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Dear Subscriber,

Last fall, a historical event took place at the University of Denver. For the first time, the Secretary of Transportation of the United States Rodney E. Slater, the Secretary of Communications and Transportation of Mexico Carlos Ruiz Sacristan, and the Minister of Transport of Canada David M. Collelllpe convened together to discuss North American intermodal issues. The secretaries were joined by a distinguished list of transportation executives, labor representatives, and prominent members of the academic community from around North America. This meeting, the North American Intermodal Transportation Summit, was organized by the Intermodal Transportation Institute at the University of Denver and with the direction and leadership of Gilbert E. Carmichael, chairman of the ITI Board of Directors, and Joseph S. Szyliowicz, faculty director of ITI and professor in the Graduate School of International Studies.

This distinguished group of individuals met over two days in October 1997. The following manuscript is the report on the proceedings of the Summit produced by ITI. It includes panel discussion summaries, individual remarks from the secretaries, and a review of a roundtable discussion. The Transportation Law Journal (TLJ) is the only law journal in North America reproducing this report with the help and permission of the ITI at the University of Denver.

All of us at the TLJ are very proud to offer this timely report to our subscribers. While many individuals made this issue possible, two people, in particular, deserve special recognition. On behalf of the Editorial Board of the TLJ, I would like to thank Sheri Straily and Cathy Johnson for their significant contributions to this issue. Without Cathy's and Sheri's assistance, this issue would not have been possible.

I hope you enjoy the Proceedings on the North American Intermodal Summit. As always, if you have comments or suggestions on this issue or any other TLJ issue, please do not hesitate to contact me.

Thank you for your continued support!

Best Wishes,

Jane E. Hershey
Editor-in-Chief

7039 E. 18th Ave., Denver, Colorado 80220 303-871-6162

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The Extension of Damage and Time Limitations of the Hague, Warsaw, and Lausanne Conventions to Agents and Independent Contractors of Ship Lines and Air Lines

Daniel E. Murray*

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I. INTRODUCTION

The Hague Convention (codified in the United States Code), 1 The Warsaw Convention 2 and the Lausanne Convention 3 all have a common theme of protection to maritime carriers and air carriers in limiting their liability for loss or damage to goods. None of the conventions expressly attempt to extend this umbrella of protection to agents, servants, and independent contractors of these carriers.

It would seem natural (at least to the author) that employees of carriers and the carriers’ agents would like to share the same protective umbrella as the employing carrier, and the carrier would also like to share this extension because it would reduce the possibility of sharing in the increased costs of these servants, agents and independent contractors who would have to charge more to defray the costs of insurance protection. Of course, shippers would not share this desire to extend these conventions—especially to deep-pocket independent contractors.

On the other hand, if shippers realize that they have little chance of full recovery against anyone in the transportation of their goods, they can then make a rational decision as to either declaring the full value of their goods, or procuring insurance coverage from their own insurers or simply

gambling that the goods will arrive in good condition with reduced freight charges.

In addition to this discussion of the umbrella of protection in the limiting of damages, it is hoped that this article will increase awareness of the strict limitations on the time for suing both the carriers and their agents and independent contractors. The time limitations in these conventions are much shorter than are found in most state limitation statutes.

II. "Himalaya Clause" Origins

A. England

1. Early History

The "Himalaya Clause" is the common name for the exculpatory clauses found in most bills of lading which attempt to extend the protective clauses of the Hague Rules or the Hague Visby Rules to third parties such as agents, servants, warehousemen, stevedores, etc., who are not directly protected by the language of these two Conventions. It seems ironic that the Himalaya rule had its genesis in dicta in the case of Adler v. Dickson and another where the court refused to protect the captain and boatswain of the ship Himalaya from liability for injuries suffered by a passenger. A female passenger, while returning to the ship Himalaya docked in a port in Trieste, fell sixteen feet to the dock when the gangplank suddenly shifted. The passenger suffered severe injuries, and she sued the captain and the boatswain for their alleged negligence. The passenger was unable to recover from the shipline because the ticket bore the legend that, "Passengers and their luggage are carried at passengers' entire risk . . . [T]he company will not be responsible for and shall be exempt from all liability in respect of any . . . damage or injury whatsoever of or to the person of any passenger . . . ."

The three judges agreed that the above language protected only the shipline, and it did not extend to protect the captain and the boatswain from liability. The court simply held that the captain and the boatswain were strangers to the contract, but that if the ticket-contract had expressly included them as being immune from suit then the law would protect them. The court was careful to note that any immunizing or liability limiting contract between shipline and passenger would have to clearly indicate that the shipline was contracting on behalf of any third party (such as the captain and boatswain) as an agent for these person. Although the

5. Id. at 269.
6. Id.
opinion made no mention of the third party beneficiary concept, it seems evident that the judges were carefully attempting to articulate how third parties could become parties to a contract arranged by their agent—the shipliner.

This somewhat convoluted approach was necessitated by the fact that the United Kingdom did not and does not recognize third party beneficiary contracts, and this fact may account for some of the much criticized language in international bills of lading. These clauses are trying to take advantage of American third party beneficiary notion and the English notion of the carrier contracting as agent and trustee for the stevedores, warehouses, etc. One lengthy clause is being asked to do too much.

The irony of the Himalaya case was continued in the famous case of Midland Silicones, Ltd. v. Scruttons, Lts. A shipment of chemicals was made from the United States to London on an American ship which issued bills of lading subject to the Carriage of Goods by Sea Act which limits liability for loss to $500 per package. A drum of chemicals valued at more than this limited figure was damaged by stevedores in London and suit was brought against the stevedores who pleaded that the bill of lading protected them because it stated, “[T]he stevedores to have such protection as is afforded by the terms, conditions and exceptions of the Bills of Lading Westbound and Eastbound.”

The trial court and the court of appeals held that the stevedores were not protected by this clause, and the House of Lords affirmed. The majority of the court seemed to agree that there was no express statement in the bills of lading that the carrier was contracting for the stevedores as agents of the stevedores: this was the very point made by Lord Denning in Adler v. Dickson—the Himalaya case.

The “agency approach” utilized by Lord Denning was further enlarged upon by Lord Reid in a statement which has come to be known as the “Lord Reid Test.”

I can see a possibility of success of the agency argument if (first) the bill of lading makes it clear that the stevedore is intended to be protected by the provisions in it which limit liability, (secondly) in addition to contracting for these provisions on his own behalf, is also contracting as agent for the stevedore that these provisions should apply to the stevedore, (thirdly) the carrier has authority from the stevedore to do that, or perhaps later ratification by the stevedore would suffice, and (fourthly) that any difficulties about consid-

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9. Id at 368.
10. See supra note 4.
eration moving from the stevedore were overcome. And then to affect the consignee it would be necessary to show that the provisions of the Bills of Lading Act, 1855, apply.

But again there is nothing of that kind in the present case. I agree with your Lordships that "carrier" in the bill of lading does not include stevedore, and if that is so I can find nothing in the bill of lading which states or even implies that the parties to it intended the limitation of liability to extend to stevedores. Even if it could be said that reasonable men in the shoes of these parties would have agreed that the stevedore should have this benefit that would not be enough to make this an implied term of the contract. And even if one could spell out of this bill of lading an intention to benefit the stevedore there is certainly nothing to indicate that the carrier was contracting as agent for the stevedore in addition to contracting on his own behalf. So it appears to me that the agency argument must fail.

And the implied contract argument seems to me to be equally unsound. From the stevedores' angle, they are employed by the carrier to deal with the goods in the ship. They can assume that the carrier is acting properly in employing them and they need not know whom the goods belong to.

There was in their contract with the carrier a provision that they should be protected, but that could not by itself bind the consignee. They might assume that the carrier would obtain protection for them against the consignee and feel aggrieved when they found that the carrier did not or could not do that. But a provision in the contract between them and the carrier is irrelevant in a question between them and the consignee. Then from the consignees' angle they would know that stevedores would be employed to handle their goods, but if they read the bill of lading they would find nothing to show that the shippers had agreed to limit the liability of the stevedores. There is nothing to show that they ever thought about this or that if they had they would have agreed or ought as reasonable men to have agreed to this benefit to the stevedores. I can find no basis in this for implying a contract between them and the stevedores. It cannot be said that such a contract was in any way necessary for business efficiency.11

Lord Denning, in a brilliant dissent, pointed out that until recent times the shipper would not have a negligence action against the stevedore because the stevedore had no direct contractual duty of care towards the cargo, and now, as a result of this case, the stevedore is liable for negligence and cannot plead the carrier's defenses because he (the stevedore) has no defenses because he is a stranger to the contract! Lord Denning suggested that the stevedore should be protected on the grounds that it was implied that the agent-stevedore would be protected because he was carrying out the shipline's contract.

The "Lord Reid Test" was soon given application in the

11. Id. at 374-75.
Eurymedon.12 A large, expensive drilling machine was shipped from Liverpool, England to Wellington, New Zealand on board the Eurymedon. The stevedore in Wellington damaged the machine in the unloading process, and the consignee sued the stevedore which was the owner of the carrier shipline. The bill of lading issued by the shipline provided in part:

In accepting this Bill of Lading the shipper, consignee and the owners of the goods and the holder of this bill of lading agree to be bound by all of its conditions, exceptions and provisions whether written, printed or stamped on the front or back hereof.13

* * *

It is hereby expressly agreed that no servant or agent of the Carrier (including every independent contractor from time to time employed by the Carrier) shall in any circumstances whatsoever be under any liability whatsoever to the Shipper, consignee or Owner of the goods or to any holder of this Bill of Lading for any loss or damage or delay of whatsoever kind arising or resulting directly or indirectly from any act neglect or default on his part while acting in the course of or in connection with his employment and without prejudice to the generality of the foregoing provisions in this Clause, every exemption limitation, condition and liberty herein contained and every right, exemption from liability, defense and immunity of whatsoever nature applicable to the Carrier or to which the Carrier is entitled hereunder shall also be available and shall extend to protect every such servant or agent of the Carrier acting as aforesaid and for the purpose of all the foregoing provisions of this Clause the Carrier is or shall be deemed to be acting as agent or trustee on behalf of and for the benefit of all persons who are or might be his servants or agents from time to time (including independent contractors as aforesaid) and all such persons shall to this extent be or deemed to be parties to the contract in or evidenced by this Bill of Lading.14

The consignee failed to sue the shipline within the COGSA one year limitation period, and then filed suit against the stevedore, so the issue presented was whether the stevedore came within the one year limitation period. The New Zealand Supreme court held that the exemption provisions of the bill of lading were made available to the stevedore through the agency of the carrier and that the stevedore’s act of unloading the machine constituted consideration for the contract between shipper-consignor and the stevedore. The New Zealand Court of Appeal reversed the lower court’s decision on the grounds that there was no consideration moving from the stevedore. The Privy Council majority repeated the “Lord Reid Test” and then held on the consideration issue:

13. Id. at 537.
14. Id. at 538.
There is possibly more than one way of analyzing this business transaction into the necessary components; that which their Lordships would accept is to say that the bill of lading brought into existence a bargain initially unilateral but capable of becoming mutual, between the shippers and the appellants, made through the carrier as agent. This became a full contract when the appellant performed services by discharging the goods. The performance of these services for the benefit of the shipper was the consideration for the agreement by the shipper that the appellant should have the benefit of the exemptions and limitations contained in the bill of lading. The conception of a “unilateral” contract of this kind was recognized in *Great Northern Railway Co. v. Witham*, (1873) L.R. 9 C.P. and is well established. This way of regarding the matter is very close to if not identical to that accepted by Mr. Justice Beattie in the Supreme Court: he analyzed the transaction as one of an offer open to acceptance by action such as was found in *Carlill v. Carbolic Smoke Ball Company*, (1893) 1 Q.B. 256.15

The Privy Council then held that the action was time barred.

The one year time bar rule of the Hague Rules was later upheld by the Judicial Committee of the Privy Council in 1980 in favor of a stevedore who apparently misdelivered 37 cartons of razor blades to an impostor after the blades were in the stevedore’s possession for some time. The language of the bill of lading closely resembled the language in the *Eurymedon* bill of lading, and the lower courts in Australia seemingly had difficulty with the consideration concept and in the notion of “fundamental breach”. The Privy Council basically followed the *Eurymedon* view in favor of the stevedore.16

A few years later, the Australian Supreme Court of New South Wales Court of Appeal was faced with a case17 where a lady had shipped furniture from Genoa, Italy to Sydney, Australia, on board a Russian vessel. The container containing the furniture was unloaded in Sydney and left on the dock between February 21, and March 5, 1975. The container was exposed to heavy rains, and the container leaked water causing damage to the furniture. On March 10, 1975, the woman was informed of the arrival of the ship and she “attended”18 the wharf on March 11, 1975. She then filed a claim against the stevedore on May 6, 1977. The stevedore relied upon the following clauses in the bill of lading supplied by the ship to the woman shipper:

Cl. 5(c)(2)(b):

... all liability whatsoever of the Carrier shall in any event cease unless suit is brought within eleven months after delivery of the goods or the date when the goods should have been delivered.

