns to investment in a new transport medium (railways in the 19th century)? The related question is what were the indirect effects (linkage effects) of the new industry.

The impact of English railways developed gradually, mostly after 1840 and was quite pronounced by 1865. The author estimates that “dispensing with the railways in 1865 would have required compensation for between 7 and 11 per cent of national income”. The social internal rate of return over the 1830-70 period is estimated at between 15 and 20 per cent. These can be compared with similar estimates derived by Fogel and Fishlow for the American economy where social savings were estimated at 4-6 per cent of national income. The difference is ascribed to the lower relative costs of the older, competitive form of transport i.e. water transport. The linkage effects, that is the impact of railway construction on other industries, especially the iron industry were important but by no means crucial to the industrial development. These results are less dramatic than one would expect on the basis of uncritical acceptance of a theory attempting to explain economic development by few, discontinuous major changes, and this is an important finding. On the other hand, one must keep in mind the limitations inherent in this type of investigation. For example, between 1840 and 1870 the size of passenger traffic in Great Britain increased more than twenty fold. The social and economic impact of such an increase in mobility profoundly affected the social outlook, information spread and marketing techniques. The effects on industrial production of the shortening of delivery cycles cannot be measured solely in inventory savings; production techniques, the increase in the range of

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potential suppliers, the breaking of local monopolies must have significantly affected the industrial structure of the country, and the increase of locational choices had an impact on spatial distribution of industry and population. Quantification of these indirect effects does not appear to be possible with the data available. Mr. Hawke is quite aware of these limitations and while being careful not to push quantifications beyond reasonable limits indicates non-quantifiable, quantitative changes induced by the railways, such as the impact on managerial techniques, corporation law etc.

To sum up: an interesting, well-researched contribution to the history of economic change in general and to transport history in particular; a valuable addition to the library of an economic historian or transport economist. Standards of editing, referencing and book production are as high as can be expected from the Oxford University Press, i.e. very high indeed.
MAINTAINING ESSENTIAL SERVICES: RAILROADS IN BANKRUPTCY—S. 2494

by GEORGE M. STAFFORD*

The railroads of this country operate as an integrated nationwide system, notwithstanding the fact that the system is made up of a large number of individual private enterprises. By law they are required to do many things, such as interchange traffic and rolling stock, so that a person turning his cargo over to one railroad can expect that cargo to be delivered by any other railroad at almost any place in the country in accordance with his routing instructions.

Consequently, when one railroad is having operational difficulties, all the other railroads are affected, some, of course, more than others. If one railroad shuts down, it is like the dropping of a stone in a pond. The adverse impact is felt not only in the immediate service territory of the non-operating railroad, but also in the surrounding and eventually more distant territories served by connecting carriers which join with it to form the national rail system.

On July 21, I appeared before this Subcommittee and presented testimony about the state of the railroad industry. At that time I identified 4 Class I railroads in reorganization and 18 others whose financial condition the Commission considers to be marginal. The same situation continues to exist today.

Three of the largest seaports in the populous northeastern quadrant of the United States rely heavily for rail service upon bankrupt or marginal railroads.

Boston looks for rail service almost completely from the Boston & Maine and the Penn Central, both of which are major railroads currently in reorganization.

The Port of New York is linked with its commercial hinterland by the Penn Central and the Central Railroad of New Jersey, both bankrupt, and by the Erie-Lackawanna, which, because of an onerous debt structure (among other things) has long been a marginal operation.

Philadelphia depends largely on Penn Central and, to some extent, on the marginal Reading Railroad.

A fourth eastern port, Baltimore, also relies on Penn Central’s service, although it is also served by major roads in relatively sound condition.

* Chairman, Interstate Commerce Commission. This statement forms part of the Chairman’s presentation to the Subcommittee on Surface Transportation of the Senate Committee on Commerce on September 16, 1971.
It is thus painfully apparent that if one or more of these bankrupt railroads were to shut down for lack of operating funds, the ramifications would be extremely severe and far reaching. Many millions of people in the most densely populated part of the country could be cut off from fresh meat, fresh fruits and vegetables, and other products of agriculture. Their electric supply, dependent upon enormous amounts of coal delivered by railroad unit trains, would be seriously curtailed causing brownouts, stalled commuter trains and elevators, spoilage of refrigerated foods, etc. Commerce and industry in general would be dealt a severe blow; and unemployment would necessarily hit many industries.

The Commission today has no means to provide for a continuation of essential service in the event a major railroad runs out of operating cash and is forced to discontinue service. We are urging Congress to make those means available through an amendment of paragraph 16 of section 1 of the Interstate Commerce Act.

As it now stands, section 1(16) contemplates that a railroad may become unable to transport the traffic offered it, but the most it authorizes us to do is (and I am quoting)—

“make . . . just and reasonable directions with respect to the handling, routing, and movement of the traffic of such carrier and its distribution over other lines of roads. . .” (emphasis added)

Note that I emphasize the word “other”.

If the Central Railroad of New Jersey, for example, were to close down, we could not—under that quoted language—direct any of the connecting lines (B&O, Erie-Lackawanna, Penn Central, Reading, or others) to enter upon the Jersey Central tracks and serve the essential port facilities on the west side of the Hudson River, or transport the 30,000—40,000 commuters who daily use the CNJ to and from work in downtown New York City and Newark.

We believe it imperative that this void in authority be filled immediately, considering the straitened circumstances of many railroads, large and small, especially in the eastern district. Our proposal is to add three words to section 1(16), thereby authorizing the Commission to issue emergency orders for the immediate handling, routing, movement and distribution of shut-down railroad’s traffic over its own lines by other railroads.

This would be clearly emergency-type jurisdiction to be used in the limited situation where a railroad can no longer serve the public (as when a bankrupt railroad runs out of cash) and its curtailed services are deemed to be essential. I.C.C. directives would be given to other railroads capable of jumping into the breach. Terms of compensation would be worked out
among the carriers, and failing agreement, by the Commission on a just and reasonable basis, as is currently provided for in the present provisions of section 1(16) of the Act.

In enacting this amendment, Congress would also go a long way toward repairing certain inadequacies in section 77 of the Bankruptcy Act. That statute was enacted as a device to keep railroads operating during a bankruptcy, pending the development and adoption of a reorganization plan. Yet the nature of the bankruptcy situation and section 77 itself, contain elements which make it difficult to fulfill that objective.

At the outset, there is a division of responsibility between the Commission and the reorganization court, neither being able to expedite matters within the other’s charge. Then there is the problem of the dual functions of the court to preserve the debtor’s estate, but at the same time keep the railroad running—even though the latter involves a deficit operation. Creditors are reluctant to compromise claims, particularly when liquidation holds out a promise for a greater recoupment. Connecting carriers—even though they may be greatly dependent upon the debtor’s service for their own survival—often are generally not willing voluntarily to undertake the service responsibilities of the bankrupt, or to propose take-over arrangements, when there is the prospect that, in time, desirable portions of the bankrupt road may be acquired at a bargain price.

These, and other factors, tend to prolong the process of reorganization, and in most instances, this is accompanied by a continual, sometimes massive, cash attrition. Obviously, when the debtor’s liquidity comes to an end, operations must cease. There is nothing in the Bankruptcy Act to provide for continued operation of a railroad that cannot meet its payroll. Efforts to cannibalize a railroad to obtain funds for continued operation are restricted by Constitutional prohibitions against the taking of private property for public use without just compensation.

With section 1(16) amended as we propose, at least three important objectives can be achieved. First, the Commission would be able to prevent a cessation of essential service by directing adjacent or other connecting carriers to conduct operations over a defunct carrier’s lines. Second, by maintaining such service, the Commission can prevent a chain reaction which otherwise could thrust marginal connecting carriers into bankruptcy. And third, the connecting carriers, knowing that they could be subjected to mandatory orders by the Commission to take over temporary operation of some or all the debtor’s services, and knowing that a crisis-caused bargain will not be available to them, would be more apt to enter into constructive negotiations on a timely basis with the debtor and among themselves for the preservation of service through participation in the debtor’s reorganization.
COMMENT

RESEARCH, LOCAL SERVICE AND THE CAB

BY SECOR D. BROWNE*

There is a general assumption that the aerospace industry is concentrated in the northwest, the west coast, and perhaps Texas. That definitely is not true; a map showing distribution of aerospace and aviation industry does include all but eleven of our 50 states.

The question is: “After the 747 and the DC-10, What?” The answer is, if we don’t do something, after the 747 and the DC-10 there will be nothing. Those aircraft, plus the L-1011, appear to be the last major transport aircraft to be built. It may sound odd to raise this point at a time when we all know there is a problem of over capacity in the nation’s airlines. But this problem is temporary.

It takes from five to seven years for an airplane to get born. Right now we need some aircraft types and within five to seven years we will need more. At this moment we need a replacement for the tired Convairs. We need something to replace the F27.

We need clean, quiet engines beyond those powering the DC-10 and the 747. Somewhere down the line, and maybe not too far away, we need an airbus—a two engine, 250 passenger aircraft suited for high density markets such as the Northeast Corridor, the west coast and others. We certainly need a short takeoff and landing aircraft. Someday, we not only will need, but must have, a supersonic transport.

What’s at stake in our aerospace industry? 80 per cent of the aircraft in the free world’s fleet are American made. The meaning is clear to our balance of payments.

If we don’t maintain our markets, we will lose the 80 per cent. We will lose the balance of payment in-flow, and we will have an out-flow as our carriers re-equip with foreign aircraft.

It’s interesting to note that airplanes are one of the few outstanding technological achievements left in our export package.

The Italian Government ran an ad recently in the Wall Street Journal and the Washington Post. It was aimed at the ten per cent surcharge and listed what the Italian Government and the Italian people bought, in an attempt to show what good customers they are of the U.S. It was curious that the only major category of advanced technology or equipment was

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* Chairman, Civil Aeronautics Board. This comment is based upon an address delivered by Chairman Browne in Wichita, Kansas on January 28, 1972.
airplanes—some $131 million worth. Most of the items were things like food and raw materials, things that the Italians either consumed or finished and shipped back to us.

Many of the tape recorders here today are made by the Japanese. We use Italian office machines. We use German milling machines and we drive Japanese, French, Swedish, English, Italian and German automobiles. Clearly airplanes and aircraft exports are among the few outstanding products we have with which to compete in the world’s market.

What am I worrying about? What's missing?

To put a $25 million airplane into production, like the Boeing 747, one is going to be about $1.5 billion dollars in the hole at the maximum negative cash flow. Previously this flow, this kind of muscle, came from the role of the Department of Defense which, with steady production of bombers and tankers and the development of engines and airframes, made possible the 707 and the DC-8 family. The reason there is a 747 and a DC-10 today, in my judgment, is that there is a C-5. The C-5 paid for the development of the General Electric engines that power the DC-10. A parallel program paid for the development of the Pratt and Whitney engines that now power the 747.

Our industry today simply can't raise the kind of financial resources to go from development through to production. And that's Boeing, Douglas, General Electric, Pratt and Whitney, Lockheed, either singly or in my view, in competition. Today, our industries are competing, not with other industries, but with governments—the French, British, German, Italian and Japanese.

We are undergoing a reverse brain drain. Boeing has made a deal with the Italians to develop a short takeoff and landing vehicle. General Electric has entered into a deal with SNECMA—the French State engine factory—to develop a ten ton thrust cleaner, quieter engine which will power many of the future generations of aircraft. If we ever re-engine any part of our present fleet, that will probably be the engine.

I don't blame the managements of any of those companies. They have the responsibility to keep their engineering teams together and they have responsibilities to their stockholders. I think we, as people of this country, as taxpayers, and as the government, also have a responsibility. I'd like to emphasize I am not talking about research and development. I'm talking about the burden of cash flow to get through tooling, through inventory, through production costs.

Having painted this black picture, what do I suggest we do? Well, I propose something that I call an Aerospace Reconstruction Finance Corp. I use those words because I think this entity should be financial in nature—not technical. It should be either independent or under the wing of the Treasury, and should be small.
Probably the only mistake of the SST program, in my view, was that it did have a project office, following the Defense Department procurement procedures, which meant that there was a 125 man team—a good one—but a 125 man team between the airlines and the manufacturers. There was considerable concern on all our parts that what was being developed and what might come out of it was the government’s airplane, not the airlines’ airplane.

I don’t think we need to re-design anything. I repeat, all we want to do is provide the financial muscle to continue the historic process whereby the air carriers develop their requirements, the manufacturers bid, the carriers make down payments, progress payments and final payments. All I want the government to do is undergird this process, provide *that* portion of the risk which is simply beyond the ability of the airline industry and the manufacturing industry to handle.

What I propose will also preserve the element of competition and some element of risk. I suggest that this undergirding be achieved first by means of guaranteed loans; second, by an improved depreciation policy to encourage the carriers to replace obsolete equipment and finally, by revised interest policies. Presently we have the curious situation whereby Japan Air Lines or Alitalia or Air France can get money from ExIm Bank for about half of what our carriers have to pay in the private sector.

I’m not suggesting a choice between social programs, like education, health or housing. These are all important. What I’m suggesting is a means to provide and preserve one of our major bases of wealth in order to provide something which we can tax in order to have the resources to have these programs. We must have something to sell in the world market. Otherwise I am afraid we will turn into a nation of service industries very busily taking in each other’s laundry.

Moving to another topic, the carriers, in my view, have turned the financial corner. From the pre-tax loss of $194 million in 1970, the newspapers now show that the carriers are about going to break even as a group for 1971. In 1972, even without a possible three per cent fare increase, I’d say the carriers, as a group, should net between 200 and 250 million dollars.

There are various indicators. October of 1971 had a $65 million swing from October of 1970. In 1970 the trunks alone lost $40 million. In October, 1971 the trunks alone made $25 million. October, November, and December traffic has been up between seven and nine per cent over a year ago.

Why has this come about? First of all because of some improvement in the economy. But also because of actions of responsible airline management in combination with what I like to call responsive regulation. Airline managements have taken hold of costs. They have reduced capac-
ity. The Board has provided an improvement in yield by granting a six per cent fare increase, and by permitting multilateral capacity reductions.

There are a couple of caveats if the carriers are to realize a $200 to $250 million profit this year. The first is labor. Almost 50 per cent of the airline dollar is spent for labor. Recent increases, before the wage/price freeze, were in my view, far beyond anything which could be matched by productivity improvement. The wage/price control, I hope, will help. But I feel it is up to the Congress to put some sort of transportation labor control into effect, and pressures to do this, of course, have been increased by the dock strike.