15. *Id.* at 539.
18. *Id.* at 334.
Cl. 4(2):
The Merchant undertakes that no claim or allegation shall be made against any servant, agent or sub-contractor of the Carriers which imposes or attempts to impose upon any of them or any vessel owned by any of them any liability whatsoever in connection with the Goods, and, if any such claim or allegation should nevertheless be made, to indemnify the Carrier against all consequences thereof. Without prejudice to the foregoing, every such servant, agent and sub-contractor shall have the benefit of all provisions herein benefiting the Carrier as if such provisions were expressly for their benefit; and, in entering into this contact, the Carrier, to the extent of those provisions, does so not only on its own behalf but also as agent and trustee for such servants, agents and sub-contractors.19

The court of appeals held that the bill of lading contract did not become “exhausted” (in the sense of coming to an end), but it still remained effective between the shipper and the stevedore; that the lady consignee by acting upon the bill of lading ratified the contract and that the carrier as agent for the consignee for the stevedore gained the benefit of the contract against the consignee which contained the eleven month time bar. The court relied primarily upon the New York Star20 and Eurymedon21 cases for its decision. The case made no mention as to why the consignee waited for over two years to institute suit.

In Glebe Island Terminals Pty. Ltd. v. Continental Seagram PTY Ltd.,22 the court had to interpret the Himalaya clause in a bill of lading:

Every servant agent or subcontractor of the carrier: . . . shall have the benefit of every exemption from liability, defense, limitation, condition, and liberty herein contained, as if such provisions were expressly for his benefit, and in entering into this contract, the carrier, to the extent of this provision does so not only on his own behalf but also as agent and trustee for such persons.23

In addition, the bill of lading provided:

(8)(3) the exemptions limitations terms and conditions in this bill of lading shall apply whether or not loss or damage is caused by the negligence or actions constituting fundamental breach of contract.24

Thirteen containers of Chivas Regal blended Scotch whiskey were sent from England to Sydney, Australia. The 13 containers were safely unloaded into the custody of a terminal operator. Two of the containers

19. Id.
22. 1 Lloyd's Rep. 213 (Supreme Court of New South Wales Court of Appeal 1983).
23. Id. at 233.
24. Id. at 236.
(each of which weighed approximately 22 tons) mysteriously disappeared from the terminal operator's premises; the disappearance seemingly required the corrupt cooperation of one or more employees of the terminal operator. The consignee sued the carrier and the terminal operator, and the appellate court held that the *Himalaya* clause extended the bill of lading immunities to the terminal operator and even if the employees of the terminal operator were involved in the theft, that the terminal operator would be protected under clause (8)(3) in light of the House of Lords decision in the case of *Photo Production Ltd. v. Securicor Transport Ltd.*

In *Securicor* a factory owner contracted with Securicor to supply a guard for night patrol of the owner's factory. One evening, one of Securicor's guards threw a lit match into a pile of paper on the floor of the factory. The ensuing fire destroyed the factory, and the owners sued Securicor. The motivation of the guard was never completely established. Securicor asserted the following contractual clause as its defense:

> Under no circumstances shall the Company be responsible for any injurious act ... by any employee of the Company unless such act ... could have been foreseen and avoided by the exercise of due diligence on the part of the Company as his employer, nor in any event shall the Company be held responsible for:
> (a) any loss suffered by the customer through ... fire ... except insofar as such loss is solely attributable to the negligence of the Company's employees acting within the course of their employment ...

The trial court held that Securicor was liable for the fire, but the Court of Appeals reversed holding that the wrongful act of the guard was a total breach of the contract and Securicor could not be immunized because it was a fundamental breach of contract which rescinded the entire contract including the immunizing clause.

The House of Lords reversed the Court of Appeals by holding that the court had incorrectly analyzed prior case law regarding the fundamental breach notion, and that with the exception of maritime deviation, the fundamental breach concept would not take away contractual protection in this non-consumer commercial setting. As Lord Diplock expressed it:

> My Lords, the reports are full of cases in which what would appear to be very strained constructions have been placed upon exclusion clauses, mainly in what today would be called consumer contracts and contracts of adhesion. As Lord Wilberforce has pointed out, any need for this kind of judicial distortion of the English language has been banished by Parliament's having made these kinds of contracts subject to the Unfair contract Terms Act, 1977. In commercial contracts negotiated between business-men capable of...

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25. 1 Lloyd's Rept. 545 (A.C.1980).
26. Id. at 547.
looking after their own interests and of deciding how risks inherent in the performance of various kinds of contract can be most economically borne (generally by insurance), it is, in my view, wrong to place a strained construction upon words in an exclusion clause which are clear and fairly susceptible of one meaning only even after due allowance has been made for the presumption in favour of the implied primary and secondary obligations.

* * *

For the reasons given by Lord Wilberforce it seems to me that this apportionment of the risk of the factory being damaged or destroyed by the injurious act of an employee of Securicor while carrying out a visit to the factory is one which reasonable business-men in the position of Securicor and the factory owners might well think was the most economical. An analogous apportionment of risk is provided for by the Hague Rules in the case of goods carried by sea under bills of lading. The risk that a servant of Securicor would damage or destroy the factory or steal goods from it, despite the exercise of all reasonable diligence by Securicor to prevent it, is what in the context of maritime law would be called a "misfortune risk"—something which reasonable diligence of neither party to the contract can prevent. Either party can insure against it. It is generally more economical for the person by whom the loss will be directly sustained to do so rather than that it should be covered by the other party by liability insurance.27

2. Damage Occuring Before the Bill of Lading is Issued

Consider when a carrier has yet to issue a bill of lading and the delivered goods are damaged while in the possession of a warehouse or dock. May the warehouse be covered by an immunity clause which would have appeared in the forthcoming bill of lading? In Raymond Burke Motors,28 motorcycles were delivered to a dock and placed in containers; the motorcycles were to be placed on a ship for transport to Canada. The motorcycles were harmed by the negligent driving of one of the operators of the dock in the unloading of a ship which had no connection with the prospective transport of the motorcycles. The dock operator and the shipline had a prior history of dealing, and the proposed bill of lading did contain an adequate Himalaya clause. The court held that the dock operator was not in the process of loading the motorcycles; that the loss incurred had nothing to do with the carrying out of the contract with the shipline, and that the unloading of a ship not owned by the shipline had nothing to do with the transport of the motorcycles and the Himalaya clause had no application.29 Contrary United States cases will be dis-

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27. Id. at 554.
29. Id.
3. Extensions of the Hague One Year Rule for Suit

English law permits the extension of time limitations to sue in many situations. However, it has been recently held that if the wrong plaintiff sues the proper defendant, the court does not have the power to substitute plaintiffs and thereby to extend the Hague one year substantive rule barring suits as distinguished from a mere limitation of liability statute. Nor does the court have the power to extend the Hague one year rule to allow a plaintiff to join a different defendant (there was a mix up of the parties) after the expiration of the same one year limitation rule. On the other hand, if the bill of lading contract is controlled by English law and the contract provides for English arbitration, then the English court could grant an application for an extension for arbitration under Section 27 of the Arbitration Act, 1950, but the courts cannot extend statutes of limitations under sections 12 and 13 of the English Arbitration Act of 1996.

It has been suggested that if the facts show that the solicitors for the defendant had misled the plaintiff’s solicitors into believing that a case would be settled and that there was no necessity to file suit, that the defendant may be equitably estopped from pleading the one year bar of the Hague Rules. The court held, however, that the alleged estoppel facts had not been proved.

B. United States Development

As pointed out in the famous case of Grace Line, Inc. v. Todd Shipyards Corporation there are six possible exemptions or limitations of liability under COGSA which may possibly be extended by contract to defendants who are not carriers. The two most important exemptions of limitations are: (1) the one year period of limitations for instituting suit; (2) the limited liability of $500 per package or freight unit, unless the shipper declares the nature and value of the goods before shipment and these items have been inserted into the bill of lading. Four less substan-
tial exemptions or limitations are the immunities from liability for the following: unseaworthiness of the vessel unless caused by want of due diligence;\(^{38}\) negligent acts in the navigation or management of the ship;\(^{39}\) damage caused by fire, unless caused by the actual fault or privity of the carrier;\(^{40}\) or damage arising from any cause without actual fault or privity.\(^{41}\)

1. The Wording of the Himalaya Clause

In 1958 the Fourth Circuit in *Herd & Co., Inc. v. Krawill Machinery Corp.*\(^{42}\) held that a stevedore does not come within the definition of "carrier" as defined in the Carriage of Goods by Sea Act nor within the terms of the bill of lading, while the Fifth Circuit in *A.M. Collins & Co. v. Pan ama R. Co.*\(^{43}\) had held just the opposite. The Supreme Court of the United States granted certiorari from the Fourth Circuit's *Herd* decision to resolve the conflict.\(^{44}\) The Supreme Court pointed out that the prior case law of the Supreme Court had held that an agent is liable for all damages caused by his negligence "unless exonerated therefrom, in whole or in part, by a statute or a valid contract binding on the person damaged."\(^{45}\) The Supreme Court then considered the case of *Elder, Dempster & Co. Ltd. v. Paterson, Sochonis & Co., Ltd*\(^{46}\) and stated:

A careful reading of the several lengthy opinions of their lordships in that case discloses that the question whether a provision in the bill of lading limiting the liability of the carrier likewise limits the liability of its negligent agent, though the agent is neither a party to nor an express beneficiary of the bill of lading, was not involved in or decided by that case. Nor has any English case ever held that a bill of lading that expressly limits the liability of only the carrier nevertheless applies to and limits the liability of its negligent agent.\(^{47}\)

The Court concluded the decision by stating:

No statute has limited its (the stevedore) liability, and it was not a party to

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42. 256 F.2d 946 (4th Cir. 1958).
43. 197 F.2d 893 (5th Cir. 1952).
45. *Id.* at 303.
47. *Herd*, at 307.
nor a beneficiary of the contract of carriage between the shipper and the
carrier, and hence its liability was not limited by that contract. It follows that
petitioner's (stevedore) common-law liability for damages caused by its neg-
ligence was in no way limited.\textsuperscript{48}

At this point, the English and American courts had agreed that strangers
to a contract were not entitled to shelter under it.

In \textit{Brown \& Root, Inc. v. M/V Peisander},\textsuperscript{49} a crate of machinery was
being transported to the side of a ship for loading when the forklift opera-
tor of the stevedore dropped the machinery causing damages of
$56,048.75. All parties agreed that the stevedore was at fault; the steve-
dore pleaded the $500 package rule, and the shipper pleaded that the
damage limitation was void because the bill of lading did not provide that
the shipper could declare a higher valuation for the goods and secure full
coverage for any damages. The bill of lading provided:

\textbf{18. Amount of limitation}

The responsibility of the carrier shall in no case, whether governed by the
U.S. Carriage of Goods by Sea Act, the Hague Rules or not, exceed the
amount of $500.00 per package or customary freight unit.\textsuperscript{50}

The court noted that the Ninth Circuit in the case of \textit{Pan American
World Airways, Inc. v. California Stevedore and Ballast Company},\textsuperscript{51} had
held that the “no case” language in the above clause made the limitation
void unless the carrier could prove that the shipper did have a choice of
rates for higher valuation.

The \textit{Brown \& Root} court held that the bill of lading was subject to
the Carriage of Goods by Sea Act (COGSA) by virtue of the wording of
the bill of lading and the fact that COGSA as a matter of law controls the
bill of lading contract. The published tariff of the shipline also gave the
shipper the right to declare a higher valuation of the cargo, and COGSA
does not prescribe that the bill of lading contain a specified space or
blank in which the increased valuation is to be written and that the face
of this bill of lading “leaves ample space in the middle of the front page
for “Description of Packages and Goods” under the heading of “Particu-
lars Furnished by Shipper.”\textsuperscript{52} The Fifth Circuit then held that the \textit{Pan
American} case does no more than relieve the shipper from disproving the
availability of increased valuation, and if the carrier’s tariff shows the
availability of a choice of valuation, then the clause in the bill of lading is
upheld.\textsuperscript{53}

\begin{footnotes}
  \item 48. \textit{Id.} at 308.
  \item 49. 648 F.2d 415 (5th Cir. 1981).
  \item 50. \textit{Id.} at 419 note 8.
  \item 51. 559 F.2d 1173 (9th Cir. 1977).
  \item 52. \textit{Brown \& Root}, at 424.
  \item 53. The \textit{Brown \& Root} case was expressly followed in Gebr. Bellher K G. v. Terminal Serv.
\end{footnotes}
What happens if the stevedore is also a "terminal operator"—does he come within the *Himalaya* language of: "(i)n the bill of lading the word "carrier" includes the shipowner, and any of its employees, agents or contractors."?\(^{54}\) In *Barber Blue Sea Line*, goods were discharged from a ship to the custody of a stevedore who also had contractual authority from the Port Authority in Miami, Florida. Some of the goods mysteriously disappeared, and the insurer sued the stevedore who claimed protection under the package rule of COGSA. The court held that the quoted language covered the stevedore. Further, the stevedore was still acting under the bill of lading for the carrier until the time that the cargo was loaded on the consignee's trucks. The stevedore as "terminal operator" had no authority to deliver the cargo to the Port Authority; the contractual authority extended to the use of the port authority for delivery of cargo.\(^{55}\)

The *Barber Blue Sea Line* case involving a stevedore who was also a "terminal operator" should be compared with the *La Salle Machinery Tool* case.\(^{56}\) In *La Salle* a terminal operator also acting as a stevedore in the port of Baltimore negligently unloaded a crate of machinery components from a truck for loading on a ship. A bill of lading was later issued, but it did not cover the crate which was damaged. The standard bill of lading of the shipline stated:

"(t)he limitation of liability . . . shall inure not only to the benefit of the carrier, its agents, servants and employees, but also to the benefit of any independent contractor performing services including stevedoring in connection with the goods hereunder."\(^{57}\)

The shipper sued the "terminal operator" who relied on a series of cases\(^{58}\) holding that when goods are delivered to the dock with the expectation that they will be carried by a carrier with a known bill of lading form that these goods are subject to this proposed bill of lading even when the damage occurs before the issuance of the bill of lading. The court rejected these cases in light of the fact that this case involved a
terminal operator functioning as an independent contractor and not as an agent of the carrier. In the absence of any proof that "the relationship between such an independent contractor and the shipper is customarily governed by the carrier's bill of lading, and Maher [the terminal operator] has offered no such proof, we do not believe that Luckenback line of cases provides any support for Maher's position."59

In addition, the court was of the view that the term "all independent contractors" did not clearly include the defendant's terminal operations within its scope."60 The Court cited the Herd case for the requirement of clarity of language to show that the language includes the particular defendant.