The second caveat is the capacity problem. The history of airline overcapacity simply must not be repeated. Last year the system load factor of the airlines was 48 per cent. This was seven per cent below what the Board has found to be a reasonable standard. This year the airlines are scheduled to put more than 60 wide-bodied jets into operation. These simply cannot be put into service on a one-for-one basis, substituting one wide-bodied for one 707 or DC-8. This is going to be tough on the industry—both the manufacturer and the airline. It’s going to mean stretch outs, possibly cancellations, probably groundings. But we cannot put more seats back into the air.

Furthermore the airlines must get over the myth of market share. If you’re flying 35 per cent of the seats in a market, as an airline, and you have 25 per cent of the traffic, you are, in my view, clearly out of your mind. You hurt the public; you hurt other carriers and you hurt yourself. This is an area of management responsibility. I’ve made this point before, and I make it again because now is the time when airlines are planning, and when they must face these hard decisions. But if there is no restraint in the matter of capacity, and no control of labor, there will be no $200 to $250 million profit. The Board will continue to be responsive, but I think we must ask the airlines and the manufacturers to be responsible in these areas.

Finally, let’s focus on the topic of Service to Small Communities. To the Civil Aeronautics Board, the names London, Paris, Lebanon, Melbourne and Athens, must also mean London, Kentucky; Paris, Texas; Lebanon, New Hampshire; Melbourne, Florida, and Athens, Georgia.

Over two years ago the Board initiated a study into the problem of airline service to small communities. The Board was aware that things were far from well.

Changing times require changing ideas. We are honoring our pledge to Congress to re-think the entire question of air service to small communities, and to bring forward new and different ideas.

We considered six alternatives:
1. changing or abandoning the subsidy class rate;
2. seeking a subsidy increase;
3. implementing a non-Federal subsidy program;
4. subsidizing air taxi operators;
5. instituting a contract bid system;
6. doing nothing.

We found that the greatest promise for better service at a reasonable cost to the taxpayer seems to be in a new approach—the contract bid system.

The regional carriers have responded very well to the needs of the system over the years. But the transportation system, particularly air transportation, is dynamic, and changes have taken place which require a new look at the means by which the smaller communities are served. In the years just after World War II, the regional carriers were small, local enterprises operating 21-28 seat DC-3 aircraft purchased at low cost from the government and the trunklines. Their principal purpose was to provide service over fixed, linear routes between small communities and hub cities, for both connecting and local traffic, at relatively low subsidy cost to the Federal Government. The usual pattern of service was, and remains, two round trips a day.

By law, the regional carriers are aided by federal subsidy payments for their non-competitive services to smaller points. Although the subsidy bill has increased in recent years to about $59 million in fiscal year 1971, the nation has received outstanding value for its money.

In recent years, four basic changes have taken place in the nation's small community transportation system.

First, during the 1960's, the nation's highway system was vastly expanded and improved as the result of a multi-billion dollar program.

Second, there has been a shift in population, in plains and mountain states. The population has declined in the rural centers, yet these communities must continue to have air service.

Third, during the 1960's, regional carriers grew through merger and route expansion. They have sought and received longer and denser routes and access to new, large hub terminals to afford new and improved single-carrier services to many points. The carriers have grown in terms of equipment, and many of them now provide token scheduled service at the smaller communities. Some of them operate aircraft which can no longer use the airports at some of the communities which require airline service.

Fourth, since the mid-1960's, air taxis operating demand services and commuter carriers operating scheduled services under a blanket exemption from virtually all regulatory requirements, except as to safety have expanded nationwide. They provide scheduled service to about 150 points
that are not certificated. In addition, such carriers serve numerous certificated points and markets and provide replacement service for certificated carriers at about 60 points. The record of the commuter carriers' substitution service has been mostly good. They have been able to give greater frequencies, better schedule timing, and improved performance.

The emerging and critical problem is the increasing difficulty the regional carriers have in responding to the needs of the communities on their systems. Each year the regional carriers—faced with rapidly mounting costs—are incurring substantially increased subsidy needs to continue to provide small community air service at their smallest system points with their 40-to 55-seat equipment. Simultaneously, they have been seeking to reduce their small community service obligations by means of deletions, consolidations, and suspensions. In many cases, a temporary suspension is sought and granted to the local carrier in conjunction with a third level carrier offering replacement service at some of the small communities. Further, as route systems have expanded, schedules necessarily have been suited to the needs of higher density large and medium points on the systems, and service to smaller points is becoming less responsive to needs.

Coupled with these problems, the smaller communities have been faced with sharply rising airport costs, and in many cases simply do not have airports capable of handling the larger jet equipment used by the regional carriers.

Faced with the need to insure continued responsiveness of the system to needs of all the communities, the Civil Aeronautics Board has decided to seek a special appropriation and special statutory authority to test an experimental contract method of supporting and selecting carriers to provide small community air service. We will propose that with the authority to take bids and grant contracts without certification, we could conduct a limited number of tests in various areas of the country, perhaps Kansas, Alaska and North Dakota, to determine whether the contract method is workable. If this were confirmed, subsidy expenditures would be more directly related to the services provided, rather than as now, to a local service carrier's system as a whole. It should be emphasized that this would be a limited experiment. The present system would, of course, remain in effect during the experiment.

The main features of the proposal would be to allow all carriers, including air taxi and commuter carriers, to submit bids for the provisions of a pattern and quality of service specified by the Board after taking into account the needs of the small community concerned in the experiment. Additional service could be provided independently of the contract. Contract awards, based on bids submitted by reliable and responsible carriers, and subject to performance safeguards, would be for a two or three-year
term. Contractors would be advised that they would have no vested
grandfather type rights for follow-on contracts which might be awarded.

The Board would ask qualified operators to bid to provide such services
as the Board determined necessary.

The matter of safety of course would remain with the FAA. The matter
of economics is the Board’s business. To insure that a successful contrac-
tor would complete the service in the period which he had undertaken,
the Board would require surety and bonding of some form.

We would have to seek appropriations to be able to let contracts for
let’s say these three areas of three systems. Our guess is that this will cost
about $2 million per year for the three systems which we would propose.
This might not increase the present subsidy, because we might be able to
relieve local service carriers of enough of their burden to keep the subsidy
cost at the same, or lower, level.

Renegotiation rights during the life of the contract would be expressly
precluded. Uneconomic bids would be unlikely if contractors are on noti-
ce that higher payments cannot be obtained through renegotiation. As
a definitive check, the Board would develop detailed procedures to enable
the staff to carefully screen out unrealistic bids, and each contractor
would be subject to performance bonding or similar financial guarantees
which would have the effect of assuring completion of the contract and,
in the event of failure, would provide funds for the immediate institu-
tion of service by a substitute carrier.

Such procedures would also spell out minimum standards for filing
bids and would include such matters as corporate financial condition,
insurance, experience of officers and employees, and adequacy of compli-
ance with all applicable FAA safety standards. The Board would also
issue the detailed specifications against which bids would be tendered. It
is contemplated that the Board’s staff and the community would partici-
pate in the development of specifications covering the service that would
fulfill that community’s needs.

In the past, academic critics of the existing subsidy system have sug-
gested the possibility of a bidding system as an alternative. However, the
pros and cons of such a system have never received a practical test, and
there is no empirical basis for altering the present system. The Board
believes that the problems of continued adequate service to smaller com-
nunities are sufficiently serious, and the possible benefits of a bid system
are sufficiently promising, to warrant a limited experiment at the earliest
possible time.

What we need is the authority to conduct the experiment. What we
need is the experience.
CHARTERED FLIGHTS AND SCHEDULED AIRLINES

DEAN BOOTH*

Prefatory Note

On December 30, 1971, after this article was written, the Civil Aeronautics Board announced a proposed new rule which would allow a charter organizer to form a group of 50 or more persons for the purpose of chartering an aircraft without any other rules being applicable except that the passenger list would have to be made up six months in advance of departure. If the new rule is adopted the charter flight would then be available to anyone regardless of membership in any club or society. The rule making regulations require a period for comment so that the proposed rule cannot be finally adopted until early March (now June). In an interview on the proposed new rule, Secor D. Browne, Chairman of the Civil Aeronautics Board said, “This will bring low cost air travel to a bigger part of the population who are not necessarily three-legged Armenians or librarians from Ashtabula belonging to a librarians society.” New York Times, December 30, 1971.

During last summer there seemed to be regular mention in the press concerning the problems of international charter flights, or more particularly, charter passengers—the stranding of passengers in Europe, Civil Aeronautics Board suits against some individuals and companies alleging violation of charter rules, cancellation of charter flights (leaving many young people stranded in Europe), the filing of charges against sixty-five parties (including a number of U.S. and foreign supplemental and scheduled carriers) for violation of the United States’ Civil Aeronautics Boards’ Charter Flights Rules, the receipt of the second largest fine in the Civil Aeronautics Board’s history ($71,000.00) for violation of charter flight rules, all of which were rather typified by CAB Release 71-148, September 17, 1971 announcing that the U.S. Civil Aeronautics Board had filed suits against sixteen individuals and organizations charging violation of the Board’s Charter Regulations and the Federal Aviation Act. It makes one wonder—What is going on here? Is the rising crime rate affecting charter flights? Are the socio-economic problems of our Country spilling into this area? The answers (without comment as to the answers to the rhetorical questions) seem to be economic.

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The Civil Aeronautics Board case mentioned above charges that sixteen individuals and organizations violated the Board's Economic Regulations relating to charter operations as well as the Federal Aviation Act by acting as "indirect air carriers". What the defendants allegedly were doing is forming their own groups for charter flights, i.e., acting as "passenger consolidators". In effect, the defendants are alleged to have either chartered an aircraft or part of an aircraft and then formed a group to occupy the space—making their profit either on the spread between what they paid for the space and what they charged, or on the commission, or both. The Civil Aeronautics Board takes the position that individuals engaged in "consolidating passengers" into groups of passengers are operating (in the case of foreign transportation) as "indirect foreign air carriers" within the meaning of the Federal Aviation Act Section 101(3) and 101(19) which respectively provide as follows:

"'Air carrier' means any citizen of the United States who undertakes, whether directly or indirectly, by lease or any other arrangement, to engage in air transportation . . . ."

(19)

"'Foreign air carrier' means any person, not a citizen of the United States, who undertakes, whether directly or indirectly or by a lease or any other arrangement, to engage in foreign air transportation."

And, therefore, the activities violated the Federal Aviation Act Section 402(a) [49 U.S.C. 1372(a)] which provides:

"'No foreign air carrier shall engage in foreign air transportation unless there is in force a permit issued by the Boarding authorizing such carrier so to engage."

The thrust of the Complaint being that the defendants were alleged to have been acting as "indirect air carriers" without a "permit", i.e., a "certificate of public convenience and necessity" from the Civil Aeronautics Board since they were allegedly soliciting "groups" in violation of the Board's Economic Regulations pertaining to charter activities.

The Board has issued numerous economic regulations concerning charter flights, which regulations generally attempt to set limitations on charter passengers so that the charter passenger may be distinguished from other passengers, i.e., "non-charter" passengers.

The Board has issued numerous regulations concerning "charter trips

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1. 49 USC 1301(3) and (19).
and special services” and “charter trips by foreign air carriers”. For the purposes of this note the regulations are the same where the charter trip is by a foreign air carrier or domestic air carrier. The Board has other economic regulations which pertain to “group” fares which are essentially the same as a charter except that they involve less than an entire aircraft. Generally, a charterer may charter either the entire aircraft or a part thereof. If the charterer charters less than an entire airplane and the charge to the passenger is on a time, mileage trip basis, the charter must be

“by a person (no part of whose business is the formation of groups or the consolidation of shipments for transportation or the solicitation or sale of transportation services), for the transportation or the solicitation or sale of transportation services, for the transportation of a group of persons as agent or representatives of such group . . . .”

There are other regulations which deal with the economic relationship between the carrier, the organization chartering the airplane and the organization members who are travelling. Thus a “sale entity charter” means the organization pays, a “pro rata charter” means the passengers pay and a “mixed charter” means that the organization pays some of the expense and the passengers pay the other.

However, the economic regulations which seem to cause the most difficulty are those revolving around the persons eligible to travel as a part of the group; i.e., the persons eligible to travel as a charter or group passenger. Thus the involved regulations seem to be:

(1) Only bona fide members of an organization, club or other entity and their immediate family may participate in a charter, provided that they have not been brought together by a solicitation of the general public and the organization is not so constituted as to ease of membership, and nature of membership, as to constitute a segment of the general public. [I don’t believe we need to comment on the factual nature of most of these requirements!] A member of one’s “immediate family” is a person living in the household of

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the member who is also a spouse, dependent child or parent of the member.\textsuperscript{5}

(2) A bona fide member of an organization, club or other entity is a person who has been a member for at least six months prior to the first flight sponsored by that organization, club or other entity.\textsuperscript{6}

(3) A person may not arrange for charter air transportation as a representative of a group if such person is professionally engaged in the formation of groups for air transportation or in the solicitation or sale of transportation services.\textsuperscript{7}

(4) The cost of a charter flight must be prorated equally among all of the charter passengers.\textsuperscript{8}

(5) All announcements to prospective charter participants giving a price per seat must state that the seat price is a pro rata share of the total charter cost and is subject to increase or decrease depending on the number of participants. All Announcements must separately state the cost of ground arrangements, air transportation, administrative expenses and the total cost, as well as identify the carrier, the number of seats available and the type of aircraft to be used for the charter.\textsuperscript{9}

(6) If an organization conducts four or more round trip charter flights per year, there must be no intermingling of round trip passengers between flights and each group of passengers must move as a unit in both directions. Regardless of the number of round trip charter flights conducted per year, one way passengers may not exceed, on any leg of any such charter, 5% of the passengers transported on such leg, and each leg of a round trip may not be chartered separately in order to avoid this limitation.\textsuperscript{10}

Thus, in order to be able to fly with the High School Band Support Organization the poor traveler must be sure that he was not solicited by a person who was professionally engaged in the business of forming groups, that he and all other members who intend to travel must not have been brought together by a solicitation directed to the general public, that his organization is not so easy to join that it is in fact a segment of the

\textsuperscript{5} 14 C.F.R. Parts 207.40(a)(2) and (b) and .41, 208.210(a)(2) and (b) and 2.11, 212.40(a)(2) and (b) .41, and 214.30(a)(2) and (b) .31.
\textsuperscript{6} 14 C.F.R. Parts 207.40(b), 2108.210(b), 212.40(b) and 214.30(b).
\textsuperscript{7}.
\textsuperscript{8} 14 C.F.R. Parts 207.43, 208.213, 212.43 and 214.33.
\textsuperscript{9} 14 C.F.R. Parts 207.44, 208.214, 212.44 and 214.34.
\textsuperscript{10} 14 C.F.R. Parts 207.13(c), 208.32(f), 212.10(c) and 214.14(c).
general public, that all members who intend to travel have been a member for at least six months, that no solicitation of the general public has been made and that no solicitations have been made in advertising which would generally be directed to the general public, that he knows that all of the costs of the charter flight must be prorated equally among all the passengers and that if any seats are not sold the price which he has agreed to pay will be increased in a yet undetermined amount depending on how many seats are not in fact sold, that he knows all the costs other than the flight cost, and that the organization is not conducting more than four round trip charter flights per year if he intends to return with a different group. One wonders why all of these rules are needed. It makes one suspect that there are really not very much economic differences between charter seats and regular seats.