The Second Circuit of Appeals has had to determine in two cases whether the following definition of the word "carrier" was sufficient to include a stevedore:

Clause 2 defines "carrier" as follows: "2 . . . [T]he word 'carrier' shall include the ship, her owner, operator, demise charterer, time charterer, master and any substituted carrier, whether acting as carrier or bailee, and all persons rendering services in connection with performance of this contract . . . ." (emphasis added by the court).

In accord with the Herd case, the court held that this language was not sufficiently clear to show the intent of the contracting parties.61 On the other hand, the same court extended the protection to a stevedore when the Himalaya clause mentioned "legal entities" and "independent contractors."62

What is the result if the phrase "independent contractor" is used in the Himalaya clause, but the carriage of goods is not covered by terms of the Carriage of Goods by Sea Act but the parties have adopted COGSA as part of the contract of carriage, i.e., the bill of lading? It has been held that the term "independent contractor" under the bill of lading contract would cover the stevedore who damaged goods (an expensive yacht) in the unloading process.63

In an often cited case, Secrest Machine Corp. v. S.S. Tiber,64 the Himalaya clause tersely provided:

All defenses as aforesaid shall inure also to the benefit of the Carrier's agents, servants and employees and of any independent contractor perform-

59. La Salle, at 59.
60. Id.
61. See Cabot Corp. v. S.S. Mormacscan, 441 F.2d 476, 478 (2d Cir. 1971); Rupp v. Int'l Terminal Operating Co., Inc., 479 F.2d 674, 676 (2d Cir. 1973).
63. Institute of London Underwriters v. Sea-Land Serv., Inc. 881 F.2d 761 (9th Cir. 1989).
64. 450 F.2d 285 (5th Cir. 1971).
ing any of the Carrier’s obligations under the contract of carriage or acting as bailee of the goods, whether sued in contract or in tort. For the purpose of this clause all such persons, firms or legal entities as alluded to above shall be deemed to be parties to the contract evidenced by this B/L. 65

A stevedore in the unloading process negligently allowed a box containing a steel press to fall with $17,000 worth of damages occurring to the press. The court held that it was clear that the phrase “independent contractors” applied to the stevedore, and, in addition, the court held that the consignee could recover $500 per package from either the carrier or the stevedore, it could not recover $500 from both ship and stevedore. The cumulative holding of the Bernard Screen and Secrest Machine Co. cases was nicely stated and adopted in Tessler Bros. (B.C.) Ltd. v. Italpacific Line: 66

Whether a bill of lading extends limitations of liability to stevedores depends on whether “the clarity of the language used expresses such to be the understanding of the contracting parties.” Robert C. Herd & Co. v. Krawill Machinery Corp., 359 U.S. at 305, 79 S.Ct. at 771. Two circuits have recently held that a bill of lading mentioning independent contractors clearly includes stevedores. Bernard Screen Printing Corp. v. Meyer Line, 464 F.2d 934, 936 n. 1 (2d Cir. 1972), cert. denied, 410 U.S. 910, 93 S.Ct. 766, 35 L.Ed.2d 272 (1973); Secrest Machine Co. v. S.S. Tiber, 450 F.2d 285, 287 (5th Cir. 1971).

The language of the district court in Bernard Screen is instructive:

To exclude “stevedores,” who are independent contractors, from the scope of the more inclusive term would, in effect, be holding that parties by using the more inclusive term had accomplished the opposite result.

When the bill of lading extends the Himalaya clause’s protections to:

1(a) The Carrier shall be entitled to the full benefit of, and right to, all limitations or exemption from liability authorized by any provisions of Section 4281 to 4288 inclusive of the Revised Statutes of the United States and amendments thereto and of any other provisions of the laws of the United States or of any other country whose laws shall apply. The terms of this bill of lading constitute the contract of carriage, which is between the shipper, consignee and authorized owner of the goods, and the Carrier, owner or demise charterer of the vessel designated to carry the shipment. It is understood and agreed that other than the Carrier, owner or demise charterer, no person, firm or corporation or other legal entity whatsoever (including the Master, officers and crew of the vessel, all agents, employees, representatives, and all terminal operators, stevedores, watchmen and other independent contractors whatsoever) is, or shall be deemed liable with respect to the goods as carriers, bailee or otherwise, howsoever in contract or in tort. If

65. Id. at 286.
66. 494 F.2d 438, 446-47 (9th Cir. 1974).
however, it shall be adjudged that any other than said shipowner or demise charterer is carrier or bailee of the goods or under any responsibility with respect thereto, all limitations of and exonerations from liability provided by law or by the terms hereof shall be available to such other. In contracting from the foregoing exemptions, limitations and exonerations from liability, the Carrier is acting as agent and trustee for the other above mentioned. 

(Emphasis added by the Court.)

The italicized words show a clear intent to extend the COGSA limitations of liability to the terminal operators. The designation “pier to pier” stamped on the face of a bill of lading has been held to mean that the carrier’s stevedore had to load cargo on trucks for delivery to an inland city in the United States and delivery had not yet been made when the stevedore dropped the goods causing damage. As a result, the stevedore was within the Himalaya clause and entitled to the package rule limitation.

If the umbrella protection of the Himalaya clause extends to the carrier and “other bailee” or to the word “bailee” is this sufficient clarity of language to protect a stevedore, for example? The Third Circuit seems to reject this language while the Eleventh Circuit approves this language. In the famous “container” case of Leather’s Best, Inc. v. S.S. Mornaclynx, one of the many issues presented was whether a terminal service company, Tidewater Terminal, Inc., was a contractual party to a bill of lading issued by the carrier. The bill of lading described the carrier as, “the word ‘carrier’ shall include the ship, her owner, operator, demise charterer, time charterer, master and any substituted carrier, whether acting as carrier or bailee, and all persons rendering services in connection with performance of this contract.” The court held that Tidewater was not a party to the contract of carriage and it was a bailee or agent for the carrier, and was liable for its negligence in safeguarding a container (containing 99 bales of leather) thereby allowing it to be stolen from the premises.

One wonders what Judge Friendly would have held if the above bill of lading language had further mentioned stevedores, warehouseman, terminal operators, etc.?

67. Id. at 1308.
70. De Laval Turbine, Inc. v. West India Indus, Inc. 502 F.2d 259 (3d Cir. 1974).
72. 451 F.2d 800 (2d Cir. 1971).
73. Id. at 805.
In the equally famous *Cabot* case a shipper’s goods were loaded into the hold of a ship; subsequently, the stevedore dropped two heavy steel plates owned by a stranger to this suit. The two steel plates damaged goods of the first shipper, and the shipper sued the stevedore who pleaded that it was covered by the clause, “the word ‘carrier’ shall include the ship, her owner, operator, demise charters, . . . and all persons rendering services in connection with the performance of this contract . . .” The court held that if the parties intended to include stevedores in the protected class it would have been simple to include the word “stevedores.” And, even if it were:

> to be assumed that the limitation provisions in the instant bill of lading applied to the stevedores here then they would still be precluded from its protective provisions because they were not rendering services in connection with Cabot’s (i.e. this) contract, but were instead rendering services in connection with another shipper not a party to this action.

As a result, the stevedores were held fully liable for the value of the damaged goods.

In *Taisho Maritime & Fire Ins. Co., Ltd. v. The Vessel “Gladious”*, the *Himalaya* clause stated:

> All servants, agents and independent contractors (including in particular, but not by way of limitation, any stevedores) used or employed by the Carrier for the purpose of or in connection with the performance of any of the Carrier’s obligations under this Bill of Lading, shall, in consideration of their agreeing to be so used or employed, have the benefit of all rights, defenses, exceptions from or limitations of liability and immunities of whatsoever nature referred to or incorporated herein applicable to the Carrier as to which the Carrier is entitled hereunder.

The inland trucking firm ABF was hired by the consignee to transport the steel from the Port of Los Angeles to Tulsa, Oklahoma. The ABF firm issued its own bill of lading to the consignee. The steel was damaged in transit, and the consignee sued all parties including ABF. The court held that the *Himalaya* clause did not protect ABF because the clause did not protect ABF because the clause refers to servants, agents and independent contractors “used or employed” by the ocean carrier; ABF was not hired by the carrier (but by another company) and was performing a non-maritime function after the shipline’s obligations under its bill of lading had terminated. As a result, the carrier ABF was not entitled to use the one year limitation period of COGSA.

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75. *Id*. at 1172.
76. *Id*. at 1174.
77. *Id*. at 1366 (emphasis supplied).
The wording of the Taisho bill of lading should be compared with the slightly different wording in a later case whose bill of lading defined a "subcontractor" as including:

owners and operators of Vessel (other than the Carrier), stevedores, terminal operators, warehousemen, road and rail transport operators and any independent contractor employed by the Carrier in performance of the whole or any part of the handling, storage or carriage of the Goods and any and all duties whatsoever undertaken by the Carrier in relation to the Goods. (emphasis added)78

And the Court also held that a truck carrier not directly "employed by the Carrier" cannot claim the damage limitations of COGSA when the truck carrier damages the goods after the completion of the maritime voyage.79

Some circuits seem to hold that only those parties who are in a direct contractual relationship with the carrier may take advantage of bill of lading provisions and then only if the intent to extend is clearly expressed.80 Many Himalaya clauses use language to the affect that the exemptions for the carrier should enure for the benefit of independent contractors "including their servants, employees and agents, whose services the carrier from time to time may engage in the operation of the vessel ..."81 What happens if the defendant independent contractor was not engaged directly by the carrier but by another independent contractor? In the subject case the facts showed that the carrier's agent notified one of the stevedores who telephoned a third person of its needed services and this third person caused the negligent damage to cargo. The three independent contractors were closely interrelated in the port area, some of them sharing the same offices and telephones, etc. The court then used a "common-sense" approach and held that the last independent contractor was "engaged" by the carrier.

This view should be compared to the view expressed in Toyomenka, Inc. v. S.S. Tosaharu Maru.82 Bales and cartons of woolen goods were unloaded by the stevedore and placed in sheds on a pier. The stevedore employed a guard service to guard the goods; unfortunately, the goods mysteriously disappeared. The shipper sued the carrier which impleaded the stevedore and the guard service. The trial court held that the $500 package rule protected all the parties, and the shipper appealed. The ap-

82. Toyomenka, 523 F.2d 518 (2d Cir. 1975).
pellate court held that the terms of the *Himalaya* clause which applied only to "all servants, agents and independent contractors . . . used or employed by the Carrier for the purpose of or in connection with the performance of any of the Carrier's obligations. . . ." did not cover the guard service because it was not employed by the carrier in the usual sense of the term. The guard service was an independent contractor hired by the stevedore. The court noted that the last sentence of the clause stated:

> It is hereby further expressly agreed that for the purpose of the foregoing provision the Carrier is or shall be deemed to be acting as agent or trustee on behalf of and for the benefit of all persons who are or may be its servants, agents or independent contractors . . . and that all such persons shall to this extent be or be deemed to be parties to the contract contained by this Bill of Lading.\(^{84}\)

The court was of the view that this language was further evidence that the parties did not intend the protection of the *Himalaya* clause to extend to the guard service.

In the second circuit it is the rule that when COGSA exemptions or limitations have been extended by contract to stevedores, warehousemen, etc., then COGSA does not have force as a statute but merely as a contractual term which means that these clauses are not to be construed under state law but under federal law in order to obtain uniform results in international maritime commerce.\(^{85}\)

It would not be proper to finish discussion of this "wording of the bill of lading" section without discussing the "long form versus the short form" bill of lading. In *Encyclopedia Britannica, Inc. v. S.S. Hong Kong Producer*,\(^{86}\) Britannica shipped 1300 cartons of encyclopedias from Chicago to a freight forwarder in New York which packed the cartons into seven containers. The forwarder delivered the containers to the carrier in New York which issued its short form bill of lading. The bill of lading was a "clean" bill. Unknown to the forwarder, six of the containers were stowed on deck and only two were stowed below deck. The short form bill of lading incorporated by reference all of the clauses in the long form including clause 13 (which Britannica claimed to have to knowledge of this clause) which stated:

13. Stowage on Deck, Etc.—Goods stowed in poop, forecastle, deckhouse, shelter deck, passenger space, storeroom, bunker space, or any other cov-

\(^{83}\) Id. at 521.

\(^{84}\) Id at 521-22.

\(^{85}\) Wemhoener Pressen v. Ceres Marine Terminals Inc., 5 F.3d 734, 736 (4th Cir. 1993).