Charters may fall into roughly three areas:

(a) Certain carriers are only certificated to carry charter passengers, i.e., the carrier itself may not engage in regularly scheduled service—these carriers in the United States are called Supplemental Airlines.

(b) Regularly scheduled carriers (or carriers which have authority to operate regularly scheduled flights) may also operate charter flights.

(c) Both Scheduled and Supplemental Carriers may charter less than an entire plane to one group. In other words either type carrier may operate a "split charter"—so that there are more than one group or organization's members on any one flight. The scheduled carriers may use the split charter concept by using part of the aircraft for passengers flying as a passenger on a regularly scheduled flight and other seats for "groups". Thus, the "group" and "charter" becomes roughly synonymous.

Because the service is more obviously equal we are referring herein to passengers flying on group rates on flights which also are regularly scheduled and the statistical data is limited to scheduled carriers. Further, we are generally limiting our comments to the international carriers although it can readily be seen that the vast market forces—although of lessor money pressure (in the vast majority of cases) are present in domestic markets. The Supplemental Carriers are omitted only because they limit all of their business to charter passengers and thus comparisons of the service they offer

11. 14 C.F.R. Parts 207.40(a)(1), 208.20(a)(1), 212.43 and 214.33.
are not so readily comparable to the service offered to (for lack of a better term) "scheduled passengers".

In all cases, the charter or group passengers pays much less (although he may or may not be getting the "same" service). Generally, therefore, it is in the passenger's economic best interest to be classified as a charter or group passenger. As will be explored further herein, it is also [assuming the traffic is in fact marginal or "added"] in the carrier's economic best interest to classify the passenger so that he qualifies for the lower rate. The hypothesis of this note is that the recent increase in the number of "charter" abuses results from these facts—and to advance the notion (without further defense) that these "abuses" respond to essentially two factors which are totally unrelated to the enforcement activities of the Civil Aeronautics Board, viz:

The "abuses" increase:

1. As the spread between the "regular" fare and the special fare increases (or becomes known), and
2. As the carriers percent of seats occupied out the total number of seats offered (the "load factor") decreases, or, stated conversely, as the number of empty seats increase.

The first factor operates primarily on the passenger, the second, primarily on the carrier.

The purpose of this note is not to either explore or wonder at the myriad of regulations concerning charters, groups, organizations, and relating to, in effect, reduced rate transportation. It may be more helpful to discuss the dynamics of the market, the history involved, and the resulting difficulties since it appears that these dynamics are responsible for the difficulties—the regulations being only a method to control the market forces at work.

The airlines (like all other transportation companies) are generally unique in that they sell a wasting asset. An empty seat on a light operating between any two points can never be sold once that flight is operated. Therefore, a very good case can be made out for marginal or added cost account as to that seat so that it is far better to have that seat occupied at a half or third of the normal fare than to have it totally unoccupied. The additional expense of having a passenger in the seat in terms of fuel, and meals is rather insignificant. Consequently, it might be fair to say that the higher the number of empty seats the greater pressure there is to occupy the seats.

Obviously, when decisions are made to cost the product a certain num-
ber of empty seats, in scheduled services, must be assumed. It is equally obvious, that whatever charges are developed will be higher per unit assuming a less than full aircraft (or freight car for that matter) than would be the case if all the seats (or space) were full. The justification for this additional cost revolves around the supposed convenience to the public resulting from regularly scheduled services.

The concept behind lower charges for seats on charter flights, then, is simply that seats can be sold on a per seat basis at a lower figure (frequently a much lower figure) if all of the seats in the airplane are sold than it they are not. It would also be true that the overhead or fixed cost per passenger on any given flight would be less to the extent that the charges were costed assuming more full seats than the number used in constructing the original fare—in other words, the cost per passenger must be great if one assumes that 55% of the seats are filled than it would be if one assumed that 65% of the seats were filled which figure would, in turn be higher than if one assumed that 75% of the seats were filled, etc. The charterer usually assumes 100% full seats and thus carries this to its logical conclusion.

Charter flights are a very important factor not only to supplemental carriers or “charter only” carriers which operate charter flights alone (with Certificates of Public Convenience and Necessity) but to carriers who operate primarily scheduled services as well. For example, in the year 1969, Pan American World Airways operated charter ton kilometers (passenger and freight) of 781,517,000. During that same year there were 104 members of the International Air Transport Association. Pan American World Airways operated more charter ton kilometers than 80% of the members of the International Air Transport Association operated in both charter and scheduled service.12 Pan American in 1969 operated more charter revenue ton kilometers than any other international scheduled carrier but the figures are important to most international carriers. Other examples are:

12. The U.S. Supplemental Carriers had gross revenues of $167,045,358 for the first six months of 1969. (C.A.B. Form 41). This, of course, would have been all charter traffic. While the IATA figures following are ton-kilometers and a comparison is difficult it is interesting to note that The Boeing Company has predicted 16,460 billion revenue passenger miles between the U.S. and Europe in inclusive tour passengers alone by 1975. Airline Management and Marketing, December, 1970.
<table>
<thead>
<tr>
<th>Carrier</th>
<th>Charter Ton Kilometers</th>
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<tbody>
<tr>
<td></td>
<td>As % of Total Ton Kilometers—1969</td>
</tr>
<tr>
<td>Air Canada</td>
<td>4.36%</td>
</tr>
<tr>
<td>Air India</td>
<td>7.53%</td>
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<tr>
<td>Austrian Airlines</td>
<td>18.5%</td>
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<tr>
<td>Braniff</td>
<td>35.61%</td>
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<tr>
<td>Canadian Pacific Air</td>
<td>8.2%</td>
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<tr>
<td>KLM</td>
<td>13.3%</td>
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<tr>
<td>Air France</td>
<td>5.59%</td>
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<tr>
<td>Sabena</td>
<td>8.71%</td>
</tr>
<tr>
<td>TWA</td>
<td>8.61%</td>
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This, of course, is not to say that "charters" do not have their bad side—they also may divert traffic which would pay the full fare. Therefore, while charter operations are important to scheduled air carriers it is equally important for the air carrier to try to keep the charter operations truly "charter" so as not to divert any passengers (or the minimum possible number of passengers), who would otherwise be prepared to pay a full fare. Thus, the economic regulations, to the extent they are designed to achieve this goal, tend to be in the carriers’ economic best interest. Of course, in the attempt to fill up the excess space the Board and the carriers are engaged in the great no-no of all transportation law, that is, discrimination among passengers. The justification for the discrimination is that the charter passengers are not obtaining the same service as the passenger who is not a "charter passenger" since the "charter passenger" did not have the same selection as to time of departure, time of arrival, number of stops, etc. This may be true and to the extent it is true it is probably more nearly true in whole plane charters (i.e., the organization or group charters the entire aircraft). However, a charter does not have to be a whole plane charter (as mentioned above) and you may have forty passengers or thirty or fifty charter ("group") passengers on a flight which is otherwise a scheduled flight. At the time the group was making its decision it had the same selection (assuming enough advance notice) as to departure time, etc. as did anyone else. The extent that any individual member of the group is discommoded or inconvenience would be as a result of the group decision rather than the availability of service—of course this accommodation to a group decision would not be present if the passenger were paying the regular fare—and, not travelling in a group.
The tour operator (such as the defendants in the CAB cases) can, if it operates a sufficient number of flights, offer the charter passenger considerable flexibility in terms of schedules. For example, if the tour operator is operating one flight to Europe and one flight from Europe every week he can offer to let a passenger extend his stay on a trip to Europe so that passenger can return on a later flight (but with a different group) on the return from Europe. To the extent that the tour operator is operating flights more frequently than once a week, it can offer even greater flexibility; and, obviously, to the extent it is operating flights on a less frequent basis it is handicapped but can still offer some flexibility. As the regulations quoted above mentioned, if the operator is sponsoring four or more round trip charter flights per year there may be no intermingling of round trip passengers and even if the organization conducts less than four round trip charter flights one way passengers may not exceed on any leg of the charter 5% of the passengers transported on that leg.

These rules might (with no intended inference that they are not) operate to accomplish the desired goals—that is to keep charter passengers distinct and separate from noncharter passengers and the two services different so that the charter passenger may fairly be said to receive a different service with the airline receiving the additional revenue from the reduced rate transportation while at the same time not diverting passengers to the reduced rate service who would otherwise be willing to pay the full fare. However, practical problems of enforcement present themselves at once. Who is to know whether or not the individual presented is an “immediate family member” of a member of the group. Immediate family members are defined as “mothers, fathers, brothers and sisters”. When you are talking about the group of, for example, the Honey, Texas High School Band Patrons, who can say whether or not the female presented as Mrs. Jones is or is not the sister of Mr. Black. Because of our custom of changing names upon marriage the opportunities are obviously endless. Further, so long as the traffic is truly marginal or added traffic then it is not in the economic best interest of the carrier to be too careful about who the passengers are—back to the original statement concerning the wasting asset—it is obviously in the carriers’ economic best interest to have a passenger travelling at a reduced rate than to have no passenger at all. Further, the carriers don’t want to make enemies—the carriage of passenger by air is a highly competitive business and the carriers are not interested in insulting anybody in the hopes of finding someone who does not qualify—and, therefore, someone who it can then refuse to let ride—losing the revenue and possibly making an enemy in the process.

Further, the organization (in the case of an entire plane charter) is
obligated to rent the airplane—that is the Charter. CAB Regulations require that the organization must rent the airplane and then advise the individual members of the organization that the seat price quoted or per passenger price quoted assumes a full airplane and that if all seats are not sold then the per seat price will be increased. This puts pressure on the organization to sell all the seats. The more seats it sells the lower the per seat charge. Consequently, it would run contrary to the stream of human experience to expect that the organization would be too careful in weeding out “new” members or “immediate family members” when the organization had already determined that it was unable or incapable of selling all of the seats in the airplane to its own bona fide (as defined by the CAB) members.

In addition, if the organization cannot succeed in selling all the seats and the price per seat therefore increases as to those members who are travelling the possibility always exist, as to the air carrier, that the organization itself will be unable to charter the airplane, i.e., that the effort will be a failure. If the aircraft has 100 seats and the airplane charter cost is $10,000.00 then the cost per seat is $100.00. If the organization can only sell, within the rules, 50 seats then the cost per seat and therefore per passenger is $200.00. It would obviously be better for the organization, if it could sell all the seats on the airplane to somebody at $100.00 per seat. Indeed, it might make an organization willing to sponsor a trip which it might not otherwise be willing to sponsor—in effect, since selling tickets to strangers would make the cost to the organization’s bona fide members less than it would otherwise be.

Moreover, if the organization has already leased the airplane, i.e., made the charter, then if it is incapable of selling the seats it is then faced with the problem of absorbing the loss. It is not difficult to imagine that there would be very few bona fide organizations with membership interests other than air travel, who would be willing to absorb losses of a significant amount when these losses could be avoided by allowing several “mothers-in-law and father-in-law, sisters, and sisters-in-law, brothers-in-law” etc., to travel on the flight.

It is interesting to note that the thrust of the cab’s enforcement procedures have been against the individual who allegedly were stimulating the formation of groups and not against the members of the groups themselves. However laudable it may be to create different classes of international air passengers for purposes of the so-called “charter flights” it is readily apparent that the dynamics of the market place are such as to create an almost overwhelming pressure for violation of those rules from the members of the organizations themselves. Perhaps this is unavoidable when the item being sold is totally fungible (certainly where the same
carrier is involved) except for scheduled times—keeping in mind that it would seem that most international air travellers would plan their trips well in advance so that it could be argued that the item sold, i.e. the seat and the trip, is totally fungible.

The large amount of charter traffic suggests that the nature of the international markets are not necessarily entirely scheduled in the first place. The 27th annual general meeting of the International Air Transport Association scheduled in Honolulu for November 15-18, 1971 had as Item 17 on the agenda “Symposium: ‘The Scheduled Air Lines and the Changing Market’”. While it is beyond the scope of this note, it would seem apparent to any interested observer that the considerable pressure on the scheduled air lines to reduce international rates (as we are all aware from “The Red Barron’s” offer of New York-Frankfort round trip at $210,000) is coming from the charter passenger—further than the international markets may not be truly scheduled but instead a large number of passengers use charter service. It could therefore be argued that the scheduled carriers be reducing fares are feeling the pressure and are responding by lowering the cost of their unit, i.e. a seat mile, in the hopes of operating at higher load factors and at greater revenue per flight—in other words, they are recosting their product assuming a higher load factor.

Pan Am is reportedly considering having an area on its 747 Aircraft for charter groups so that the aircraft would carry first-class, tourist and charter passengers in one aircraft. In March the “charter” vs. “scheduled” problem was the subject of a meeting between the U.S. State Department and the European Civil Aviation Conference. Pan American’s President Najeeb Halaby told a Senate group in February that the charter/scheduled problem was so great that “it is the very existence of an effective and dependable air transport system that is at risk”. All of which seem to demonstrate and evidence the growing pressure.