\(^{86}\) 422 F.2d 7(2d Cir. 1969).
The shipper represents that the goods covered by this bill of lading need not be stowed under deck and it is agreed that it is proper to and they may be stowed on deck unless the shipper informs the carrier in writing before delivery of the goods to the carrier that under deck stowage is required. With respect to goods carried on deck, all risk of loss or damage by perils inherent in or to incidental [sic] such carriage shall be borne by the shipper and the carrier shall have the benefit of all and the same rights, immunities, exemptions, and limitations as provided for in Act 4 of the Hague rules or the corresponding provision of any Act that may be applicable, excepting subdivisions (1), (2)(j), (2)(q), (3) and (4) thereof. In no event shall the carrier be liable for any loss or damage to goods so carried on deck arising or resulting from any cause whatsoever, including unseaworthiness, unless affirmatively proved to be due to lack of due diligence or to the fault or the neglect of the carrier or those for whom it may otherwise be responsible, but the carrier shall not in any event be liable for any act, neglect or default in the navigation or the management of the ship.87

No copy of the long form bill of lading was given to the forwarder, although the short form mentioned where the long form could be obtained. The short form was issued after the containers were loaded on the ship and, of course, there was no way that the forwarder could issue a demand in writing before loading that all the containers be carried below deck, nor was there any proof of a verbal understanding nor of any custom in the New York port to ship containers on deck.

During the trip to Japan, heavy seas came over the weather decks and some of the containers' contents were damaged by sea water. Britannica sued the carrier, and it asserted that the short form bill of lading permitted deck carriage, and that the carrier acted in accordance with the contract. The trial court held in favor of the carrier, but the court of appeal held that the on deck bill of lading implies under deck loading in the absence of information brought home to shipper that its goods were to be deprived of that status under the terms of the long form of lading. In addition, the bill of lading was a contract of adhesion and strictly construed against the carrier, and that the carrier was estopped from pleading Clause 13 because it was issued after the goods were loaded on the ship. Finally, in the absence of proof of a contrary custom in New York as to the loading of cargo on deck, then the containers were to be construed as "goods" entitled to all of the protections of goods under COGSA.

Judge Hays, in a pithy dissenting opinion, opined that this bill of lading was not a contract of adhesion because it was negotiated by an experienced freight forwarder; that the freight forwarder had a duty to

87. Id. at 10.
examine the conditions under which the goods were being carried; and if it chose to ship the cargo without knowing of the terms and conditions of the bill of lading it could not complain later. In addition, Judge Hays pointed out that bills of lading generally are not issued until after the shipping contract has been made, and that there was no deviation in this case and even if it were a deviation, the carrier should not be deprived of the package rule of COGSA.

Whatever one may think of the contrasting views in Britannica, it has been followed in the Fifth Circuit,88 in the Eleventh Circuit,89 and in a district court in the First Circuit.90 In Insurance Company of North America v. Puerto Rico Marine Management, Inc.91 goods were shipped from Elizabeth, New Jersey to San Juan, Puerto Rico. The goods (dried fish) were unloaded in the carrier’s storage facilities. Two days later, the carrier delivered the goods to an impostor purporting to represent the consignee. The consignee’s insurance company paid the consignee, and it sued the carrier who asserted the one year limitation rule. The court of appeal affirmed the district court, and held that the subrogating insurance company has no greater rights than the consignee. Further, even though the transaction was governed by the Harter Act rather than by the COGSA, the bill of lading “long form” bill of lading adopted COGSA to govern the shipment and the “short form” bill of lading adopted this rule by incorporation by reference. This procedure is authorized by 46 U.S.C. § 844 which authorizes filing of the long form bill of lading with the Federal Maritime Commission and this gives shippers (and their insurance companies) constructive notice of the one year rule. The court in this case distinguished two contra cases, Allstate Ins. Co. v. Int’l Shipping Corp.,92 and Puerto Rico Marine Mgmt, Inc. v. Ken Penn Amusement, Inc.93 In the first case, the Allstate Court relied upon a Fifth Circuit

90. Caribbean Produce Exch., Inc. v. Sea Land Serv., Inc., 415 F.Supp. 88 (D. Puerto Rico 1976). A federal district court in following Encyclopedia Britannica v. S.S. Hong Kong, has held that a limitation of liability clause must appear in a short-form bill of lading to be effective. If the short form bill merely incorporates by reference the long-form bill of lading which has a limitation of liability clause, this is not effective against the shipper and because there was an inequality of bargaining power between the shipper and the carrier this clause would also be invalid as a contract of adhesion. (Caribbean Produce Exch., Inc. v. Sea Land Service, Inc., 415 F.Supp. 88 (D. Puerto Rico 1976). Allstate Insurance Company v. Int’l Shipping Corp., 703 F.2d 497 (11th Cir. 1983) follows the holding of Encyclopedia Britannica, Inc. v. SS Hong Kong Producer, 422 F.2d 7, (2d Cir. 1969) and Marvirazon Compania Naviera, S.A. v. H.J. Baker & Bros., 674 F.2d 364 (5th Cir. 1982) regarding short forms and long forms of bills of lading.
91. 768 F.2d 470 (1st Cir. 1985).
92. 703 F.2d 497 (11th Cir. 1983).
case, and the latter case was primarily based upon 46 USC § 814 rather than on § 844. The second case, Puerto Rico Marine, “is based on decisions which either misinterpreted § 844 or simply did not interpret § 844 at all.”

On a cost-benefit analysis it would seem that the savings in paper and printing costs between the short and long form bill of lading would not come near the potential liability costs in using the short form. In addition, the use of “fine print” in exculpatory clauses (as decried in the majority opinion in Britannica) would seem to be self-destructive; why not put these clauses in bold face print in order to show good faith by the carriers? Manufacturers in the United States have been issuing disclaimers of warranty in conspicuous print under § 2-316 of the UCC without disastrous results for many years.

2. Hague Coverage of Independent Contractors Before the Issuance of the Bill of Lading

As previously stated, one English case held that if a bill of lading was never issued then its provisions (including the Himalaya clause) could not apply. The concept that a shipper and carrier may be held to the terms of a bill of lading which was not issued until after the goods have been damaged or lost, seemed to have originated in the United States in the case of Luckenbach S.S. Co., Inc. v. American Mills Co., A shipper delivered 2,852 cots for shipment. After 1,402 cots had been loaded, fire broke out on the wharf and destroyed 1,450 of the unloaded cots. The shipper sued the carrier, which pleaded the exemption from fire loss contained in the bill of lading which was issued after the fire. The district court held in favor of the shipper, and the court of appeals reversed by stating:

Appellant was required by law to issue a bill of lading, but it had the right to except liability for loss by fire. The memorandum merely acknowledged receipt of the goods; it did not purport to be a contract of carriage. Appellee is presumed to know the law, and therefore must have known that the terms and conditions on which its goods were received and would be transported would be contained in a bill of lading to be issued later. In the circumstances, it cannot be inferred that it was the intention of the parties to enter into a contract that would bind the carrier as insurer; but an implied understanding arose from common business experience that the carrier would issue such bill of lading as it was its custom to issue to shippers in the usual

95. 768 F.2d at 478.
96. 422 F.2d at 10.
97. See supra, note 28.
98. 24 F.2d 704 (5th Cir. 1928).

Appellant's bill of lading was issued after the fire, but it was in accordance with its standard form, issued to all shippers alike, and was not made to fit a special case, in order to escape a liability that had already accrued. It, therefore, but evidenced the contract the parties entered into at the time the goods were delivered and accepted. In the ordinary case of a shipment of goods, it is not to be assumed, upon proof of delivery without condition, that the carrier intends to become insurer; but a shipper, in the absence of a special contract, must be presumed to deliver his goods on the terms and conditions usually and customarily imposed by the carrier in the regular course of business.99

The Luckenback case was followed in the same year by another federal court which held that the time bar limitation for suit in the bill of lading was applicable even though the goods (furniture) were damaged prior to the issuance of a bill of lading while the goods were still in the possession of the carrier on an Army base.100 Two American cases have held that the Himalaya clause in bills of lading would apply even though in one case the goods were destroyed before the loading and bills of lading were never issued101 and in another case where the bill of lading was issued after the goods were placed in a container which was allegedly contaminated and which caused damage to the rice contents.102

It has been held that when a dock receipt incorporates by reference the carrier's usual bill of lading which has a Himalaya clause protective of stevedores and the stevedore negligently drops a 45,000 pound steel shearing which damages the shear and the vessel, that the stevedore is protected even though a bill of lading was never issued because of the accident.103 If the parties understand that a contract for maritime carriage of goods exists even though a bill of lading has not been issued, then the parties are covered by COGSA time limitations.104

The facts in Scott & Williams, Inc. v. Pittston Stevedoring Corp.105 illustrate the old saw that "truth is stranger than fiction." A shipper delivered goods to a stevedore for maritime transport. The stevedore issued a dock receipt on behalf of the shipline; the dock receipt stated that:

99. Id. at 705.
102. Uncle Ben's Int'l Div. of Uncle Ben's, Inc. v. Hapag-Lloyd Aktiengesellschaft and Biehl & Co., 855 F.2d 215 (5th Cir. 1988).
105. 422 F.Sup. 40 (S.D. N.Y. 1976)
[r]eceived the above described goods or packages subject to all the terms of the undersigned's [Mormac's] regular form of dock receipt and bill of lading which shall constitute the contract under which the goods are received, copies of which are available from the carrier on request and may be inspected at any of its offices.

Unfortunately, the stevedore did not realize that the Mormac shipline was using an old form and a new form bill of lading simultaneously, and:

Under these circumstances, it cannot be said that either form of bill of lading was incorporated into the parties' agreement concerning the transportation of the knitting machine into Brazil. Given that the new form was either not being used at all or was being used along with the old form, the dock receipt did not refer to either document with the specificity necessary to effect an incorporation by reference.

The court pointed out in a footnote that the new form was apparently filed because the old form did not refer to stevedores with enough specificity to extend to them the COGSA limitations of liability. If a dock receipt is issued by the carrier and this receipt expressly adopts COGSA as governing and also adopts by reference the carrier's standard bill of lading including the $500 package rule) and the goods are damaged while in the ship's sling, then the shipper is bound by the package rule in its suit against the carrier.

On the other hand, a different result was reached in a case where a dock receipt was issued by the carrier to the shipper (no mention of the terms of the receipt was made in the decisions) and then the shipline unilaterally canceled the port of call agreed by the carrier and the shipper and then the goods mysteriously disappeared. The court held that the shipline became a common law bailee and could not plead the $500 package rule of COGSA. When a terminal operator in Baltimore, Maryland also operates as a warehouseman and he issues a dock receipt which incorporates by reference a proposed bill of lading and a blank copy of the proposed bill of lading is supplied by the terminal operator to the shipper, then:

The provisions of the bill of lading are applicable even though the bill was never issued. Where an unissued bill of lading is incorporated by reference in an issued dock receipt, its provisions become part of the maritime contract between the parties. (Ferrex International Inc. v. M/V Rico Chone, 718 F.Supp. 451 (D.Md. 1988) and Mediterranean Marine Lines v. John T. Clark

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106. Id. at 42.
107. Id.
108. Id at 42 n 5.
3. Non-Maritime Transportation and the Wording of the Bill of Lading

How wide an interpretation should the phrase "independent contractor" be given in the context of a Himalaya clause? It has been held that an independent truck-carrier in the hauling of a large tractor between two separate ports in the United States would be a non-maritime transaction and not fall within the exemption and, in addition, the bill of lading talked about the time when goods were "in custody of the carrier" that this would not include the time when the truck carrier was transporting the tractor on the public highways outside of the area of a port and the damage occurred on a public highway.\footnote{112}

In the case of Lucky-Goldstar Int'l (America) Inc. v. S.S. California Mercury\footnote{113} the Himalaya clause stated:

the Carrier shall be entitled to sub-contract on any terms the whole or any part of the handling, storage or carriage of the Goods . . . . [E]very such servant, agent and sub-contractor shall have the benefit of all provisions herein, for the benefit of the Carrier as if such provisions were expressly for their benefit.\footnote{114}

Goods were shipped from Korea to Seattle, Washington and for final delivery to New Jersey via railroads. The goods were seemingly damaged during the railroad transit, and the railroads claimed the package rule protection under the marine bills of lading. The court held that the above quoted language was not sufficient in itself to show an intention to extend the COGSA protections to a non-maritime carrier. The court suggested that if the parties really intended to cover non-maritime carriers it would have been so effortless to include the words "inland carriers" to the clause.\footnote{115}

The extensive reach of a "Himalaya" clause was well illustrated in a recent case\footnote{116} A large shipment of shoes was made from Hong Kong to Los Angeles for further shipment to New York. While the shoes were being carried on the railroad, the shoes were destroyed as a result of a derailment and fire which occurred in Arizona. The subrogating insur-

\footnotesize{111. The Ferrex case has an interesting discussion about the warehousing function and its liabilities in cases of mysterious disappearance.}
\footnotesize{113. 750 F.Supp. 141 (S.D.N.Y. 1990).}
\footnotesize{114. Id. at 144.}
Maritime voyage and an expensive hauling accident suffered by a trucking line at the destination

affd.,

very careful analysis of a maritime Himalaya clause in the context of inland transportation from a

presentation of proof in a mysterious disappearance case.

SUpp. 358 (S.D.N.Y. 1996). This case is a virtual law book trial guide in the preparation and

sealed, apparently intact, untampered-with container when it was unloaded in Buenos Aires

after a voyage from New York,

analysis of the facts surrounding the mysterious disappearance of 498 cartons of shoes from a

1235 (S.D. Tex. 1995) Another shoe case, but with a somewhat different result. For a painstaking

4. The Package Rule and Unreasonable Deviation

The Carriage of Goods by Sea Act provides that:

(5) Neither the carrier nor the ship shall in any event be or become liable for
any loss or damage to or in connection with the transportation of goods in an
amount exceeding $500 per package lawful money of the United States, or in
case of goods not shipped in packages, per customary freight unit, or the
equivalent of that sum in other currency, unless the nature and value of such
goods have been declared by the shipper before shipment and inserted in the
bill of lading. This declaration, if embodied in the bill of lading, shall be prima facie evidence, but shall not be conclusive on the carrier.

By agreement between the carrier, master, or agent of the carrier, and the shipper another maximum amount than that mentioned in this paragraph may be fixed: Provided, That such maximum shall not be less than the figure

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117. Id. at 419.
118. Id. at 427.
above named. In no event shall the carrier be liable for more than the amount of damage actually sustained.

Neither the carrier nor the ship shall be responsible in any event for loss or damage to or in connection with the transportation of the goods if the nature or value thereof has been knowingly and fraudulently misstated by the shipper in the bill of lading.

It is beyond the scope of this article to discuss the concept of "package" in light of the current use of containers in ocean transport. The case law seems to agree that when smaller "cartons" or "packages" are concealed in containers, it is imperative for the shipper to adequately state the number, character and value of these small packages in the bill of lading for adequate declaration of value under COGSA under pain of having a court declare that the container itself is this "package." 121 Unfortunately, when the contents are described by the shipper it is almost a guaranty in some ports that the goods will be stolen at some point in transit.

Even though the shipper is a sophisticated shipper (an airline) and it acted through a sophisticated freight forwarder, the carrier must give the shipper an opportunity by leaving spaces on the bill of lading wherein the shipper may declare a higher value for the goods and pay increased freight charges to the carrier. If the carrier fails to do this, a stevedore acting under this bill of lading cannot plead the $500 package rule as a successful defense. 122

Subsection 4 of Section 1304 provides that:

Any deviation in saving or attempting to save life or property at sea, or any reasonable deviation shall not be deemed to be an infringement or breach of this chapter or of the contract of carriage, and the carrier shall not be liable for any loss or damage resulting therefrom: Provided however, That if the deviation is for the purpose of loading or unloading cargo or passengers it shall, prima facie, be regarded as unreasonable.

Prior to the adoption of the Hague Convention (COGSA) in the United States it was the rule that an unreasonable deviation from the contract of carriage made the vessel an insurer of the goods if the goods were lost or damaged as a result of the deviation. After the adoption of COGSA, the Second circuit, 123 the Fifth Circuit, 124 and the Ninth Circuit 125 have con-

121. See e.g., Universal Leaf Tobacco Co., Inc. v. Companhia de Navegacao Maritime Netumar, 993 F.2d 414 (4th Cir. 1993); Belize Trading Ltd. v. Sun Ins. Co. of New York, 993 F.2d 790 (11th Cir. 1993); All Pacific Trading, Inc. v. Vessel M/V Hanjin Yosu, 7 F.3rd 1427 (9th Cir. 1993).
125. Nemeth v. General S.S. Corp., Ltd., 694 F.2d 609 (9th Cir. 1982)
continued this rule while the Seventh Circuit\(^{126}\) has held that COGSA was intended to change the former rules, and that the $500 per package limitation rule has survived in spite of the unreasonable deviation.

When the bill of lading states that the port of discharge is New York but the destination is Boston and the goods are delivered to a trucking company for transport to Boston, but the driver parks the trailer and chasis overnight on a public street in Queens, New York, where it was stolen, the trucker has lost the protection because of his unreasonable deviation.\(^{127}\) The carrier under 46 USC §§1304(4) and (5) may lose the protection of the $500 package rule of COGSA if it commits an unreasonable deviation in the carriage of the goods, and the loading of goods on deck in violation of a clean bill of lading or in violation of an agreed under-deck stowage will deprive the carrier of the protection of the package rule.\(^{128}\) The general rule is that a carrier is liable for an unreasonable geographic deviation to a port other than the destination port, but the liability is still limited under the $500 package rule in the Seventh Circuit.\(^{129}\)

The Fifth Circuit has held that when an Israeli vessel was instructed by the Israeli government to divert the vessel to Mobile, Alabama, on a journey from Israel to New Orleans, and the shipper's watch parts were discharged on the docks in Mobile and damaged by rain, that this was an unreasonable diversion even though the ship was to use the vacant cargo space to transport military supplies to Israel.\(^{130}\) The court then held that this unreasonable diversion precluded the use of the package rule by the ship when the shipper brought suit.

Section 4(5) of COGSA requires that the carrier give the shipper an opportunity to declare the true value of the goods and to pay a larger freight bill if required by the carrier, otherwise the carrier cannot plead the package rule. If the carrier prints the offer to the shipper in print that can not be read with the naked eye this does not impart notice to the shipper and is not prima facie evidence of "fair opportunity."\(^{131}\)

At least one court has held that the alleged negligence of the stevedore in unloading goods from a ship cannot constitute unreasonable deviation thereby precluding the defense of the COGSA package rule.\(^{132}\)


\(^{128}\) See Calmaquip Eng'g W. Hemisphere Corp. v. West Coast Carriers Ltd. 650 F.2d 633 (5th Cir. 1981) and the cases discussed therein.

\(^{129}\) See Atlantic Mut. Ins. Co., 313 F.2d at 874.

\(^{130}\) Spartus Corp. v. S/S Yafo, 590 F.2d 1310 (5th Cir. 1979).

\(^{131}\) Nemeth v. General S.S. Corp., Ltd. 694 F.2d 609, 611 (9th Cir. 1982) (holding that deck stowage is a deviation).

\(^{132}\) Rockwell Int'l Corp. v. M/V IncoTrans Spirit, 998 F.2d 316 (5th Cir. 1993).
The alleged deviation of "restowage" was involved in a recent case. Cargo was sent from China to California; when the ship arrived in Japan the cargo was removed from the ship and restowed in another ship. The cargo was damaged in the restowing process, and the shipper sued. The ship pleaded the package rule, and the shipper alleged unreasonable deviation which precludes this defense. The carrier then pleaded a clause in the bill of lading:

> Carrier shall have the right, without notice, to substitute or employ a vessel, watercraft, or other means rather than the vessel named herein to perform all or part of the carriage.

The district court held that this procedure was a "transshipment" and that the above clause did not cover this. The court held that the words "all or part of the carriage" means that: "[U]se of a substitute vessel for part of the voyage necessarily encompasses a transshipment." As a result, there was no unreasonable deviation, and the package rule prevailed. Under a *Himalaya* clause which mentions bailees, stevedores, etc., an intermediate stop stevedore who damaged the shipper's goods while restowing them for final delivery and this restowage was customary or contractually contemplated the stevedores' acts in accordance with the carrier's duties, and the stevedore is entitled to the protections of the package rule of COGSA.

Goods were sent from Sunnyvale, California to Dublin, Ireland, but the ship discharged the goods in Antwerp, Belgium and re-loaded them on another vessel for the trip to Dublin. When the goods were unloaded in Dublin, expensive damages to the cargo were discovered. The shipper sued, and the court held there would be no deviation if the testimony shows that in shipments to Dublin it is customary to stop in Belgium. Without a showing of unreasonable deviation the package rule would prevail as to the carrier. However, in this case there was a contract between the shipper and a freight forwarder that damages would be limited to twenty dollars per kilogram, or $9.07 per pound. The court held that the higher limits in this contract prevailed as against the forwarder rather than the COGSA limitation of $500 per package. The irony in this case is that it is obvious that the freight forwarder used the damage limits in the Warsaw Convention governing airline transport and not marine transport. Nine dollars and seven cents a pound for diamond shipments on airplanes is adequate protection to the freight forwarder and to the airline, but the same amount of money for marine cargo weighing tons is not

134. *Id.* at 1353.
135. Spm Corp. v. M/V Ming Moon, 965 F.2d 1297 (3rd Cir. 1992).
adequate protection to the forwarder.136

When a shipper and a freight forwarder orally agree with the carrier for underdeck storage of goods and the bill of lading prepared by the forwarder provides for a “clean” bill of lading, the oral contract controls. The acts of the carrier in stamping the issued bill of lading as providing for “deck” carriage cannot unilaterally change the contract of the parties and, the carrier is liable for damage suffered by the cargo in transit. Further, the forwarder cannot successfully use the unilateral change of the bill of lading by the carrier as a defense when it (the forwarder) is sued by the shipper.137 “It is clear that if there is no definite agreement one way or the other, a shipper is entitled to expect below deck storage, unless there is a showing of a different custom in that port.”138

If a bill of lading mentions New York City as the only port of call for a shipment originating in Spain, but the ship, in fact, stops at St. John, Newfoundland and Boston, Massachusetts, this will not constitute a deviation if the carrier has made these stops known to the shipper or to the shipping community generally through advertisements and publications. Unrebutted testimony from the carrier's employees that these routes were widely published in Spain and the United States would be sufficient evidence of publication.139

A federal district court (in the Fourth Circuit) has followed the lead of the Second Circuit140 in refusing to find as a matter of law that the carriage of goods on deck under a “clean” bill of lading is an unreasonable deviation depriving the carrier of the protection of the COGSA provisions.141 In this case the court held that when a carrier can show that on deck stowage is customary, there can be no deviation and the issue of reasonableness does not arise. However, the court went on to state:

What was unreasonable yesterday may be reasonable today. Thus, the carrier will be given the opportunity to show that stowage on deck of the cargo was only a reasonable deviation from the contract.142

This case was heard on a motion for summary judgment filed by the shipper, and no facts were introduced as to why the ship in this case loaded

136. Amdahl Corp. v. Profit Freight Sys., Inc., 65 F.3d 144 (9th Cir. 1995).
142. Id. at 934.
two of the shipper's containers below deck and the third one on deck. The third container's contents because of strong wind and seas burst through the sides of the container and were damaged. The case did not indicate that this was a container ship like the one involved in the DuPont case.

5. **Time Limitations for Suit-Estoppel, Waiver, Fraud, Extensions, Misdelivery and “Short Form-Long Form Bills of Lading”**

46 USC §1303(6) provides:

[T]he carrier and the ship shall be discharged from all liability in respect of loss or damage unless suit is brought within one year after the delivery of the goods or the date when the goods should have been delivered . . .

The running of this time bar can only be interrupted by the filing of suit within the one year period, or by an express waiver of the one year rule by the defendant, or the defendant may be equitably estopped from asserting the bar because the defendant has misled the plaintiff. A number of courts have either held or recognized that the one year limitation of action under COGSA may be tolled if the defendant or its attorneys have fraudulently misled the plaintiff into thinking that the case would be settled and the plaintiff acted reasonably in relying upon the misleading conduct of the defendant.143 Unfortunately, most of the cited cases have held against the shippers by finding either that there was no misrepresentation by the carrier and/or the shipper was not misled. It seems that any prudent attorney for the shipper should first file suit (with service of process) and then negotiations for a settlement should commence.

In a recent case from Puerto Rico, the attorney for the carrier and the plaintiff shipper were negotiating a settlement and while the shipper was awaiting an amended offer, the filing deadline “came and went.”144 The shipper sued, and was met with a motion for summary judgment. The court held that there was no evidence that the carrier expressly waivered the running of the statute of limitations. The court then stated that a carrier may be equitably estopped from raising the statute if the


plaintiff can show that he was misled into reasonably and justifiably believing that the statute of limitations would not be used as a defense or it would be extended. However, mere settlement negotiations would not be sufficient to equitably estop a carrier from raising the time bar. The court in this case noted that the federal district court in Puerto Rico in *Michelena & Co., Inc. v. American Export and Isbrandtsen Lines, Inc.* 145 had posed a hypothetical question to the attorney for the defendant carrier which elicited an answer which seemed to state that the attorney believed that the one year bar would prevail even if the defendant had maliciously misled the plaintiff into waiting too long and then telling the plaintiff: "I am very sorry. The time has elapsed. I have been fooling you all these days but the law states that you had just one year in which to make your claim in court. Now I don't owe you anything at all."146

One of the best researched cases dealing with the question of estopping a defendant from asserting the COGSA one year rule is *Mikinberg v. Baltic Steamship Co.* 147 Mr. Mikinberg shipped some of his possessions to the United States on the Baltic line. The goods were unloaded by a stevedore who misdelivered the goods to an impostor who used forged papers to claim the goods. The stevedore claimed coverage under the shipline's *Himalaya* clause. Mr. Mikinberg was not versed in the English language, and his lawyer removed himself from the case "citing unfamiliarity with Russian and Yiddish,"148 and the plaintiff continued the case pro se. Mr. Mikinberg filed suit after the elapsing of the one year period, and the stevedore moved for summary judgment. The plaintiff contended that he was told that the statute of limitations would be extended while the investigation of the missing shipment was being handled by the stevedore.