All of the observable evidence would tend to indicate that the difficulties in the enforcement of the Board’s economic regulations in the area of determining exactly what is a “charter” passenger flow from this price pressure—coupled with the possibility that at least the North Atlantic markets may be more “charter” markets than otherwise. It would seem that if the charter passenger were really different from other passengers then it would not be so necessary to constantly monitor the differences;

14. Ibid.
15. Ibid.
that is, that market forces would operate so that there would be self-selection. Also, the rather dramatic difference between tourist fares and charter fares adds increased pressure. It may be that all of this year's travelers travelling on the reduced fares which will be approved by IATA before summer will owe a considerable vote of thanks to those individuals who violated the Civil Aeronautics Board's economic regulations—certainly, to the extent that the number of violations indicated the considerable pressure present, the two factors are at least a result of the same market dynamics.
FEDERAL REGULATION OF TRANSPORTATION AND TECHNOLOGICAL INNOVATION

by TERRY A. TRUMBULL*

1. Introduction

The importance of developing and implementing new technologies is frequently discussed. These discussions generally focus upon encouraging new technology through increased use of federal research and development funds or upon mechanisms to foster transfer of technology used in one area to other areas. However, little discussion has been given to another important area, the environment for innovation that is provided by the regulatory and other governmental policies.

The environment for innovation is determined to a major extent by the government. To some people, the major barriers to innovation lie in this environment in the form of institutional and organizational barriers. These barriers do not involve the government directly in the sense that it is participating in the innovative process, but instead the government is indirectly involved because of its influence on innovation.

The government provides the rules which impinge on the freedom of action of the various forces which might affect innovation. A rule may affect all innovative activity or only one type of activity. Because a discussion of the environment for all areas of innovative activity is not possible within the limits of this paper, it has focused on the effect of the federal government’s regulatory scheme on technological innovation in transportation, with a brief introductory comment on general policies that affect innovative incentive.

II. General Federal Policies

At the outset, it is a good idea to get out terms straight. Invention is the development of an idea or concept, while innovation is the application

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of an invention to a need. For the most part, inventions are applied to needs by entrepreneurs so that the rate of innovation is strongly affected by the entrepreneur's perceptions of the need for the innovation. Governmental regulation can encourage or discourage the entrepreneur's willingness to innovate through manipulation of its various policies, of which federal patent, antitrust, tax, and procurement policies are an example.

A. Government Procurement Policies

Implicit in much of the literature which discusses technological innovation is the assumption that direct subsidization of research and development is the only way for the government to stimulate innovation. However, the Federal Government has enormous purchasing power which it can use to stimulate innovation. It purchases over $30 billion worth of goods and services in the civilian market each year and the manner in which it does so can have an enormous effect on technological innovation. The Federal Government unfortunately has not done this and as a consequence, innovations that might have been encouraged have not been.

B. Antitrust Policies

In contrast to the direct effect on innovation of patent policies, antitrust policies seek to maximize competition and affect innovative activity only indirectly. There is much disagreement as to the effect of antitrust policies on innovation.

Most of the discussion centers on whether larger firms are more likely to innovate than smaller firms. If larger firms are more innovative, then our antitrust policies reduce innovations by limiting firm size to keep an industry competitive. Conversely, if small firms are more innovative, then antitrust policies encourage innovation.

Almost everyone agrees that the larger firms can be more innovative. They have the advantages of economies of scale and the ability to tackle costly research and development that is beyond smaller firms. Yet there is much reason to doubt that the large firm will utilize these advantages.


6. For example, see the continuing disagreements in the discussion portions of National Science Foundation, Technology Transfer and Innovation (1967).

7. J. Galbraith, American Capitalism 87 (1956).
Several studies of innovations in a variety of fields have indicated that most major advances are introduced by small companies or individual entrepreneurs. Generally, small firms and entrepreneurs must be oriented to innovation because this is the area in which they can gain a competitive advantage over the established firms.

From this discussion, one concludes that strict enforcement of the antitrust laws will encourage innovative activity by either making larger firms more competitive or breaking them into smaller units.

Uncertainty and confusion as to permissible activity is an additional problem that results from antitrust and other business regulation. Because businessmen are unsure as to the legality of mergers, joint ventures, or expanding their market share, technological innovations by them are inhibited. The "rule of reason" approach in these areas causes particular difficulty since its flexibility does not permit clear cut decisions on the propriety of innovative activity.

C. Tax Policies

The purpose of our tax system is basically to collect revenue, although special provisions are designed to encourage or discourage certain types of activity. Technological innovation is rarely one of the activities that tax laws attempt to influence, but instead the tax laws affect innovation quite unintentionally and indirectly.

The tax system offers several incentives to innovation. Expenses of research and development can be charged to the year in which they are incurred, while the product of this search, innovation, yields benefits into the future. Furthermore, when an innovation is sold, it is treated as a capital transaction even though it probably resulted from years of work that were untaxed. Similarly, the seven percent investment tax credit, proposed as part of the President's economic policy, will have a signifi-

8. See J. Jewkes, D. Sawers, & R. Stillerman, The Sources of Invention (1958) and D. Hamberg, "Invention in the Industrial Research Laboratory," J. of Pol. Economy 71, 95-115 (1963). These studies indicate that larger corporations are responsible for only about one quarter of major innovations.

9. M. Wachs, "Fostering Technological Innovation in Urban Transportation Systems," Traffic Quarterly 39, 45 (Jan. 1971) [hereinafter cited as Wachs]. This is not to say that all small firms are more innovative, but only that the percentage of innovations occurring from small firms greatly exceeds those developed in large firms.

10. De Simone, supra note 2 at 42.

11. For example, say a person works on a job for a year and earns $10,000, which is subject to income tax. However, if that same person works on an innovation for a year and develops a $10,000 innovation, he pays no income tax upon his labor.
cant impact on technological innovation. It encourages investment in new plant and equipment which provides a great inducement to introduction of innovative technologies, rather than waiting for present facilities to complete their useful life before introducing new technology.

D. Patent Policies

Unlike most governmental policies which are ostensibly neutral towards innovative activity, the patent system is intentionally designed to encourage innovation. Despite the fact that there has been enormous change in all facets of our lives in the last 150 years, the patent system has remained basically unchanged. This is true even though the federal government's sponsorship of research and development has reached enormous proportions and changed the direction of technology.

Of course, if the patent system continues to provide the kind of innovative encouragement that is optimum, then there is no need to change it. But does it? Compared to the number of innovations classified as trade secrets, the number of patentable innovations is small. Apparently American industry does not feel adequately protected by the current patent system.

Inadequate protection causes a secrecy which stifles introduction of new technology. Through patents, other companies can purchase rights to use the patented process, but this does not occur if no one is aware of their existence. If innovative technology is kept secret, its distribution is obviously quite limited.

Taxpayers finance three-quarters of the research and development in this country, and this funding usually requires that the products of this research be placed in the public domain. For the remaining one-quarter of the research, use of innovative technology may be better fostered by not permitting monopoly through a patent, but instead placing everything in the public domain by eliminating the patent system altogether. This would eliminate the problem of continuing monopolies such as occurred with Polaroid cameras and Xerox in copying. Of course, the acceptability of this approach will depend on whether the remaining incentives to encourage the innovator such as prestige, trade secrets, or the jump on competition, are sufficient.

12. De Simone, supra note 2 at 40.
13. De Simone, supra note 2 at 43.
14. Id., at 44.
15. A major part of this feeling occurs because of the lack of an adequate international patent system. Id., at 45.
16. Id.
III. Transportation Regulation Policies

In spite of the overwhelming profusion of technological developments in recent years, our present transportation systems seem unable to provide the kind of service that will keep up with changing transportation demands. For example, one need only contemplate our clogged streets or the plight of the nation's railroads or urban bus systems.

Although public and private organizations invest great amounts of capital in transportation systems each year in the United States, there has been little change in automotive and mass transportation systems in the last 40 years.\(^{17}\) Expenditures have fostered expansion of existing systems and adoption of new transportation systems has been quite rare. When innovative improvements are attempted, they tend to be incremental improvements, rather than totally new systems, with the possible exception of aviation. While the reasons are not clear for this lack of innovation, it is clear that the answers lie to a great extent in the institutional framework which has been created for the management and control of transportation.\(^{18}\) The remainder of this paper discusses this institutional framework and its impact on transportation innovation.\(^{19}\)

A. Policies of the Interstate Commerce Commission

1. Water Transport

Up to the time of the Depression, water transport was not regulated, a source of irritation to the railroads, who were regulated. In order to reduce their competition, the railroads lobbied very heavily for regulation of water transport, which resulted in passage of Part III of the Interstate Commerce Act.\(^{20}\) The most important provisions of this law restricted entry of new water carriers,\(^{21}\) gave the I.C.C. control over maximum and minimum carriage rates, and introduced rate publication and notice requirements.\(^{22}\)

Until the law was passed, entry costs into water transport were quite

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\(^{17}\) Wachs, supra note 9 at 40.

\(^{18}\) Id., at 41.

\(^{19}\) Obviously not all Federal transportation policies can be discussed in a paper of this length. Consequently, areas such as gas pipeline and merchant marine policies are not included in the following.

\(^{20}\) 54 Stat. 929 (1940).


low and the large number of new entrants each year kept the market competitive. However, I.C.C. regulation has limited entry, which has reduced competition and permitted firms to increase in size. A result has been increased use of existing towboats and development of larger towboats by the larger firms. This is a significant innovation which greatly increases operational efficiency. 23

Because water transport competition has decreased and carriage prices have risen since the I.C.C. began regulation, a large number of users of water transport have bought their own vessels for transport. This has been advantageous because the I.C.C. regulates only "for hire" carriers and not those carriers who carry their own goods. The purchase of water transport by users have resulted in purchase of new and innovative equipment at a more rapid rate than might have occurred without regulation. 24

2. Trucking

The trucking industry has three distinct types of service: common, contract, and private carriers. Common carriers are extensively regulated by the I.C.C. and private carriers, which constitute 85 percent of American trucks, 25 are virtually unregulated, with contract carriers between the two extremes. Trucks used exclusively for agricultural commodities are generally exempt from regulation. 26

Regulation of common carriers by the states and I.C.C. is virtually identical. Reasonable, nondiscriminatory rates must be published and continuous, adequate service must be provided. Safety regulations must be observed that include minimum driver qualifications, maximum hours of service for employees, operational requirements, and necessary equipment. Contract carriers must also meet these safety regulations, but not the service or rate requirements. Most importantly, new common carriers are permitted to operate by the I.C.C. only if they can show "public necessity and convenience," and contract carriers must obtain a permit. 27 The I.C.C. uses these requirements to limit entry of motor carriers to the number that it considers desirable and to control expansion of existing

24. Spychalski, supra note 22 at 15.
26. Agricultural commodities carried by water transport are similarly exempt, but not when carried by railroads.
carriers. Because of the I.C.C.'s policies, while the great majority of carriers are small enterprises, the tendency has been for the number of large carriers to increase and for the average size of regulated carriers to grow.

Innovative activity in trucking is quite similar to that in water transport. While there have been some incremental innovative improvements, the basic technology in trucking has not changed since regulation began in 1935. Improvements have occurred in areas such as increased use of existing truck capacity and continuing construction of larger and more specialized trailers. However, the effect of these improvements is not particularly great since capital replacement occurs quite rapidly in trucking and innovative improvements have not been particularly significant.

3. Railroads

Because of cartelization and rate fixing arrangements, in 1887 the Interstate Commerce Commission was established to regulate the railroads. The fundamental policy at that time was to prevent monopoly and unfair competition by rate and service regulation. This regulation has resulted in many inequities including the problems caused by nondiscriminatory rate policies. Under I.C.C. policies, small shippers or small communities must be charged the same amount as nearby shippers or communities which are larger, even though the cost to the railroad is considerably higher per unit shipped by the smaller shipper or community. Consequently, small shippers or communities use railroads more because the prices are artifically low and those who are larger use other modes, particularly trucking, which are cheaper because the railroads' prices are set too high.

30. Fair, supra note 28, at 104.
32. Not all railroad problems are discussed here. For example, many states have full crew requirements that discouraged introduction of the diesel engine, but these problems are left to others. See E. Landau, “Arbitration, the Courts, Technological Change, and Craft Definition: Railroad Firemen v. Diesels,” 19 Drake L. Rev. 93 (1969).
34. G. Harrison, Clarification of Transportation Policy Goals,” Transportation Renaissance 24 (1963) [hereinafter cited as Harrison].
35. Id., at 25.
36. R. Spann and E. Erickson, “The Economics of Railroading: The Beginning of Cartel-
For the railroads, the primary technological changes since World War II have been in the power employed, with some roadbed improvements. The diesel engine has completely revolutionized the railway industry, the “clickless rail” is rapidly replacing its predecessors, and roadway maintenance is almost entirely mechanized.37

The economic relationships among the various modes are unclear, but it can be said that each mode has advantages for some types of service. Rail transportation has an advantage for most long distance freight transportation involving full carloads.38 Trucks have obvious advantages in areas such as short hauls and loads less than a carload.

However, the present rate structure permits motor carriers to compete with the railroads over long hauls when they would not be able to do so without regulation.39 All rail carriers are subject to regulation but the vast majority of water and truck transport carriers are not. Because of this, unregulated trucks (and water transport to some extent) have been able to carry items that cost little, but yield high revenue, while leaving the unprofitable shipments to the railroads.40

The effect of this on the rail carriers ability to innovate has been quite pronounced. Competing carriers have been much more able to innovate for a number of reasons. First, other modes need considerably less capitalization to innovate.41 Second, governmental financial assistance to competing modes is much greater,42 such as construction of roads, waterways, or airports. Finally, “inequitable and destructive regulation” causes railroads to have less profits and capital to innovate with.43

B. Urban Mass Transportation Policies

Contrary to what one might think, the Federal Government’s efforts in urban mass transportation did not result because of a feeling that an alternative to the automobile was needed. Instead, the Federal urban

38. Harrison, supra note 34, at 25-6.
40. Harrison, supra note 34, at 26.
41. Piggyback, supra note 39, at 378.
mass transit program gathered support by emphasizing its role as a supplement to the automobile and the declining quality of public transportation. This approach brought suburban support to the long standing support of mass transit by the big cities, as well as neutralizing the traditional opposition of the highway lobby to mass transportation.\footnote{2 Nat. J. 2024-6 (1970).}

Unfortunately, the interests of the Congressional coalition supporting the program are reflected in the legislation. These were well expressed by Carlos Villarreal, Urban Mass Transportation Administrator, who stated:

> The highest priority is the saving of the systems which run the risk of going out of business. Second is improving existing systems. Third is extending existing systems. And fourth is new systems.\footnote{2 Nat. J. 2155 (1970).}

Consequently, the primary focus of the Urban Mass Transportation Administration is upon saving existing transit systems. Typically, this means using capital grants to place new buses in the same system where old buses were unsuccessful.\footnote{This policy, of only using grant or loan money to support conventional technologies is quite widespread in the Federal Government. Another example is the FHA, which makes little use of ps loan guarantees to induce new housing technology. Michaelis, supra note 5, at 81.} While this policy has some incremental innovative effect, it has done little to encourage technological innovation. This has a very pronounced effect on mass transport innovation because the ability of individual firms to underwrite development expenditures is very limited.\footnote{T. Lisco, “Mass Transportation: Cinderella in the Cities,” Public Interest 52, 68 (Winter 1970) [hereinafter cited as Lisco].} In fact, in Congress there is some distrust of research and development of new mass transit systems. Congress is very cautious about programs which would force a shift from our reliance on the automobile,\footnote{2 Nat. J. 2158 (1970).} and the Appropriations Committees have made it clear that they are willing to fund only conventional bus and rail technology and, for the most part, conventional operating methods. These Committees have considered the results of research to be too intangible to justify significant expenditures. Consequently, urban mass transportation research has been approved on practically an item by item basis, and grants have focused upon buying conventional transportation equipment. These policies can be expected to continue until the Federal Government realizes that the solution to the fundamental weakness lies not in providing more conven-
tional equipment but in developing systems which respond to the urban travel demands of the consumer.\footnote{49}

C. New Modes

In the overshelming majority of cases, transportation improvement has meant expansion of existing systems, building of new systems utilizing old technology, or occasionally use of new technology on a small scale to improve existing systems.\footnote{50} Radically new systems are used infrequently, and instead an incremental approach used. While systems which have enormous potential such as dial-a-bus, tube trains, and automated roadways have been studied and proposed, these significant new systems have not been implemented. The following discussion focuses on the problems associated with the implementation of two new transportation systems, dial-a-bus and vehicle monitoring.