Lawyers and investigator (sic) were busy with this case for more than one year and were not in a hurry to bring this action to Court. I was told that the one year period of statute of limitations should be extended while the investigation is (sic) being processed.149

The court rejected the assertion that the statute of limitations under COGSA should be extended during such investigations. However, the court was of the view that there might be an equitable estoppel against the stevedore:

Rather, we examine whether as a matter of equity Baltic is estopped from

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147. 988 F.2d 327 (2nd Cir. 1993).
148. Id. at 329.
149. Id. at 330.
asserting the time bar as a defense. See Austin, 367 F.Supp. at 948. This is an issue of fact, and one that need not be proved by documentation if credible testimony is given about misrepresentations by the defendants. In this case, Mikinberg would have to show that Baltic falsely represented to him that the statute would be extended during the investigations into the stolen cargo, or that Baltic would not assert the statute as a defense. Mikinberg would also have to show that he relied on this representation in failing to file suit within one year from delivery. An oral representation would suffice. See Gour­mand, Inc. v. M/V Nedlloyd Inc., 1989 WL 54155, at *1(S.D.N.Y. May 18, 1989).150

The large volume of Himalaya cases seem to display an appalling ignorance by maritime shippers of the fact that the Carriage of Goods Act has a one year statute of limitations which protects not only the maritime carrier but also the carrier’s agents, servants and independent contractors if they are embraced under a Himalaya clause.151 The statute of limitations provided for in a bill of lading which is subject to COGSA may not be shorter than the one year period provided by COGSA.152 In order to be effective, any agreement to extend the one year statute of limitations in COGSA must be entered into prior to the expiration of the one year period.153 Misdelivery of goods by a stevedore does not take away the one year for suit limitation rule of COGSA under a theory of deviation.154

In a similar vein, the misdelivery of goods even if caused by a criminal bribe of an employee of the misdelivering warehouse has been held as not doing away with the protection of the package rule for the warehouse.155 Even if owners of a vessel keep it hidden and change its ownership and name in order to avoid its being libeled, these acts do not toll the running of the statute of limitations of COGSA.156 On the other hand, it has been held that the statute of limitations may be extended when a potential corporate defendant fraudulently conceals the identity of another possible corporate defendant controlled by the concealer, and the statute begins to run from the time of the discovery of the identity of the

150. Id. at 331.
151. See, e.g., Uncle Ben’s Int’l Div. of Uncle Ben’s, Inc. v. Hapag-Lloyd Aktiengesellschaft, 855 F.2d 215 (5th Cir. 1988); Barretto Peat, Inc. v. Luis Ayala Colon Sucrs., Inc., 896 F.2d 656 (1st Cir. 1990).
concealed defendant.\textsuperscript{157}

If the carrier gives a written extension of time to the shipper to sue does this extension also bind an independent contractor who was hired to handle and store the cargo? It has been held that when the independent contractor was a third party beneficiary under the carrier's \textit{Himalaya} clause, that the unilateral extension of time by the carrier does not extend the time for suit against the independent contractor.\textsuperscript{158} An unreasonable geographical deviation by the carrier does not abrogate the contract of carriage and thereby take away the protection of the one year time limitation of COGSA.\textsuperscript{159}

6. \textit{The Position of Freight Forwarders}

If the shipper of goods contracts with a freight forwarder to forward the goods and to make contracts of shipment with marine carriers, is the forwarder an agent for the shipper, agent for the carrier or an independent contractor and not an agent for either shipper or carrier?

This question is not of mere academic interest because if the freight forwarder is an agent for the shipper and the forwarder makes an improper contract of carriage with the carrier, then the carrier may not perhaps be liable in case of loss while the agent may bear the loss. For example, in \textit{Constructores Tecnicos, S. de R.L., v. Sea-Land Service, Inc.},\textsuperscript{160} a shipper shipped a truck and drilling rig from New Orleans, Louisiana to Honduras. The truck and rig were shipped on deck, and the goods were severely damaged by other containers which broke loose from their lashings and fell on the truck and drill rig during a severe storm. The shipper sued the carrier (and others) for placing the truck and drill on deck under a clean bill of lading. The shipper pleaded the deviation rule when the carrier asserted that the freight forwarder knew that the carrier retained the option to store on deck or below deck in the absence of a specific instruction in the bill of lading, and that the agent's knowledge bound the shipper.

The court followed the general rule that a clean bill of lading imports that goods are not being carried on deck and holding that even if the freight forwarder was the agent of the shipper and had knowledge of the carrier's right to stow on deck, this would not bind the shipper. The court

\textsuperscript{157} Ross Indus., Inc. v. M/V Gretke Oldendorf, 483 F.Supp. 195 (E.D. Tex. 1980).
\textsuperscript{160} 945 F.2d 841 (5th Cir. 1991).
also found that there is no hard and fast rule in American law that freight forwarders are deemed to be agents of the shipper; the facts of each case determine the result. The court determined that the freight forwarder was not the agent of the shipper, and that:

The key under non-agency circumstances is not who obtains the bill, but rather its contents. If the shipper has in no way consented to on deck stowage, and cannot be deemed to have done so through a freight forwarder acting as its agent, the law's concern is with the shipper's expectations. It is immaterial whether the shipper or the shipper's freight forwarder has made the arrangements under which a clean bill of lading has been obtained. Thus, the Ingersoll presumption is equally applicable where, as here, the shipper obtains a clean bill of lading for its shipment through the actions of a freight forwarder working as an independent contractor.161

The court then upheld the findings of fact by the district court that the damage to the goods was caused by the inadequate lashings of the adjacent containers, and that there was no contrary evidence indicating that under deck stowage would not have entailed the same risk to the goods. The deviation was deemed unreasonable by the court, and the package limitation rule would not protect the carrier.

7. Indemnification of the Shipline by Third Party Contractors

When the carrier is held liable for the mysterious disappearance of cargo from the possession of a stevedore-warehouse the carrier can recover indemnification from the stevedore-warehouse for its breach of implied warranty of workmanlike service. However, the Himalaya clause which protects the stevedore-warehouse by limiting its liability as to the shipper under the package rule can also limit the stevedore warehouse's liability to the carrier under the same rule.162

If a stevedoring contractor who is also acting as steamship agent of the carrier delivers the goods to the consignee at the port of destination without receiving a surrender of the negotiable bill of lading and the shipper-seller is thereby deprived of control of the goods and is unable to secure the purchase price from the consignee and it sues the stevedore, then a properly drafted Himalaya clause covering independent contractors will also protect the stevedore who may then plead the one year statute of limitations rule of COGSA.163

161. Id. at 848.
162. See Seguros "Illimani" S.A. v. M/V Popi, 929 F.2d 89 (2d Cir. 1991) modified, Monica Textile Corp. v. S.S. Tana, 952 F.2d 636 (year).
163. Barretto Peat, Inc. v. Luis Ayala Colon Sucres, Inc. 896 F.2d 656 (1st Cir. 1990). The Orient Verseas Line court provides an interesting and through analysis of the negligent discharge, unloading, and mishandling of a cargo of hand tools and the allocation of losses between carrier,
III. THE WARSAW CONVENTION

A. INTRODUCTION

The Warsaw Convention of 1929 (Convention for the Unification of Certain Rules Relating to International Transportation by Air) was designed to limit damages for personal injuries, death, and damage or loss to baggage and cargo. Currently, airlines are liable for not more than $9.07 per pound for baggage and air cargo unless a higher declaration of value is made by the passenger or shipper and reflected in the airway bill. Of course, the airline may impose increased charges for the declared higher value.

The Warsaw Convention made no clear declaration concerning extending its protective limits to employees of the airlines, nor did it cover agents and third party contractors under any kind of protective umbrella. This omission in coverage seems strange (at least to the author) when one considers that Article 20 (1) mentions that the “carrier shall not be liable if he proves that he and his agents have taken all necessary measures to avoid the damage . . . ,” and sub-section (2) of this article mentions that the carrier would not be liable if he proves that the damage was occasioned by an error in piloting, in the handling of the aircraft, or in navigation and that, in all other respects, he and his agents have taken all necessary measures to avoid damage. In addition, Article 25 provides that the carrier may not avail himself of the liability limiting provision of Warsaw if any employee acting within the scope of his employment is guilty of wilful misconduct. On the other hand, it might well be that in spite of the agent-employee focus in these articles, the real focus was on the protection of the air carrier in light of the civil approach of treating the corporate-human agents as one entity.

B. EXTENSION OF WARSAW CONVENTION’S PROTECTIONS TO THIRD PARTIES

Article 22 of the 1929 Warsaw Convention originally limited recovery for injuries and death of passengers to 125,000 French francs (approx. $8,241.00) which was subsequently raised to $75,000 per passenger on all flights into or out of the United States (Montreal Agreement). These relatively low limits encouraged efforts to circumvent them, and the first appellate case to attempt to do so, Reed v. Wiser, involved passenger representatives suing the president and vice-president in charge of secur-
ity for Trans World Airlines (TWA) for their alleged negligence in failing to prevent the terrorist bombing of an aircraft which killed 79 passengers. The airline was not sued by these plaintiffs. The defendants pleaded the Warsaw Convention limits, and the district court held that the Convention did not protect the officers of TWA; the district judge then certified the question of law to the Court of Appeal.

The Court of Appeal made an extensive analysis of the wording of the Warsaw Convention, the proposed Hague Convention which provided that any servant or agent of the carrier shall "be entitled to avail himself of the limits of liability which that carrier himself is entitled to invoke under Article 22," the historical background of the Warsaw and Hague with the conclusion:

Thus the plain language of the original Convention, read according to the meaning that would ordinarily be given to the pertinent official French-language text, tends to support appellants' contention that its liability limits were intended to apply to a carrier's employees, with little or no further light on the issue being contributed by its legislative history, subsequent events, or decided cases. That interpretation, moreover, although not necessarily according with common law principles, which separate the corporation and its employees for liability purposes, does reflect the legal principles of many civil law states, which treat the corporation and its employees as one.

To the extent that the decided cases indicate anything, they would tend to support, on balance, the conclusion that employees should be covered. In Wanderer v. Sabena the court held that agents were protected by the liability limits. Following Wanderer, the court in Chutter v. KLM also held that the Convention protects agents. In 1957, the court in Pierre v. Eastern Airlines, Inc. apparently unaware of Wanderer and Chutter and relying on the failure of this country to ratify the Hague Protocol, held that the defendant pilot was not protected even though his co-defendant and employer Eastern Airlines was. The ultimate disposition of this case was unclear. (Appellants assert that the case was not appealed and was settled for a nominal amount. Amicus asserts that the nominal sum was greater than that permitted by the Convention.) In 1961, a Canadian trial court ruled that the Carriage by Air Act, which embodied the Warsaw Convention in Canada, did not limit the liability of the estates of employee pilots. The Court of Appeals held that the flight was not "international" for purposes of the Convention, so that the limitations of the Convention did not apply, and that in any event any cause of action against the pilots did not survive their deaths, and therefore concluded that "it is not necessary to consider whether

168. Id. at 1087-88 note 11.
the pilots would have been entitled to its benefits had it been applicable to the flight in question."\textsuperscript{173}

The parties and amicus curiae cite in addition Scarf v. Trans World Airlines, Inc.\textsuperscript{174} and Hoffman v. British Overseas Airways Corp.\textsuperscript{175} and Judgment of Dec. 3, 1969, Cass.Crim., France (1970) D.S. Jur. 81. In Scarf, no allegations of agency were made, and the court distinguished Chutter on that basis. In Hoffman, the court refused to dismiss for improper venue a suit against an airport portable stairway company where the company refused to concede jurisdiction over the claim in any other court, distinguishing Chutter as not dealing with venue problems. Why amicus curiae cites the French case, Judgment of Dec. 3, 1969, in support of its position is something of a mystery, since France ratified the Hague Protocol prior to that decision. In any event, the case involved the jurisdictional peculiarities of the French action civile, in which criminal and civil liberties are assessed simultaneously against an alleged wrongdoer—in this case the pilot. The court upheld a motion to dismiss the adjoined suit against the employer carrier for lack of venue under the Warsaw Convention. No motion was made to dismiss the civil half of the action civile, and no consideration was given by the court to problems that might be involved in doing so.

Thus, with the possible exception of Pierre, to our knowledge there has never, during the entire 40-odd years of the Convention, been a Warsaw case in any country in which a plaintiff has obtained, by suing the carrier's employees instead of the carrier itself, more than the sum for which the carrier itself would be liable under the Convention as modified by applicable protocols and agreements.\textsuperscript{176}

The court stated that the Warsaw Convention's objectives of uniformity and for airlines being able to define the limits of their liability would be furthered by extending the shelter of Warsaw to the servants of the airline.