An automatic vehicle monitoring (AVM) system constantly reports in real time the position of a set of moving vehicles to a central point, and displays their positions and identification numbers on a map. The key word is “automatic”; no driver intervention is necessary once a vehicle has entered the system. The word “vehicle” is almost incidental. For, although many AVM systems will work only for vehicles, others are equally adaptable to the monitoring of other objects such as cargo containers.\footnote{51}

Vehicle monitoring as a technology has a substantial history dating from before World War II, involving both passive radio systems such as radar, and active radio systems such as IFF (identification-friend or foe) systems, inertial navigation, and the like. The unique elements broadening the use of AVM are: (1) the civilian context, with its requirement of low cost; (2) the urban environment, with its associated severe radio propagation problems; (3) the possible multiplicity of users, with its implications of joint-usage forms for the system; and (4) the possible public interest inherent in developing AVM.

There are many potential uses of an AVM system. Application to

\footnote{49} Lisco, \textit{supra} note 47, at 52.
\footnote{50} Wachs, \textit{supra} note 9, at 40.
police work would reduce response time, increase the pool of available vehicles, improve patrol effectiveness, and reduce the present radio spectrum congestion. Urban bus systems could use AVM to keep buses on schedule, equalize loading, and improve driver and passenger security. By enabling taxi companies to dispatch the taxi nearest to the requesting rider, AVM would speed service and reduce vehicle mileage. AVM could also assist demand responsive systems such as dial-a-bus. Use in the future will probably also include air and harbor traffic control, prevention of cargo loss and theft, transportation research and traffic control, personal safety, employee surveillance, and pre-trial surveillance.

AVM systems make extensive use of radio communications, which are primarily regulated by the Federal Communications Commission (FCC). FCC approval is required for any emission of radio waves by any person other than the Federal Government.

The existing FCC regulatory framework does not easily accommodate new uses such as AVM. While allocation of a wave length is normally a one step process (although admittedly difficult), approval of AVM involves revising FCC's entire spectrum allocation, which would involve at least four stages. Because of this, the FCC has been resistant to restruc-

52. The expected benefits per police vehicle are about $3700 per year. Institute of Public Administration, Urban Vehicle Monitoring: Technology, Economics, and Public Policy 24 (1971) [hereinafter cited as Urban Vehicle Monitoring].


54. Other contributions of AVM to taxi operations could include: increasing the pool of available vehicles (i.e., by enabling central dispatching of all taxis operating in a large metropolitan area), alleviating alleged dispatcher favoritism (i.e., by automating the dispatching process), improving driver and passenger security (i.e., by enabling immediate reporting of emergencies) and improving overall taxi supervision (i.e., by permitting owners to monitor driver performance and cross-check driver reports). Taxicab annual benefits are estimated at $1700 per car. Urban Vehicle Monitoring, supra note 52, at 24.


57. 48 Stat. 1081 (1934).

58. The four steps are:

1—classification of users;
2—allocation of the spectrum to the various user classifications;
3—allocation of portions of each user classification spectrum to geographic areas; and
4—assign a frequency to a particular user.

Normally, a user becomes involved only in this fourth stage, but AVM, being a completely different form of use, would require revision of all of FCC's spectrum policies. See Institute of Public Administration, Public Urban Locator Service: Technical and Institutional Foundations 9-2 (1969) [hereinafter cited as PULSE].
turing their spectrum policies.

Attempts have also been made to fit AVM use into one of the present user classifications. This suffers from two disadvantages: present user classifications (except UHF television) are overloaded now and AVM does not really come close to fitting any of the present classifications (the closest being navigational).\(^{59}\) Certainly a new classification is most logical, since acquisition of a portion of the spectrum is relatively easy if it is granted. However, until AVM gains popular acceptance, a new classification is unlikely.

The FCC is not unaware of the development of AVM systems and has indicated a willingness to issue experimental licenses to test AVM under a variety of operating conditions. Nevertheless, applicants for wave lengths have been cautioned against attempts to integrate vehicle locating systems into their operations. The FCC has indicated that this should not be done until it has evaluated the experimental usage.\(^{60}\) Unfortunately, this attitude has largely precluded issuance of experimental licenses because of the enormous costs of establishing an AVM system (approximately $1.5 million at a minimum)\(^{61}\) and the short length of experimental licenses (six months). No user can recover his initial capital outlay during the six month period and he has no assurances that the system can operate any longer than that period.

2. Dial-A-Bus

Dial-a-bus provides door-to-door transportation in response to telephone requests. It utilizes a small bus, but has taxi characteristics in that it provides door-to-door service. Costs per trip are estimated at slightly above that of a bus and considerably below that of taxis.\(^{62}\)

A computer is responsible for determining the assignment of vehicles to service customer requests in an optimal manner. The customer will have no direct contact with the computer, but will talk to an operator when he phones in his request. After learning his origin and destination, the operator will type this information into the computer. It will immediately print out the estimated time of customer pickup and arrival at

\(^{59}\) Id.
\(^{60}\) Id. at 9-14.
\(^{61}\) Urban Vehicle Monitoring, supra note 52, at 22. Furthermore, annual operation costs are estimated at $200,000, so that probably $100,000 in operating costs would have to be recovered in six months.
destination. The operator will give this information to the patron and it will also be displayed to the bus driver. The patron will be expected to watch for the bus and enter it within thirty seconds or so of its arrival. The vehicle will take him to his destination, making minor detours to pickup and drop off other passengers on the way. The route will be determined for the driver by the computer.\textsuperscript{63}

Dial-a-bus is thus a personalized, flexible public transportation system in which the routes of the vehicles are determined by and adapted to the particular travel demands as they arise.\textsuperscript{64} The real cause for excitement about dial-a-bus is that it can serve the highly random travel patterns and low-density land use patterns typical of this automobile era. It can take people where they want to go when they want to go. And it can do so quickly, directly, and at reasonable cost. It can do this either as an independent system or more likely, as a supplement to existing transit systems. At present, the technology is ready to support an automated dial-a-bus demonstration. Regular service could begin on the streets of an American city within six months of a decision to go ahead.\textsuperscript{65}

The regulatory constraints on dial-a-bus have occurred at both the local and federal level. Local regulatory officials try to categorize the system as both a bus or taxi without realizing it has characteristics of both and is best considered as a new category.\textsuperscript{66} As a result, dial-a-bus may be required to follow fixed routes, adhere to bus-like fare schedules, or carry only one passenger group at a time. Since dial-a-bus is most effective in larger metropolitan areas, severe inter-area conflicts over fares and operation would be expected.\textsuperscript{67} All of these and many other local regulations would completely cripple a dial-a-bus system.

The Federal Government has not been particularly helpful. The Urban Mass Transit Administration, which provides the Federal Government's mass transit funding, has steadfastly refused to fund to new transportation improvements such as dial-a-bus. Because of the poor financial position of existing transportation systems, they are unlikely to implement dial-a-bus until they can obtain assistance.

D. Federal Airline Regulation.

Federal regulation of aviation falls into three main categories: safety

\textsuperscript{63} Id., at 83.
\textsuperscript{64} City of Phoenix, Personalized Transit Study 2 (1970).
\textsuperscript{65} Altshuler, supra note 62, at 84.
\textsuperscript{66} Institute of Public Administration, Demand Actuated Road Transit IV-4 (1969).
\textsuperscript{67} H. Bauer, A Case Study of a Demand Responsive Transportation System 51 (1970).
regulation, promotion (including facility development and operation), and economic regulation. Economic regulation includes route certification, merger regulation, and fare regulation. Promotion is basically the responsibility of the Federal Aviation Agency, while the Civil Aeronautics Board (CAB) is responsible for economic and safety regulation.

The most important aspect of CAB regulation is control of entry, through which no new carrier has been permitted since CAB was established in 1938. Not only have new carriers been precluded, but the number of carriers along routes is strictly limited. CAB feels its job is to avoid facility duplication, prevent excessive competition, and insure service quality. These policies have resulted in a service quality competition, but little price competition, and generally higher prices.

The effect of service quality oriented competition among the airlines has been to encourage technological innovation before it might have occurred under price competition. In this regard, California’s unregulated intrastate carriers provide a marked contrast to their CAB regulated competitors. The California carriers provide significantly cheaper prices and utilize older airplanes and equipment. Conversely, the CAB regulated carriers have consistently introduced service quality improvements to compensate for their inability to compete with prices.

... the development of the California intrastate carriers’ fleets provides an indication of the types of aircraft the interstate carriers would have operated had there been no CAB regulation. It seems reasonable to conclude that without regulation the nonpressurized DC-3’s and DC-4’s would have had longer lives, especially in short-haul markets. Pressurized, piston-powered aircraft would have been adopted, particularly for medium- and long-range operations, but the final series of these aircraft (the DC-7’s, later model L-1049’s, and the L-1649’s)—those aircraft powered with turbo-compound pis-

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68. Fair, supra note 28, at 509.
69. Id., at 516.
70. 52 Stat. 973 (1938).
71. Fair, supra note 28, at 517.
74. Unregulated by CAB, but still regulated by California’s Public Utility Commission which does regulate either price or service quality.
76. Competition has not merely involved newer aircrafts such as jets, but also improvements such as the pressurized cabin.
ton engines) would not have been adopted because their small improvements in speed over the DC-6's, DC-6B's, L-749's, etc., were obtained through very much higher operating costs. Turbine-powered aircraft, however, would have been adopted in much the same manner that actually occurred since this innovation offered both superior service quality and lower seat-mile costs—a potent combination.77

However, when the first unregulated carrier introduced an innovation, all others were forced by competition to provide the same service.78 Nevertheless, the CAB regulated carriers were consistently the first to introduce an innovation unless it also involved a cost per passenger reduction.79

E. Federal Air Pollution Control Policies80

In recent years Americans have become increasingly aware of air pollution, roughly two-thirds of which result from motor vehicular emissions.81 Each vehicle in the United States averages a ton per year of contaminants.82

Control of motor vehicle emissions was first initiated by the State of California, perhaps because Los Angeles was the first major American city to observe the problem. In 1965, the first Federal motor vehicle pollution control law was passed.83 It required the Federal Government to prescribe emission standards for all new cars sold in the United States and in 1967 the law was clarified to indicate that federal pre-emption of new car emission testing was to apply, except in California.84 The most significant motor vehicular air pollution controls are in the Clean Air Amendments of 1970.85 The effect on technological innovation of the most important provisions, emission standards and transportation controls, will be discussed in the following paragraphs.

77. Jordan, supra note 63, at 49. It is interesting to note that CAB regulated carriers who had a monopoly over a route had even poorer innovative records than the unregulated carriers. Apparently, on monopolized routes passengers must pay higher prices and receive a lower quality service than they might if there was no CAB regulation. Id., at 54.
78. Id. at 55-56.
79. Id. at 53.
80. The effect of safety regulations on motor vehicles, not discussed in this paper, is quite similar to air pollution control in its encouragement of technological innovation.
85. 84 Stat. 1676.
The Clean Air Amendments require a 90 percent reduction\textsuperscript{86} in carbon monoxide and hydrocarbon emissions for all new cars sold in the 1975 model year and thereafter. There is a similar 90 percent reduction requirement for nitrogen oxides which becomes effective in 1976. To prevent deterioration of a vehicle's air pollution control capacity, the manufacturer must warranty that the vehicle will comply with the 1975 standards for five years or 50,000 miles, whichever occurs first.\textsuperscript{87} to insure that this warranty is complied with, the law requires the states to inspect vehicles if non-compliance could have an adverse effect on air quality in the state.\textsuperscript{88}

While there seems to be little question that the technology to meet these standards does not currently exist, the demands of the standards will result in technological breakthroughs and innovations. A multitude of different technologies are being tested which utilize different engines, components, and fuels. Or if the law is enforced, but automobile manufacturers cannot comply, sufficient demand for other vehicles may be generated that they can adequately fill transportation needs.\textsuperscript{89} In any event, it is apparent that the effect of the law will be to accelerate technological innovation.