Perhaps the most telling reason for protecting employees and agents was expressed in the following words:

Most carriers, at their employees' insistence, provide their employees with indemnity protection. The pressure for indemnification is attributable principally to the difficulty confronted by certain employees, such as pilots or their estates, in defending against personal liability, regardless of the amount claimed, in view of the common law presumption of liability created by the doctrine of res ipsa loquitur, see Lowenfeld, Aviation Law § 4.32, at VI-100 (1972), and the imposition of absolute liability under certain civil law systems.\textsuperscript{177} It is inconceivable that airlines could long operate without reim-

\textsuperscript{174} 4 Av.L.Rep. (CCH) 17,828 (S.D.N.Y. 1955).
\textsuperscript{175} 9 Av.L.Rep. (CCH) 17,180 (N.Y. Sup. Ct. 1964).
\textsuperscript{176} Reed v. Wiser, 555 F.2d 1079, 1087-88 (2d Cir. 1977).
\textsuperscript{177} Id. at 1090. "Thus the estate of the pilot of the DC-10 that crashed shortly after takeoff
Seven years after the Reed case, a Mrs. Baker was having her baggage checked by a security service company employed by British Airways in the course of her flying from New York to London. Mrs. Baker allegedly lost approximately $200,000 worth of jewelry from her hand luggage between the time she delivered the luggage to the security service and when it was returned to her on the other side of the screening area. Mrs. Baker sued the security service and British Airways. The court held that the Warsaw Convention applied because Mrs. Baker was involved in the embarking phase of her flight which is covered by Warsaw rules. Following the lead of the Reed case, the court granted partial summary judgment stating that the security service was performing work that would otherwise have to be performed by employees of British Airways, and that the Warsaw limits of recovery of approximately $400 would apply in favor of the security service.179

Mrs. Baker’s loss in New York was preceded by another jewelry loss when a jewelry salesman checked jewelry sample cases with jewelry contents worth $55,000 in a flight from Nassau, Bahamas to Bermuda with an intermediate stop at JFK International Airport in New York. The baggage was lost when it was being transported from a Delta Air Lines flight to an Eastern Air Lines flight by a transport company employed by Delta and other airlines to perform inter-line baggage transfer services between connecting airlines at JFK. The court followed the Reed holding by stating:

To allow an agent such as Allied, which is performing services in furtherance of the contract of carriage, and in place of the carriers themselves, to be liable without limit would circumvent the Convention’s purposes of providing uniform worldwide liability rules and definite limits to the carriers’ obligations. Nor do we see a sufficient basis for departing from the principle of the Reed case. See Leppo v. T.W.A., 56 A.D.2d 813, 814, 392 N.Y.S.2d 660, 661.

We are fortified in this conclusion because permitting circumvention in this manner would be inappropriate considering the Convention’s express provision in Article 22(2) for consignors to avoid the damage limitations applicable to baggage by declaring an increased value at the time of delivery. Plaintiffs’ representative did not avail himself of this opportunity to cover

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178. Reed, 555 F.2d at 1090. "Here, plaintiffs demand a total of $8,600,000 on behalf of 9 out of the 79 passengers on board. As the amicus brief notes, the case on appeal is the test case for the remainder of the suits consolidated with it below." Id. at note 15.

the full extent of his loss. Further, there was no privity between plaintiffs-appellants and Allied, and their only relationship arises by virtue of Allied's employment by the carriers.

Accordingly, we hold that the liability limitations of the Convention apply to an air carrier's agent performing functions the carrier could or would, as here, otherwise perform itself. The order of the Supreme Court, New York County (M. Evans, J.) entered on December 29, 1977, should be modified on the law to delete the specific damage limitation, and otherwise affirmed, without costs.180

If the shipper declares the value of the cargo as being in excess of the basic Warsaw recovery limitation of $9.07 per pound, then if the cargo (dental gold) is lost, the carrier is liable for the value of the gold as of the time of loss even though the carrier asserts its filed tariff which denies any liability for the carriage of gold and silver bullion in the absence of proof that the shipper knew of the tariff restriction. The mere filing of a tariff rule does not put the shipper on notice (according to this court) unless it is proved that the shipper knew of the restriction; filing is no longer constructive notice after federal deregulation.181 At least one court has held that the liability limitations of the Warsaw Convention extend to independent corporations which serviced and maintained an airline whose airplane crashed killing all on board.182

An independent contractor which provides services for an airline which the airline could have provided for itself and which it was bound to supply under a contract of carriage is subject to the two year statute of limitations of the Warsaw Convention.183 In Johnson v. Allied Eastern States Maintenance Corporation, a woman arrived at an airport terminal and was met by a skycap employed by Allied who offered her a wheelchair just as she stepped out of a car. As the skycap was wheeling her onto a boarding ramp, the wheelchair struck a metal strip and it turned over throwing her against the wall and then to the floor. The woman suffered a broken bone in her foot and other injuries. Almost three years later, she sued Allied, who pleaded the two year limitation statute. The court followed the Reed case, and held that Allied was performing services for the airline and should be protected by Warsaw, and that her

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183. Garlitz v. Allied Aviation Serv. Int'l Corp., 17 Av. L. Rep. 238 (N.Y. Sup. Ct. 1982). However, the opinion did not disclose the nature of the services.
action was time barred.185

C. WARSAW WORDING REQUIREMENTS UNDER ARTICLES 4 AND 8 FOR BAGGAGE CHECKS AND AIR WAY BILLS

Article 8 of the Warsaw Convention requires, among other things, that the airway bill state the “agreed stopping places” of any particular transport. This requirement may be satisfied (at least in the second circuit) if the air waybill incorporates by reference the airline’s published timetables, provided that they accurately reflect the “agreed stopping places” for any particular flight.186

Article 4 of the Warsaw Convention states rather formal requirements as to the wording of baggage claim checks and likewise, Article 8 contains similar requirements for cargo air waybills. In the Second Circuit the federal courts have held in the past that when one or more of the stated “requirements” are missing this will not preclude the carrier from asserting the Warsaw limits of liability where the omissions are insubstantial and do not prejudice the shipper.187

More recent cases have, however, placed limitations on these Second Circuit cases. Under the new interpretation of the Warsaw Convention in the Second Circuit, if “the text is clear” the courts cannot insert an amendment.188 For example, in Maritime Insurance Co., Ltd. v. Emery Air Freight Corp., photographic equipment was delivered to Emery in Panama for transport to Toronto. Pan American Airways was the initial air carrier. Emery issued the air waybill. The goods were lost somewhere in transit. Emery's air waybill did not contain: (a) the place and date of its execution; (c) the agreed stopping places . . . ; (e) the name and address of the first carrier . . . .” In addition, under section (i) of Article 8 of the Convention, the air waybill did not contain the volume and dimensions of the goods although it did contain the weight and quantity as required by section (1) of Article 8. The district court held in favor of the Emery Air Freight on the grounds that the omissions were not commercially significant or prejudicial under the Exim holding.

The Court of Appeals reversed, holding that most of the text of Arti-

185. Id.
articles 8 and 9 are clear, and the court cannot amend them. The court reaffirmed *Exim* as good law, but limited it by stating:

However, *Exim* must be limited to its facts: that is, the “commercially significant” test applies *only* to subsections (h) and (i). Except for those two subsections, the language of Articles 8 and 9 is clear. Article 9 states simply and categorically that if the waybill does not contain the particulars listed in Article 8(a)-(i) and (q), the carrier will not be entitled to limit its liability. Subsections (a), (c) and (e) are also clear, unambiguous statements. No confusion can possibly arise as to the meaning of “the place and date of its execution.” “[t]he agreed stopping places” or “[[t]he name and address of the first carrier” *Chan and Victoria Sales* prohibit us from engraving a commercially significant test on Articles 8 and 9 except where the text is ambiguous, that is, except with respect to subsections (h) and (i). *Exim* is thus limited to its facts, and to the extent any district court cases in this Circuit have expanded the *Exim* holding beyond subsections (h) and (i), they are hereby overruled.

Applying these results to the facts before us, it is clear that Maritime must prevail. Particulars listed in subsections (a), (c) and (e) were missing from the waybill. Under Article 9, the carrier is not permitted to limit its liability if those particulars are absent. We need not address the omission of the subsection (i) particulars and can thereby avoid engaging in any commercial significance analysis. Therefore, we hold that Maritime is entitled to full recovery.189

The Second Circuit in companion cases190 has laid down the required wording requirements of Article 8 and 9 of the Warsaw Convention:

As we noted in *Brink's Ltd. v. South African Airways*191 argued contemporaneously with this case, our cases interpreting Articles 8 and 9 of the Warsaw Convention yield three rules. First, if an air carrier omits from its air waybill any of the enumerated particulars of subsections (h) and (i) of Article 8, Article 9 operates to deprive the carrier of limited liability protection if the omitted particular is of commercial significance.192 Second, if an air carrier omits any other essential particular from its air waybill, Article 9 automatically deprives the air carrier of limited liability protection regardless of commercial significance.193 Third, if an air carrier includes an essential particular in its air waybill, but deviates in language or some other respect, a court may look beyond the language of the text to secondary tools of interpretation in determining liability.194 Each of these rules comports with the general rule that where the text is clear, a court has “no power to insert an

189: *Maritime*, at 17,384.
191. *Tai Ping*, at 31-33.
194. *Id.*
Our decision in Brink's enunciated an additional rule. In that case, the shipper contended that Article 8(c) required the air carrier to list the agreed stopping places within the air waybill itself. The carrier instead had referred to its timetables for the stopping places. We reasoned that resort to secondary tools of interpretation was permissible and necessary because the Maritime decision addressed only the pure omission of agreed stopping places and Articles 8 and 9 were otherwise ambiguous. Brink's 93 F.3d at 1033. We noted that other signatories to the Convention approve of satisfying Article 8(c) by incorporating timetables into the air waybill. Id. We also noted that incorporation of readily available timetables provides shipper with sufficient notice of the international character of the flight, thereby realizing the drafter's purpose in including the agreed stopping places in the air waybill. Id. Accordingly, we held that an air waybill that incorporates readily available timetables satisfies Article 8(c)'s requirement that the air waybill "contain" the "agreed stopping places" and does not deprive the air carrier of limited liability protection under Article 9. Id.

The purpose behind Article 8(c), which we examined in Brink's is most pertinent here. As we explained, the participants to the Convention included the requirement that the waybill contain the contemplated stopping places so that the waybill itself would notify the shipper of the international character of the flight and, thus, the applicability of the Warsaw Convention. Brink's, 93 F.3d at 1034-35. We also explained that while the point of departure and destination ordinarily would indicate the domestic or international character of the flight, Article 8(c) recognizes the possibility that a contract of carriage within one sovereign may include a stopover in another sovereign. Id. Thus, Article 8 requires the air carrier to include in its waybill not only "[t]he place of departure and of destination." Warsaw Convention, Art. 8(b), but also "[t]he agreed stopping places," id., Art. 8(c).

(5) An air waybill cannot realize Article 8(c)'s purpose of establishing the domestic or international character of the carriage unless if effectively conveys the necessary information. In other words, incorporation by reference to readily available timetables satisfies Article 8(c)'s requirement that the waybill "contain" the agreed stopping places only if the incorporation effectively reveals the agreed stopping places. An air waybill can not effectively reveal the agreed stopping places by incorporation of its timetables unless it also includes the information necessary to apply those timetables to the contract of carriage. Thus, effective incorporation depends on the accuracy of other information in the waybill. Cf. Kramer v. Time Warner Inc. 937 F.2d 767, 777 (2d Cir. 1991)(stating in context of securities laws that the practice of disclosure through incorporation by reference "should be restricted to circumstances in which no reasonable shareholder can be misled"); New York Marine & Gen. Ins. Co. v. S/S "Ming Prosperity", 920 F.Supp. 416, 427 (S.D.N.Y. 1996) (stating in context of arbitration agreements that "an in-

195. Id at 31-32.
complete or inaccurate reference ... may prove insufficient to incorporate” (quoting Coastal States Trading v. Zenith Navigation S.A. 446 F.Supp. 330, 338 (S.D.N.Y. 1977)).

(6) Northwest's waybill did not effect a valid incorporation of regularly scheduled stops in Anchorage, Alaska and Narita, Japan by reference to its timetables. Although the waybill stated that the agreed stopping places were those "shown in Carrier's timetables as scheduled stopping places for the route," the front of the waybill incorrectly identified the flight number and date of the flight as "901/10"—flight number 901 on December 10, 1992. Thus, although the waybill referred to readily available timetables, the timetables referred to did not apply to the transportation of Tai Ping's shipment.

The waybill included incorrect information regarding the date of departure. Without the correct date of departure, the shipper could not refer to the timetables to ascertain the stopping places. Similarly, the waybill did not include any information regarding the transfer of the shipment to flight 907 in Narita, Japan. Although carriage to be performed by several successive air carriers is deemed to constitute a single carriage, Warsaw Convention, Art. 1(3), so that such information generally might not be necessary, transfer information is necessary when an air waybill incorporates regularly scheduled stops in satisfaction of Article 8(c) by reference to its timetables. Without notice of the transfer, the shipper could not track its shipment and discover the scheduled stops from the timetables. Thus, in light of the incorrect and omitted information, Northwest's air waybill did not incorporate or "contain" the agreed stopping places under its contract of carriage with Tai Ping.

The provision contained in the Northwest tariff, to the effect that the carrier does not guarantee any particular flight or time for commencement of carriage, does not protect Northwest from the loss of limited liability under Article 9. Although the air waybill incorporates the Northwest tariff, and although the terms of the tariff are also the terms of the contract of carriage, Tishman & Lipp v. Delta Air Lines, 413 F.2d 1401, 1403 (2d Cir. 1969), the terms of the tariff do not address or affect the validity of Northwest's attempt at incorporation by reference. In other words, while the terms of the contract of carriage allow Northwest to change the time for commencement of flight and the flight number unilaterally, the Warsaw Convention still requires Northwest to include the "agreed stopping places" in its air waybill. 196

D. Freight Forwarders as "Indirect Air Carriers"

The concept of a "freight forwarder" became a little more refined in the case of Royal Insurance v. Amerford Air Cargo, 197 Amerford Air

196. Id. at 32-33.
Cargo was an air freight forwarder which picked up goods from customers, arranged air transport on direct air carriers, consolidated the goods in preparation for transport, and delivered them to air carriers. Amerford charged a single fee which included the cost of the flight. Amerford picked up some expensive goods from IBM for shipment to Japan. The goods were stored over-night in Amerford's warehouse which was located near JFK International Airport. The following day, Amerford employees could not locate the goods, which were never found. IBM claimed the full value of $97,713.97, while Amerford offered the Warsaw limitation of $1,310.00, which was refused and the subrogating insurance company sued Amerford.