While there is little awareness of the general public about the transportation controls requirement in the Clean Air Amendments,\textsuperscript{90} they will probably have a more pronounced effect on the lives of Americans than the motor vehicle emission standards discussed above.\textsuperscript{91} The law requires states to utilize land use and transportation controls when necessary to attain ambient air quality standards.\textsuperscript{92} This is expected to occur in about 60 major cities in the country.\textsuperscript{93} In these cities, controls such as banning or restricting traffic, motor vehicle inspection and retrofit, mass transit

\begin{itemize}
\item \textsuperscript{86} The 1970 model year standards are used as a base. \textit{Id.}, §202(b)(1).
\item \textsuperscript{87} \textit{Id.}, §202(d).
\item \textsuperscript{88} \textit{Id.}, §110(a)(2)(G).
\item \textsuperscript{89} For example, an electric vehicle that can supply the power and endurance demands of the urban motorist is available for about $7000. With mass production, the costs might be considerably lower. See S. Kalish, \textit{The Potential Market for On-the-Road Electric Vehicles} (1971).
\item \textsuperscript{90} 84 Stat. 1676 (1970), §110(a)(1)(B).
\item \textsuperscript{91} For example, controls will affect over 300,000 residents of Manhattan and the millions who travel into the area each day. “What Hath Henry Ford Wrought,” \textit{Car & Driver} 26 (Oct. 1971).
\item \textsuperscript{92} This could occur because areas in some cities have such a high volume of traffic that a 90 percent reduction in emissions per vehicle is not sufficient to reach the standards.
\item \textsuperscript{93} J. Middleton, Deputy Ass’t Administrator for Air Programs, Environmental Protection Agency, 2 \textit{Nat. J.} 2187 (1971).
\end{itemize}
improvements, land use controls, parking fees, and a multitude of other controls are being contemplated. 94

Changes in transportation patterns as broad as these should have significant effect on transportation innovation. These changes provide enormous encouragement of new mass transit systems, such as the new subway systems or dial-a-bus, and new technological innovations related to transportation, such as automatic fare collection. New vehicle technologies will be required or at least encouraged, such as propane, natural gas, or electric powered vehicles. Traffic flow improvements 95 will introduce computerized and other new flow control technologies. Other effects might be increased communication development because of restricted mobility, development of high-speed, mechanized parking systems, and rapid development of emission measuring technology. Many of the effects of the implementation of transportation controls are not now known, 96 but it is expected that technological innovation in areas such as mass transit improvements will be strongly encouraged.

IV. Conclusions

The Federal Government's efforts to encourage technological innovation have almost exclusively focused upon policies that directly subsidize research and development. Unfortunately, the Federal Government has neglected the subtler effects that its other policies have upon technological innovation. Its antitrust, tax, procurement, and even to a certain extent its patent policies do not reflect anything other than a neutral attitude towards innovation.

For the most part, federal regulation of transportation has focused upon transportation innovation. The impact of this neglect has been largely neutral since innovation in trucking and water transport has been

94. For example, the District of Columbia is proposing mandatory emission inspection of all vehicles registered in the District, banning parking on downtown streets and main thoroughfares, requiring conversion of fleet vehicles to natural gas, banning on-street truck deliveries during the day, banning parking anywhere in the District during the day by Maryland and Virginia residents, and making standing illegal anywhere in the city. In addition, the District has proposed inspecting all vehicles entering the city unless Maryland and Virginia agree to inspect their vehicles. See District of Columbia, Proposed Implementation Plan (1971).


96. See Institute of Public Administration, The Effect of Different Transportation Controls on Urban Air Pollution (1971).
basically unaffected, with railroad innovation discouraged and airline innovation encouraged. The only areas where the Federal Government has actively encouraged transportation innovation are in areas such as air pollution control and safety restraints, where current technology has adverse effects on consumers.

If the Federal Government is interested in fostering technological innovation in transportation or other aspects of our lives, then it should actively involve itself in utilizing all of its policies towards that goal. Rather than relying solely on pouring money into research and development, the government should also use its other powers to hasten technological innovation.
TRANSPORTATION AND STAGGERED WORK HOURS

BY

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Urban transportation systems in cities across the country are faced with the need for newer and better solutions to the crushing problems of peak hour loads. But planners and transportation experts have learned that more and more transportation facilities are not always the best response to that need. Sometimes, they are too expensive and, sometimes, in terms of the way they are used throughout the 24-hour day, they are not the most efficient response to the peak hour travel demand. As Secretary Volpe has said, “we must look at the plight or agony of the commuter. There is no rational reason for his daily travels to or from work to be periods of tension, waste and frustration.”

With greater frequency, we are trying to find better ways, more efficient ways to use the transportation facilities which are already available to us. And at the same time, we are looking at non-capital improvements which might give us more transportation service for our transportation dollar.

One technique, one such non-capital improvement is the concept of staggered work hours.

I will try to provide an overview of the area of staggering work hours, and mention how the concept is accepted by the Federal Government.

1. The Context

Staggering work hours is one of a variety of measures for alleviating today’s most serious transportation problem, that of peak hour congestion. Urban traffic is highly concentrated not only in time but also according to route and direction. The travel demand resulting from workers moving between the suburbs and the central business districts during two 2-hour portions of the day has overcrowded transportation facilities in most large urban areas of this country.

The traditional approach to this problem has been to plan large new transportation systems to meet peak hour demand. The existence of large federal grant programs in the transportation area has helped to create or reinforce this approach. However, large new transportation projects are unsatisfactory for solving peak hour congestion for several reasons:

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1. The lead time between decision and implementation is quite long.
2. Large new facilities are extremely expensive both in dollar and environment terms. This is particularly true for construction of new urban freeways.
3. Such freeways are unlikely to continue to be built in many urban areas because of the nationwide revolt against them.
4. New facilities become congested due to induced traffic and new development stimulated by the facility. As economist Anthony Downs states, “peak-hour traffic congestion rises to meet maximum capacity”.
5. Investment in facilities to meet peak hour load is very uneconomic, since they are underutilized for most of the day.

An alternative approach is the use of a variety of low cost methods to utilize existing facilities more efficiently. Alternatives fall into two categories. The first includes ways to accommodate the peak hour demand more efficiently, and includes the use of reversible lanes, inducements to form car pools, exclusive bus lanes and pricing mechanisms such as congestion tolls or increased parking charges. The second category encompasses ways of modifying or spreading peak hour traffic, including the staggering of work hours. It is the latter category which we are here to discuss tonight.

In this context, staggering work hours can be viewed as one low cost means of traffic control which is designed to spread peak hour travel demand. However, it is important to also take a broader approach. Since one means of staggering work hours is to institute a shorter work week, 4 days or 3 days, it should also be regarded as catalyst for producing changes in behavior patterns and even in life styles in this country. Ultimately it leads to increased leisure time, country/city living, second homes, secondary and part time employment. Each of these changes in life styles have important impacts on transportation demand.

II. Approaches to Spreading Travel Peaks

A. Shift of Nonessential Traffic

One approach to spreading travel peaks is to shift non-commuter peak hour travel to off peak hours. Included are downtown shoppers, sports events, truck movements and urban goods deliveries, and scheduled arrivals and departures by air and rail. Such shifts can be facilitated through the use of incentives, direct regulation, or pricing mechanisms. These devices are being carefully analyzed by transportation planners.
B. Staggering Work Hours—General

Another technique for peak spreading includes staggering of work hours, by either formal or informal means. The more uniform spread of peak travel demand produces a more efficient use of existing transportation capacity.

C. Formal Staggering

On a formal basis, various business individually or collectively can stagger the starting and finishing times of their employees. This is the traditional approach and has been attempted with varying degrees of success in Washington, London, New York, Atlanta and other cities.

However, in general, this approach is quite low in cost and offers significant potential, at least theoretically, for reducing peaking. The TRANS model run by the U.S. Department of Transportation in conjunction with the 1972 Highway Needs Study looked at the effect of staggered work hours. It indicated that there would be a 12% reduction in highway investment needs for 1970-1990 in urban areas of over 1 million population, if all work travel within the morning and afternoon peak hours were distributed uniformly throughout the peak period. In this connection, the results reported to us from the Lower Manhattan experiment indicate a general reduction in crowding and congestion.

Passenger counts on the Port Authority Trans-Hudson rapid transit line showed a 13% reduction in the peak, with the difference being spread over the previous hour. A reduction of 6% was also found at New York transit stations in the area during the morning peak. More dramatic reductions in building and elevator congestion were also reported. This project was implemented at reported cost of around $50,000.

In general, the following kinds of results are likely to occur, depending on the size of the project and the degree of cooperation:

—A reduction in congestion of transportation facilities, roads, elevators, and perhaps restaurant facilities and stores, if lunch hours are staggered as well.
—A reduction in commuting time. This is less of a potential for a fixed rail facility but offers greater possibility where access is principally by road.
—Increased worker efficiency, if the workers see measurable benefit from the new working arrangements.
—Reduction in pollution, resulting from the cutting down of stop and go driving.

These results would vary, of course, based on the magnitude of the
shift. A single firm may stagger work hours for its employees and have no effect on overall congestion, while a project involving a significant portion of the downtown area has a great deal of potential.

However, since urban life is interrelated, the following potentially troublesome aspects must also be examined in connection with a staggered work hour attempt:

—Staggering may make the formation of car pools difficult or impossible.
—The staggering must be carefully coordinated with mass transit schedules. Such schedules are difficult to change and a change is fairly expensive for the transit operator.
—If road congestion is reduced, employees may shift from mass transit to the automobiles.
—Inter-action between firms during the early and late parts of the work day will be reduced.
—The effect on all parts of the transportation system must be analyzed. For example, even if transit stations in Lower Manhattan were less congested, what was the effect on transit stations in other areas? Were new peaks created?

Institutional inflexibility seems to be the major impediment to implementing a comprehensive program of staggered work hours. Most organizations in the central business districts are autonomous. Lack of cooperation among firms and employees seem to be responsible for the lack of success of staggering in London and Atlanta. In this regard, the New York Times of April 6 reported in dispute in Flemington, New Jersey over a 3-day work week at the Lipton plant. One of the major sources of concern seemed to center on the “highhanded” manner in which the program was imposed on the employees without their consultation. This story highlights the need to work closely with all affected parties both employers and employees in implementing any major new programs.

In London, staggered hours were instituted in 1959 for 145 firms. However, these firms were scattered over the central business district, rather than being concentrated in one area as in the case of Lower Manhattan area project. Twenty-one thousand employees participated but this was a small percentage of the 1,000,000 daily commuters in London. The project was organized by the British Ministry of Transport and not by a smaller local merchants' group. The Ministry met much opposition to changing work hours. As a result, all firms expressing interest were made part of the project, despite their diverse geographic locations. Seventy-two percent of the firms approached by the government group refused to participate for the following reasons: loss of business efficiency; contacts
with customers, and business associates would be limited; and the need
to maintain business hours and maximize periods for intercontinental
communications. Twenty-three percent of the firms also stressed staffing
problems. Firms felt they could not risk losing present employees nor
impede further recruitment by adopting what employees regard as unat-
tractive hours.

For London it is quite possible that no substantial change in processing
efficiency resulted from the changes in hours that were made. Not only
were the involved firms spread throughout the city, but the hour changes
were very small, usually fifteen minutes rather than the thirty minute
changes that prevailed in New York City.

Let me say a few words about the experience of the Federal Govern-
ment in Washington, D.C. to stagger work hours. Prior to 1941, over 95%
of all federal employees in Washington began work between 8:30 and
9:00. The Bureau of the Budget devised a staggered work hour plan in
1941 for federal employees in an attempt to relieve traffic congestion. The
plan, which staggles arrival times from 7:00 to 9:00 in 15-minute inter-
vals, has been in operation since the mid 1940's. However, 1963 study
revealed that despite the plan, over half (57.4%) of the federal employees
arrived between 8:30 and 9:00. A remedial plan suggested by the 1963 was
not adopted, but most new federal buildings constructed since that time
have experimented with staggered hours.

The two most recent examples of federal attempts have been the South-
west Mall employment area where the Department of Transportation
building happens to be located, and Crystal City in Virginia just outside
of Washington. Both projects had three advantages. First, the Federal
Government was the major employer in both locations. Second, the plans
were tied with New York locations which decreased employee resistance
since new travel patterns were required anyway. Third, a single entity, the
Government Services Administration made all the moving and staggering
arrangements. GSA very carefully polled employee attitudes to determine
preferences, and arranged the work hours to match the preferences as
much as possible. GSA worked closely with transit companies to accom-
modate the revised work hours and the New York locations. Unfortu-
ately, no attempt was made to record the actual effect of the staggering
plan. Since both projects involved new employment locations, "before"
data was meaningless. No specific data is available on time savings,
volume processed, or costs. However, the plan seems to be operating
quite efficiently and there seems to be a high degree of employee accept-
ance.

Regarding institutional constraints, and city or area considering work
scheduling changes should pose these key policy questions in evaluating the adoption of work hour changes in their area:

1. Is there a single, large employer, e.g., the Federal Government, or a strong merchants' association within a specific portion of the central business district, favourable to the plan?

2. Does the proposed plan concentrate on a specific work area or portion of the central business district, or does it apply instead to the whole city or region?

3. Is it likely that public transit will cooperate in making any routing or scheduling additions or changes necessary? The plan may work best in areas where transit is fairly solvent or is publicly controlled.

4. Is the area involved one which has a concentration of administrative offices or an area of offices or stores depending heavily on consumer contact?

5. Is the area one in which most offices are to be newly opened, so that employee scheduling and arrangements are disrupted anyway?

6. Is the plan one which union officials will accept? Note that unions generally oppose longer daily hours as well as a reduced number of days per week in which the days off are not consecutive.

In any further study of staggered work hours, an important question is the extent to which hours can be changed without interfering with the functions of the affected businesses or public agencies. Without this data, campaigns to persuade reluctant employers and employees would be premature. More investigation into employer, union, and employee attitudes on the effect of changes in hours on contracts, day-to-day transportation arrangements and office procedures is needed.

D. Gliding Work Hours

An informal approach to staggering work hours is being tried in Germany. Each employee chooses his own work day between the hours of 7 a.m. and 7 p.m. This method called "Gleitende Arbeitszeit", or, Gleitzzeit (gliding work time), is currently in effect in the Lufthansa headquarters office in Cologne and in the Boelkow aircraft plant in Munich. This approach has the double advantage of reducing congestion and providing a freedom of choice for employees.

Under this approach, workers can adjust their work time according to their own preferences. Punching a time clock is required to verify the time actually worked. Varying degrees of flexibility can be incorporated. The
least flexible is to require an 8-hour day, 40-hour week every week. Variations would include requiring a 40-hour week, with the number and length of work days left to the employee; or to require a monthly total, with no daily or weekly requirements. These latter alternatives would provide significant new freedom to the worker and must be viewed for its impact on life styles and behavior. New life styles are possible. It would have a significant impact on recreational resources, and could significantly reduce weekend congestion, which is even more serious in some areas than workday peaks.

The possible disadvantages of Gleitzeit include the following:

—Although peak hours are reduced, they may vary significantly from day to day, depending on individual preferences.
—Interoffice communication is affected even more than through other formal staggering arrangements. Under formal hours, the availability of people is predictable; it would not be in the floating hours under Gleitzeit.
—Labor laws and union work agreements may restrict the flexibility possible.

The advantages would include:

—Reduced peak hour congestion, but not necessarily on a predictable basis.
—Significant flexibility. Recreation, other business activities, and medical appointments could be more easily accommodated.
—More opportunity for women with children to arrange their work hours to accommodate school hours, day care centers, baby sitters, or availability of the husband to care for the children.

E. Changes in The Work Week

A third approach to peak spreading is adoption of a 3 or 4 day work week at one end of the scale and spreading work over 5 or 6 days at the other end. By mid 1971, about 600 firms offered some form of the four-day work week for at least part of their employees. Days off either float or are lumped into long weekends. There are indications that an expansion of this approach is likely to continue. Already, Congress has rescheduled several national holidays so that they fall on Mondays, thereby creating four day work weeks. The New York Times reports that more than 1,000 companies across the country are close to instituting a four day work week. New Jersey presently has 65 companies using the shortened schedule, New York 34 and Connecticut 31.

The impetus for 4 day work weeks has come from management. The
results are overwhelmingly favorable, namely:

—Greater productivity and lower unit cost,
—Improved morale, and
—Reduced absenteeism, tardiness, and turnover.

For manufacturing plants, the higher output is attributed to the reduction in starting and closing down relative to operating time, and the tailoring of work schedules to fit the time required for completing a specific operation rather than to a standard work week. For businesses, increased productivity is due to fewer and shorter meetings, fewer non-productive hours, better pre-planning of agendas and improved workload planning.

From the worker’s point of view, the four-day week is appealing for the following reasons:

—An increase in his usable leisure time.
—A decrease in the number of commuting trips, and hence in the cost and the amount of time spent commuting.
—Reduction in other costs associated with commuting, e.g., transit fares, restaurant lunches, and child care.

In terms of the transportation system itself, the four-day week provides a means of reducing congestion and improving transportation service without additional investment in equipment and facilities. If all workers in an urban area worked four ten-hour days every week, the number of daily commuting trips would be reduced by a fifth if employment were distributed evenly over five days, Monday-Friday; and would be reduced by one-third if employment were distributed for six days, Monday-Saturday. Even if only one-third of all employees participated in a four-day week, it would result in substantial economies from their staggering during the four days when 100% of the labor force were at work, and some reduction in the number of trips on the fifty day during the peak, as a consequence of those not working.

Analysis of this latter schedule for Los Angeles indicates a potential reduction for the Los Angeles central business district of 8% in the traffic peak during the first four days and 15% during the fifth day. In the former schedule with all employees on a four-day work week uniformly spread over 5 days, the reduction would amount to 25%.

The increased leisure time resulting from three day weekends could mean a different life style for many people. There would be increased demand for second homes in the country, a need for more recreational resources, and second jobs. Present weekend peaks would be reduced.
Certain adverse consequences of a four-day work week must be anticipated:

—More weekend travel may result in a much higher number of automobile accidents than we have presently. Current injury accident rates are about 30% higher on weekends than on week days. Also, three days weekends have a much higher proportionate accident rate than two-day weekends.
—Mid-week peaks, Tuesday through Thursday, would not necessarily be reduced.
—Since people would be working 10-hour days, a major rescheduling of transit facilities would be necessary. This is difficult to accomplish and expensive for the transit operator.
—Since each person’s work week would be reduced by one day, the total revenue of mass transit companies could fall significantly. Opposition is likely from labor unions who oppose lengthening the 8-hour work day.
—Some legislative changes would be necessary, since overtime rates are often required for work days longer than 8 hours.
—Worker productivity may fall as the result of a lengthened work day. The efficiency tests used to justify a reduction of the work day from 10 to 8 hours indicated that there would be no appreciable loss in output due to increased efficiency during the shorter day. Now we must see the effect on productivity of lengthening the work day again. The Lipton plant experiment in New Jersey created employee opposition to the 12 hour shifts required, according to the New York Times. The issue of employee efficiency and acceptability remains to be explored farther.

III. Federal Policy

I should like to comment on the policy of the U.S. Department of Transportation regarding staggering work hours. In recent years, the Department of Transportation has begun to place high priority on a variety of low capital improvements to existing transportation systems. These techniques offer extremely high rewards in increased capacity, particularly as compared to the investment required, and they have a relatively short lead time. Exclusive bus lanes in particular have been tried in a number of cities and have proved to be highly successful. Staggering work hours is an important element in this package of low cost alternatives. Secretary Volpe and Federal Highway Administrator Turner have both emphasized the importance of staggered work hours on a number of occasions. I have already mentioned the work of the Federal
Government in implementing staggered work hours for its own employees.

Unfortunately, there is no single source of federal funds, or of managing funds on behalf of a staggered work hours program, but there are several areas where funds might possibly be utilized. The traffic studies and traffic operations aspects of such a program may be eligible within the TOPIC's program funded by the Federal Highway Administration and the state highway departments. Application could be made for Urban Mass Transportation Administration planning funds to determine mass transit needs and to facilitate necessary rescheduling. In addition, the Department of Labor may have funds available for studies of personnel.

I also want to mention a proposal now before the Congress. As most of you are aware, Secretary Volpe has suggested the broadening of the use of the Highway Trust Fund in the 1972 Federal-Aid Highway Act. His proposal would create a Single Urban Fund for expenditure in large urban areas on any highway or mass transportation improvement. Forty percent of this money would be passed through directly to metropolitan areas. This program would provide broad new flexibility to urban areas to define their own transportation needs and make their own decisions of appropriate transportation investment. If local areas wished to emphasize low capital improvements to existing transportation facilities, this should provide the needed resources. Therefore, I commend Secretary Volpe's proposals for your review and suggest that they would give local areas significant new opportunities to implement schemes such as these discussed.

IV. Conclusion

In conclusion, let me reemphasize that staggering work hours, as one of a variety of low capital alternatives, offers the potential of substantial reductions in peak hour commuter travel and improving travel service with little capital cost for transportation facilities.

Institutional inflexibility must be overcome, and the needs of employers and employees must be carefully considered to implement a successful program. However, those programs presently underway show favorable employer and employee response without a loss in business efficiency.

Therefore, all signs point to go in this area.
THE CASE FOR HIGHWAY PLANNING

F.C. Turner*

Unfortunately, these days, much criticism is being levelled from all directions at highway planning—or rather, what is alleged to be the lack of it. I say "unfortunately"—because these charges simply are not true.

Still, it is a fact that in many of the legal actions being pressed in courts around the Nation it is charged that there have been inadequacies in highway planning. Then, too, we hear it asserted that highway planning goes forward without accompanying land-use planning or that it is done in a vacuum, without regard to other modes. There are many more similar charges and I am sure you are familiar with them.

However, these critics are either misinformed—or they are unformed. To put it bluntly, they simply do not know what they are talking about. It is because of these misconceptions and ill-conceived notions—and because the subject is so important—that I wish to discuss the entire subject of highway planning.

The transportation land-use planning process as we know it today is probably the most outstanding and successful of all planning programs, and its roots are firmly based in the longest continuing intergovernmental planning program in our history. I refer to the Statewide highway planning program established 37 years ago by the Hayden-Cartwright Act of 1934. That Act authorized the use of "1-1/2 percent funds" for physical and economic investigations required for developing a sound formulation for the planning of future highway projects and programs.

The highway planning process organized by the State highway departments, in cooperation with the FHWA, then called the Bureau of Public Roads, led to the physical inventory and measuring of existing highway systems and the traffic services which they rendered. These inventories and measurements gave us for the first time in history reliable data about our highway systems and provided us at the same time with related statistics on highway expenditures and revenues in every State, and collectively as a Nation. Without such fundamental information, we would have been unable to provide the necessary factual inputs to the national study leading to the famous 1939 report to Congress entitled, "Toll Roads and Free Roads."

This study, which was begun in 1937, by direction of Congress to Bureau of Public Roads Commissioner Thomas H. MacDonald, con-

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* Federal Highway Administrator, Department of Transportation. This paper is based upon an address delivered by Mr. Turner before the Annual Convention of the American Association of State Highway Officials on December 6, 1971.
cluded that a national system of major highways could not be financed through tolls alone, although certain sections could be so financed. It recommended instead that a system be constructed to comprise "direct interregional highways, with all necessary connections through and around cities." This single statement, supported by the necessary facts, was the forerunner of today's great Interstate System. Your attention particularly is called to the words "through and around cities." More than 30 years ago, the highway planners of this Nation recognized the transportation needs of our cities and developed a program to aid in its solution.

That report of a generation and a half ago emphasized that "the location and design of transcity connecting streets, express highways and belt lines or bypasses is a matter that requires particular study of the physical and traffic conditions peculiar to each city." And although it was written 32 years ago—it is equally applicable today. It was almost prophetic, in fact, in this and other of its findings. It stated: "The facts derived from the highway planning surveys were especially useful in disclosing the general characteristics of highway traffic, which have an important bearing upon the estimation of the amount of traffic that would probably use the proposed super-highways . . ." and "In fullness and in accuracy the facts supplied for consideration in the investigation (by the highway planning surveys) are unmatched by the information elsewhere or to any person available. In the absence of these facts, this report would be far less definite in its conclusions, and less dependable in its authority." That last statement points up the quality of those early planning surveys—a quality which has been present in all subsequent planning for highways and transportation carried on by the States and the Federal Highway Administration.

Recognizing the feasibility of the recommendations contained in this 1939 Toll Roads and Free Roads report, President Roosevelt in April, 1941, appointed the "National Interregional Highway Committee" to investigate the need for a limited system of national highways. Serving on the Committee were three men from the highway field and two from the city planning field. Rounding out the Committee were the Chairman of the National Resources Planning Board, and the former Governor of Alabama. The Committee elected Commissioner MacDonald as Chairman, and H.S. Fairbank, both of the Bureau of Public Roads, as Secretary. The composition of the Committee clearly shows the importance attached even then to the city and its problems, and to a broad planning approach in developing a framework for national highway development.

The system finally selected by the Committee as best meeting the requirements laid down by the President was reported to the Congress on
January 12, 1944, and the designation of the System, identified as the National System of Interstate and Defense Highways, was subsequently authorized as Section 7 in the Federal-Aid Highway Act of that year. But it was not until passage of the Federal-Aid Highway Act of 1956 and the Federal-Aid Revenue Act of 1956 that construction of the System actually began. These enlightened words from the “Interregional Highways” report of 27 years ago strike a familiar note today.

“By careful and complete functional studies of the city organism, it may be possible to devise a rational plan of future land-use that will assign more or less specific areas to each of the principal classes of use—residential, cultural, business, industrial, etc. Having planned such rational distributions of land-use, it may be possible to obtain the public consent necessary to the establishment of legal controls, land authorities, and other devices and machinery that will assure an actual development over a period of years in conformity with the plan. In such cases, the planning of city streets, the interregional routes and other expressways, and all other urban facilities would take the forms and locations necessary to serve the intended land-uses, and these facilities would be provided in essential time relationship to the development of the entire plan, and in a manner to bring about its undistorted realization.”

There were many other major historical landmarks of the highway planning process over the years. Certainly one of the most significant was the Federal-Aid Highway Act of 1962, with its transportation planning requirements for purposes of program approvals of proposed Federal-aid highway projects in urban areas above 50,000 population. Section 9 of the Act, now known as Section 134, Title 23, gave national recognition to the urgency for resolving problems relating to the planning and location of highway and transportation facilities in and around the larger urban areas. Simply stated, the planning requirements called for the development of transportation systems, embracing various modes of transportation in a manner that will serve the State and local communities effectively and efficiently, and specified that proposed projects must be based on a continuing comprehensive transportation planning process carried on cooperatively by the States and local communities.

This highway history has been recited because I believe it is important to stress the fact that the planning progress and highway officials are not new acquaintances—they are old friends that go back many years. They have grown up together. Despite these facts, however, we have oft-times been accused of developing our highway plans without regard to land-use planning. This charge simply has no validity. Even the 1939 “Toll Roads
and Free Roads” report which first recommended the Interstate System was based on land-use considerations, as earlier noted.

The land-use plan is a stated requirement for the transportation planning process carried out under the requirements of the 1962 Highway Act. This does not mean that highway departments must actually do the land-use planning within their own staffs, but that they participate with the urban area’s own land use planning body and develop highway needs based thereon. Since our transportation planning process emphasizes the necessity for land-use planning to such a high degree, it is worth some elaboration on how the process works.

The process of preparing a land-use plan usually begins with the preparation of a Development Guide by a multi-disciplined team of planners, demographers, economists, and sociologists. The Development Guide, when adopted by the Policy Board, becomes an official statement by the community—not the highway officials, Federal or State—of the principles and policies desired to be followed in guiding the future growth of that metropolitan area. A more popular term for the Development Guide is “Goals and Objectives.” It also is the policy guide for developing the detailed land-use plan. But before detailed location of future land-uses can begin, economic and population forecasts must independently be made for the metropolitan area and balanced against each other so that population and employment are not out of step with each other. Again, this requires the talents of many disciplines outside of, and additional to those in the highway engineering field.

The next step in the process is to locate on the ground each future land-use: i.e., residential, commercial, industrial, either on vacant or redevelopable land. The location or distribution of these land-uses depends upon the accessibility offered by the transportation system, the zoning policies of the local governments, the recognition of reserved areas such as historic sites, parks, open space, wildlife refuges, etc. Once more, this is a process in which we utilize highway trained people from a variety of disciplines.

The end result becomes a land-use plan that describes in numeric terms the future pattern of densities of development by type throughout the metropolitan area, which permits control totals of population, automobile ownership, income, households, etc., to be developed. It is within the constraints of these control totals that the calculation of travel demand can begin—and only then. We accept no other procedures of reckoning travel growth other than those derived from this kind of a land-use plan. In fact, the transportation planning requirements formalized into law by the 1962 Act have contributed heavily to the evolution of land-use planning from a description by bright-colored maps to quantified numerical equations and models portraying the expected analytical dimensions of
the metropolitan area for use with the largest and most sophisticated computer machines of today's world.

The Federal Highway Administration and the highway departments have jointly developed the analytical tools to transform a land-use plan into identifiable travel patterns, related to the income, auto ownership, population, and social characteristics of each area within the community as derived from the land-use plan. The number of daily trips of all kinds for each household is then calculated, area by area, without regard to any mode. These trips are then connected to work places, recreation places, and so on, to build up the complete picture of travel requirements by the residents of the metropolitan area at periodic intervals into the future, generally 20 years ahead. The proportion expected to use mass transit is then calculated by examining each trip as if it were to be taken by auto and then by transit, the costs and time of each being considered. This is the "modal split" step. Trips are then traced through the transit or highway network as appropriate along minimum time paths from origin to destination. It is only at this point that the highway portion of total transportation needs is determined, and it is significant that the other modal needs are determined simultaneously as an integral part of the same study operation. Many alternative transportation systems are then explored and the costs and benefits of each calculated to permit the local Policy Board to decide which systems best serve the policies of the official Development Guide and furnish the lowest possible transportation costs and most desirable service. The one adopted then becomes official highway and transit plan for that urban area.

After determining what highway system which will best serve the transportation demands of the planned land-use development in conjunction with public transportation service, we then move to a determination of the priorities in the development of that highway system. In the project planning stage, those segments of the system which have high priority get immediate attention of greater detail than was possible in the analysis of broad alternatives in the multimodal systems planning stage. For every highway project, we study the 23 items spelled out in PPM 20-8 back in 1969 which cover the gamut in the environmental scene from esthetics, conservation, and natural resources to replacement housing, education, and fire protection. It even includes the element of no highway project at all. PPM 20-8 also initiated the two-hearing procedure to cover location and design separately. These public hearings have sometimes been criticized by anti-highway groups as so much window dressing, but this general charge is based on ignorance of the actual planning process, and the record tells a different story altogether.

State highway departments today are making material changes in their highway plans as a result of comments made at public hearings. In a
survey of all States during the period January 1, 1966, to 1968, it was reported that 1,606 public hearings were held. There were substantive suggestions received at 264 of these, and as a consequence, 162 significant plan revisions were made. In a more recent survey in 1971, in three eastern regions of the Federal Highway Administration, numerous examples of plan changes were found as a result of presentations at the public hearings stage.

Highway planning has opened up new avenues for imaginative urban and rural development opportunities with the multiple use of right-of-way and joint development concepts. These concepts are no longer abstractions but very much part of the project planning process in cases where such possibilities exist. Projects which have been developed are to be found in all States and involve such diverse facilities as parks, camp sites, conservation areas, lakes, parking areas, medical centers, libraries, museums, and even a battleship memorial. The careful step-by-step planning of systems and projects has provided the assurance that all of the environmental impacts, both social and physical, have been weighed in the balance at the proper stage during development of a highway project before ground is broken for construction.

Turning now to our most current actions in the planning area, we have just recently established within the Department of Transportation an intermodal coordinating arrangement described as the “Program for Improved Intermodal Planning in the Field.” Secretary of Transportation John A. Volpe, in a letter of August 5, 1971 to each of the Modal Administrators, spelled out the organization and goals of this program, which puts together as a working coordination group the Secretary’s Representative and the planning representatives from FAA, FHWA, FRA, and UMTA in each of our ten regions. We expect to achieve a further improved intermodal planning at the local level as a result of this coordination at the Federal level where our programs impinge on each other and the community. But more than just planning, we will achieve coordinated action in the development of transportation facilities. Now that our sister Department of Transportation agency, UMTA, has money out of the 1970 legislation for program implementation, multimodal planning will assume a new dimension and permit program implementation of planning decisions.

As a second step, we have also moved forward in the area of strengthening the 3C process in urbanized areas by issuing IM 50-3-71 which requires that the planning organization, the areawide policy board, and the planning process be individually certified annually before any Federal-aid highway projects are approved. This is really no different than the 1916 Highway Act which required strong State highway departments as a prerequisite to participation in Federal aid—and which pro-
duced strong State highway departments. IM 50-3-71 is expected to be similarly beneficial in improving areawide decision making on urban plans and projects.

Third, we have made progress in the very difficult area of citizen participation. We now have a better understanding of the problems of apathy in the absence of conflict and problems of negativism in the presence of conflict. We have met on three separate occasions with the Citizens Advisory Committee established by Secretary Volpe. We asked this Committee to examine FHWA procedures and practices in the area of citizen involvement. Although we do not know how the Committee's final report will read, the initial draft stressed that "citizen participation" does not mean "citizen decision making" outside the governmental process. It also stressed the need for citizen education, more trial and demonstration programs involving citizen participation, and the multidisciplinary approach. We intend to follow through and build upon this Committee's advice.

These are some of the things that we have been doing to strengthen the transportation planning process and to make it truly an overall intermodal local community planning operation. Although jointly we have achieved a great deal over the years and created the most sophisticated planning process existing in any public function, there is still more to be done. We must do more to keep pace with shifting public values. The continuing phase of the planning process in the future may be different from the years of the sixties and the fifties. The technical processes of data collection, forecasting, and estimating traffic volumes for design purposes will certainly be improved and enlarged, but their analysis to aid in improved public decision making must also be improved.

The 1970 Highway Act placed increased emphasis on local initiative for the new Urban System. This further underscores the need for viable metropolitan decision making bodies. I am convinced that we must take the initiative and exert a leadership role to assist the trend toward creation of State legislated bodies in the larger metropolitan areas where local government is fragmented and there are multiple Federal programs all requiring areawide processes. These legislated bodies should have the following characteristics as a minimum if they are to be viable:

1. A policy board consisting of elected and appointed officials with appropriate State representation.
2. Co-terminus boundaries for all planned functions.
3. The authority to do land-use planning at the metropolitan scale.
4. The authority to assume project responsibility such as route selection, priority setting, and programming.
5. The authority to do mass transit system planning.
6. The authority to make commitments for implementation of regional scale projects on behalf of the entire urbanized area and to be responsible to the public for its decisions.

Funds for planning support are in very short supply. We should be sure that we are making the most efficient use that we can of the 1-1/2 percent planning and research funds. We should continually reexamine our programming practices. Are we devoting the proper share to urban planning support when considered from the standpoint of urban versus rural population and travel, size of construction program, etc? Are we allocating the funds devoted to urban size, complexity of problems and the size of the highway program? Continuing stable support to metropolitan bodies will be a critical determinant of their viability.

As these bodies are granted more authority by State legislatures, they can be expected to assume more of a role in location and design studies, working with counties, municipalities and citizens' groups as appropriate. Only in this way will they be able to exercise State-granted authority to make commitments for implementation of projects in behalf of the entire urbanized area.

Environmental impact studies are being made an integral part of the comprehensive planning process with the areawide agency working closely with counties and municipalities as project development moves through the system, corridor, location, and design planning phases. Most of the environmental considerations must be dealt with early in the planning process to insure that these objectives are consistent with other areawide development goals and objectives, of which good transportation is also an important one.

We must become more active in transit planning. As you know, the 1970 Highway Act required that a study be made of highway-related mass transit needs. The study is progressing well and we will be able to meet the very tight deadline of next January. Although I cannot give you any preliminary findings, I want to share with you some of the things we have learned.

Sixty-eight percent of all mass transit usage is by bus and therefore it is a highway matter. Bus patronage has been generally declining. Fares are climbing beyond the limits of practicality, and bankruptcy of bus companies is common. The prospects of other substitutable modes is even more remote in the acceptable future planning target dates.

With the advent of the exclusive right-of-way express bus concept, it now becomes possible through the highway program to provide a higher level of transit service to the American public than has ever existed before. With good line-haul and distribution characteristics UMTA can
provide the buses and we at FHWA, working with you in the State highway departments, can provide the busways.

We have made great strides with UMTA in arriving at a common view of the planning process. What needs to be done now is to get this new concept of transit planning incorporated into the on-going planning within the larger metropolitan areas. The exclusive right-of-way bus concept is compatible with the systems planning approach.

Small segments of the system can be built and progressively placed into operation without waiting many years for a total system to be built before any portion can be made usable. Massive local funding efforts can be avoided, along with the risk that completed facilities may languish or be abandoned. The result is a superior level of transit service.

We have come a long way and have done a good job in planning since the beginnings in the late 20's. But we still have a long way to go, and we must constantly strive to keep abreast—or ahead—or rapidly changing public values. The things I've mentioned herein are part of this effort. There is no need as some are suggesting to tear down the structure built thus far and start over anew. Indeed to do so, is to waste our already inadequate resources.

Neither can we afford to separate the planning process from the program process as some are proposing. Proper planning cannot be done in the vacuum which divorcement from constantly changing program activities would create. There is feedback between these twin responsibilities of the manager which cannot be separated. There is an imperative requirement for coordination of highway planning with other program planning, but this can be adequately achieved within the program operational area without separating all planning out to itself to be made a function part. Planning for planning's sake alone is something we cannot afford in this country. Constantly changing technologies in the construction part of our highway program make it possible today to build something that ten years ago was impossible, and this new-found capability in construction makes it possible to revise our yardsticks in the planning department. Such illustrations exist through the whole spectrum and so planning can no more be separated from construction, than construction can be done without regard to and as a result of appropriate planning.

Managing these program execution and planning functions in coordination with each other and within the whole big list of public goals and objectives which change from day to day is indeed a large order, but I believe we're doing it about as well as anyone can, and that the public—both as individuals and as a group—is the beneficiary.
BOOK REVIEW


"Before there was a Federal Aviation Administration, there was a Federal Aviation Agency, and before there was a Federal Aviation Agency, there was a Civil Aeronautics Administration—and before that a Civil Aeronautics Authority, and before that a Bureau of Air Commerce, and before that there was an Aeronautics Branch in the Department of Commerce.

"Of course, before any of these, there were those magnificent Wright brothers, who started the whole thing on a sandy knoll not far from Kitty Hawk, North Carolina, on December 17, 1903."

Thus does Author Burkhardt outline the “begats” of what, to everyone interested in civil aviation, must surely be one of the most important of all federal agencies—the Federal Aviation Administration (FAA).

This is a highly readable book, the contents of which belie its rather dull title. In fact, the author has neatly combined the story of the FAA with a capsule history of the development of civil aviation over the past fifty years. Furthermore, Mr. Burkhardt, a professional journalist specializing in aviation matters, constantly drops small gems of information which could almost qualify one for participation in a TV quiz show:

Dwight D. Eisenhower was the first (and so far only) president to hold a pilot’s license.
General William F. McKee was the first Air Force general to reach four star rank who never qualified as a pilot.
A North Central Airlines DC-3 was retired in March 1966 after nearly twenty-seven years of commercial service, 12 million air miles, 100,000 taxi miles, 8 million gallons of fuel, 25,000 spark plugs, 550 tires and 136 engines.

While the volume purports to be about the Federal Aviation Administration, it is, in fact, mostly about its immediate predecessor, the Federal Aviation Agency, since the Department of Transportation (of which the Administration is a part) was created only a short time before

* Chief Counsel, Lockheed Aircraft Corporation; B.S., Monmouth College (1939); J.D., University of Chicago (1942).
the book was published. This is really a distinction without a difference.

The first three chapters are primarily an historical outline of the struggle to create an organization and a structure adequate to handle the complexities of modern civil aviation.

Since the primary functions of the FAA are to regulate “air commerce in such a manner as to best promote its development and safety” and to control “the use of navigable airspace . . . in the interest of . . . safety,” a fair portion of the book is devoted to air traffic control, air safety problems and the certification of airmen and aircraft—again with emphasis on the safety factor.

Most of the balance of the volume sets forth in concise and interesting detail some of the less publicized activities of the FAA, such as its international operations, its continuing relationship with the defense establishment in the area of air traffic control, its management of Dulles International and Washington National airports and its airport aid programs.

In Chapter XIII, Mr. Burkhardt outlines the history of the FAA’s participation in the supersonic transport (SST) program beginning in late 1960 and culminating in the announcement of the “winners” (Boeing and General Electric) on December 31, 1966. Since the book was published in mid-1967, the author could not have foreseen the unfortunate events of later years that resulted in the loss of U.S. leadership in the field of advanced commercial transport aircraft, at least for the near future. Nor could he have known that the Boeing swing-wing design which, according to him, made the Boeing proposal clearly “out front in the design competition” would, after more than a year of further study and development, be abandoned only to be replaced by a fixed-wing remarkably similar to that originally proposed by Boeing’s competitor in the SST competition.

There is also an interesting chapter on the first three Administrators of the FAA, Elwood R. Quesada, Najeeb E. Halaby, and William F. McKee. Both Quesada and McKee were retired General officers in the U.S. Air Force. One’s overall impression is that Mr. Burkhardt rather favored “Pete” Quesada over his two successors.

Finally, the author has included as an appendix to his text a transcript of a tape recording made by Air Traffic Control (ATC) telling the story of how ATC, with the help of a United Airlines captain and the pilot of a Piper Aztec, succeeded in bringing a pilot (with two passengers), lost in the fog over Northern California, to a safe landing. A short quote from the opening scene of this little drama will not detract from the excitement of the whole:

RED BLUFF FLIGHT SERVICE STATION: Oakland Center, this is Red Bluff radio. We have a little problem with an air-
craft—Nan XYZ—not sure of his position. We can give him steers into Red Bluff. We want to know if you have any traffic.

OAKLAND AIR ROUTE TRAFFIC CONTROL CENTER: I have traffic at four thousand. Is he VFR?

RED BLUFF: Oh no. He's in the soup at two thousand.

OAKLAND: ATC requests XYZ contact the Oakland Center one one eight point four or one two five point seven now for radar identification and steers into Red Bluff.

NAN XYZ: This is XYZ. Where in the hell am I now?

OAKLAND: XYZ, climb and maintain four thousand, over.

XYZ: This is XYZ. I read you, and I am climbing out.

OAKLAND: Roger. XYZ, remain on this frequency. How much more fuel do you have? Over.

XYZ: About one-quarter of a tank—about three-quarters of an hour. I don't know where in hell I'm at.

OAKLAND: Roger, XYZ. What is your present heading?

XYZ: I am flying at twenty-nine degrees.

UNITED AIR LINES FLIGHT NO. 388: XYZ, this is United Air Lines. What is your estimated position? Over.

XYZ: I have no idea.

In pleasant contrast to many books about highly specialized organizations or industries which have their own private cant, Mr. Burkhardt consistently explains (and, where necessary, repeats) the meaning of the many acronyms associated with FAA's operation. This is, of course, a great help to the uninitiated reader.

In any book of this kind, a few errors of fact are likely to creep in. This one is no exception. However, since they are minor and of little interest to other than professionals in the field, they do not in any way detract from the total excellence of Mr. Burkhardt's effort.