The court rather than entirely following the Reed approach, noted that freight forwarders may be classified as "indirect air carriers" under Federal Regulations\textsuperscript{198}. This labeling of a freight forwarder as an "indirect air carrier" comes within the notion of air carrier under the Warsaw Convention thereby entitling the freight forwarder to limited liability. The court refused to apply New York law governing warehouses as stated in \textit{I.C.C. Metals, Inc. v. Municipal Warehouse Co.}\textsuperscript{199} that a warehousemen is presumed guilty of conversion if he is unable to prove what was the cause of the loss and that he will be responsible for the full value of the missing goods as a converter. The court was of the view that Warsaw Convention governed, not the law of the state.\textsuperscript{200}

A shipment of the drug, "coumadin" was made from Frankfurt, West Germany to New York by a freight forwarder. The forwarder sued the Emery Air Freight Company for loss of the goods which occurred in Emery's warehouse located approximately one-quarter of a mile outside the New York airport. Emery claimed the Warsaw Convention limits of $9.07 per pound, or $16,220, while the plaintiff claimed the full market value of $281,571.00. The trial court held that Emery was protected by the Warsaw limits; the court of appeals reversed holding that Section 1 of Article 18 of the Convention provides that liability under the Convention extends to any damage or loss sustained during "transportation by air." Further, Article 18 defines this wording as "the period during which the baggage or goods are in charge of the carrier, whether in an airport or on board an aircraft." In addition, Section 3 of Article 18 provides that the "period of transportation by air shall not extend to any transportation by land . . . performed outside the airport." Finally, there is a presumption

\textsuperscript{200} \textit{See Victoria Sales Corp. v. Emery Air Freight, Inc.}, 21 Av. L. Rep. (CCH) 18,529 (S.D.N.Y. 1989) (holding that freight forwarders were covered under the Warsaw Convention in the shipping of air cargo).
that "for the purpose of loading, delivery or transshipment, any damage is presumed, subject to proof to the contrary, to have been the result of an event which took place during the transportation by air." In this case there was no doubt that the goods disappeared from the Emery warehouse, so the presumption of damage occurring "during the transportation by air" was rebutted.

Of course, Emery advanced the argument that as a matter of common sense the loss occurred during the shipment of the goods, but the court gave the Warsaw Convention a literal interpretation and held against Emery. However, the Court of Appeal upheld the trial court's award of indemnification between Emery and the forwarder for attorneys fees and court costs amounting to $87,929.58.201

In accord with Victoria Sales Corp. v. Emery Air Freight202 a California federal district court has held that when goods are transported by truck from the airlines office in the airport to a warehouse three quarters of a mile from the airport, that the Warsaw Convention does not apply to damage occurring at the warehouse when forklift operators damaged the cargo because of Article 18 which excludes from any transportation by air "any transportation by land, sea, or by river performed outside an airport." The court went on to hold, however, that the federal common law governed this shipment and that the air waybill which provided for a limitation of $9.07 per pound (under the Warsaw Convention) would act as a "released rate valuation" which limited the carrier's liability by contract.203 The cumulative result of these two cases would seem to indicate that freight forwarders (and other handlers of cargo) should attempt to lease quarters on an airport, and if they are unable to do so, then use the "released rate valuation" approach of the Hitachi Data case. In addition, warehouses which might not be classified as freight forwarders, should consult Section 7-204 of the Uniform Commercial Code for a possible limitation of liability.

In a recent case, a large container of prescription pills was either lost or misplaced and replaced by a container of bottled water. The shipper sued the airline (KLM) and the freight forwarder which had prepared the airway bill. The airway bill contained a number of non-conforming details, but the court held that the weight was accurately stated and that the incorrect descriptions were not "commercially significant" and did not take away the Warsaw limitations. Further, the shipper alleged that the freight forwarder did not take adequate security protections and that this was willful misconduct under Warsaw. The court then held that even if

201. Victoria Sales Corp. v. Emery Air Freight, 917 F.2d 705 (2d Cir. 1990).
202. Id.
these inadequate precautions were proved, the vital element of "proximate causation" was not shown, and therefore the willful misconduct allegations were insufficient to remove the damage limitations of the Warsaw Convention.204

E. TOLLING OF THE TWO YEAR LIMITATION RULE

The two year limitation section of the Warsaw convention has been interpreted by a number of courts to constitute an absolute bar or a "condition precedent" which cannot be tolled under an equitable estoppel assertion,205 or under an infancy tolling rule or statute206 or a third party claim for contribution is not tolled until the cause of action for contribution ripens until payment of a judgment207 When the shipper sues the freight forwarder within the two year period, the freight forwarder must sue the carrying airline within the same two year period, and the court has no power to extend the period because the freight forwarder was sued toward the end of the two year period.208

In a very recent case involving the accidental scalding of a minor passenger by an airlines' flight attendant, the court (in a well researched opinion) held that the scalding met the notion of accident under the Warsaw Convention, and that the minority of the passenger did not toll the running of the two year rule of limitations because the legislative history of the Convention clearly showed that the delegates rejected any kind of tolling of the period based upon local law. The court noted that:

Fishman (Plaintiff-Parent and Guardian) relies on two cases which reached a different conclusion. In Joseph v. Syrian Arab Airlines, 88 F.R.D. 530 (S.D.N.Y. 1980), the court held that whenever a state law would toll a state statute of limitations, the two-year time limitation under the Warsaw Convention is tolled as well. Joseph cited Flanagan v. McDonnell Douglas Corp., 428 F.Supp. 770 (C.D. Calif., 1977), a class action brought under California's wrongful death statute. Flanagan held that Article 29(2) adopts the forum court's method of calculating statutes of limitations and concluded that California's one-year statute of limitations was tolled pending class action certification. Id. at 776, See also Delaney v. Aer Lingus Irish Airlines, 16 Av.Cas. (CCH) ¶ 17,725 (S.D.N.Y. 1981)(citing Joseph and Flanagan).

Neither Joseph nor Flanagan consulted the history of the Warsaw Convention. Moreover, the conclusion reached by these courts is contrary to one of the purposes of the Convention—"to establish uniformity in the aviation industry with regard to "the procedure for dealing with claims arising out of international transportation and the substantive law applicable to such claims."" In re Lockerbie, 928 F.2d at 1270 (citing Lowenfeld & Mendelson, The United States and the Warsaw Convention, 80 Harv.L.Rev. 497, 498-99 (1967).209

F. WILLFUL MISCONDUCT UNDER ARTICLE 25 OF THE WARSAW CONVENTION

A combined American and English translation of Article 25 of the Warsaw Convention is as follows:

(1) The carrier shall not be entitled to avail himself of the provisions of this convention which exclude or limit his liability, if the damage is caused by his wilful misconduct or by such default on his part as, in accordance with the law of the court [seized of the case] to which the case is submitted, is considered to be the equivalent to wilful misconduct.

(2) Similarly the carrier shall not be entitled to avail himself of the said provisions, if the damage is caused under the same circumstances by any agent [servant or agent] of the carrier acting within the scope of his employment.210

The American courts have agreed that the words "wilful misconduct" are the English equivalent of the French word "dol", but they have divergent views as to the application of the "wilful misconduct" wording to various kinds of reckless conduct by airline employees and agent. The latest court to attempt to define this nebulous term has attempted further refinements.211

In Tokio Marine & Fires Insurance Co., Ltd. v. United Airlines, Inc.,212 it was held, among other things, that the failure of a carrier to terminate an employee who was later detected as a thief of stolen cargo (watches) was not a reckless misconduct which would deprive the carrier of its limitation of liability under Article 25 of the Warsaw Convention because the prior wrongful conduct did not deal with stealing but with general insubordination and irresponsibility. In addition, the fact that the airline may have known of the valuable nature of the cargo (the shipper

did not declare the value) did not amount to a reckless disregard showing willful misconduct when the airline did not place the cargo in a higher security area.

In *Rustenburg Platinum Mines Ltd. v. South African Airways*²¹³ approximately 50 pounds of platinum were shipped by air from South Africa to London and on to Philadelphia, Pennsylvania. The platinum reached London, and it was seemingly stolen by a "loader" for Pan American while it was loaded for its destination in Philadelphia. The loader positioned the box containing the platinum under a shelf in the cargo bay of the aircraft; the positioning of the box facilitated the stealing of the box either by the loader or his accomplice who drove away with the box.

The shipper's insurance company sued Pan American Airways for the full value of $102,000.00, and Pan American pleaded that the shipper had not declared the high value of the shipment and asked the court to limit its liability to $369.23. The Court of Appeal, in affirming the trial court, held that when the Pan American "loader" was entrusted with the storage of the box of platinum in the aircraft and then either stole it himself or cooperated with an accomplice to steal the box, then he was acting within the scope of his employment and his willful stealing of the goods was willful misconduct under Article 25 of the Warsaw Convention and the airline was liable for the full amount of the loss.

The decision in *Rustenburg* was based on original Article 25 of the Warsaw Convention, which read (as interpreted by Lord Denning):

(1) The carrier shall not be entitled to avail himself of the provisions of this Schedule which exclude or limit his liability, if the damage is caused by his willful misconduct or by such default on his part as, in accordance with the law of the Court seized of the case, is considered to be equivalent of wilful misconduct [—that is the carrier's wilful misconduct. The sub-par, (2) says] Similarly the carrier shall not be entitled to avail himself of the said provisions, if the damage is caused as aforesaid —that means by wilful misconduct— by any servant or agent of the carrier acting within the scope of his employment.²¹⁴

It is to be noted that the nebulous term "willful misconduct" was used twice and without definition (*dol*). In addition, the original Article 25 made no mention of any possible liability or non liability of carriers' "servants or agents."

These omissions were corrected in the Hague Protocol (Carriage by Air Act, 1961, amending the Warsaw Convention, 9 & 10 Eliz. 2, pp. 86-113 (1961). New Articles 25 and 25A now read:

²¹⁴. *Id.* at 23.
Article 25. The limits of liability specified in Article 22 shall not apply if it is proved that the damage resulted from an act or omission of the carrier, his servants or agents, done with intent to cause damage or recklessly and with knowledge that damage would probably result; provided that, in the case of such act or omission of a servant or agent, it is also proved that he was acting within the scope of his employment.

Article 25A. (1) If an action is brought against a servant or agent of the carrier arising out of damage to which this Convention relates, such servant or agent, if he proves that he acted within the scope of his employment, shall be entitled to avail himself of the limits of liability which that carrier himself is entitled to invoke under Article 22.

(2) The aggregate of the amounts recoverable from the carrier, his servants and agents, in that case, shall not exceed the said limits.

(3) The provisions of paragraphs (1) and (2) of this Article shall not apply if it is proved that the damage resulted from an act of omission of the servant or agent done with intent to cause damage or recklessly and with knowledge that damage would probably result.

The English codification of original Article 25 uses the term "any servant or agent" while the United State's version is "any agent"; the English version seems more extensive than the American. It would appear that the holding in Rustenburg would remain enact under the modified version of the Warsaw Convention.

Years after the decision in Rustenburg, a United States District Court had to decide an employee theft case whose facts were very close to the Rustenburg facts.215 A shipment of thirty-two boxes of palladium and two boxes of rhodium were made from South Africa to New York. Upon the South African Airway plane's arrival in New York, it was discovered that five boxes of palladium and one box of rhodium were missing. The plaintiff sued for the full value of $1,789,012.67 while the carrier asserted that its liability was limited to approximately $1,520,00 under Article 22 of the Warsaw Convention. The court held that Article 25(1) states that the "standard for wilful misconduct is to be determined "in accordance with the law of the court to which the case is submitted," and that the courts of the United States in an unbroken line of cases had held that stealing by an employee of an air carrier is not in furtherance of the employee's duties and is not to be charged against the employer.216 Therefore, the liability of the airline was limited by Article 22 and not enhanced under Article 25.

In Rustenburg and Brink's Limited, the United States was the com-

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216. Id.
mon destination, both cases involved theft by employees and both cases involved valuable metals. But, what a difference in result. Rustenburg gave full relief to the shipper, while Brink's Limited gave a paltry recovery; same facts different results because the lawyers in Rustenburg knew the English rule on employee thefts and the Brink’s lawyers perhaps did not know the American law.

Article 28 of the Warsaw Convention provides:

(1) An action for damages must be brought at the option of the plaintiff, in the territory of one of the High Contracting Parties, either before the court of the domicile of the carrier or of his principal place of business, or where he has a place of business through which the contract has been made, or before the court at the place of destination. (emphasis added)

In the Rustenburg case, in the trial court, the trial judge mentioned that the attorney for the defendant-airline had cited a South African case as allegedly holding that the master is not liable for the thefts of his employees. The trial judge paid little attention to this submission because foreign law in England is a question of fact to be proved by expert evidence and this was not done. As a result of this failure to prove, the English court applied English law with only passing reference to civilian text writers.217

In light of the wording of Article 25 that the question of wilful misconduct is to be decided “in accordance with the law of the court to which the case is submitted” it is suggested that the chosen court could make no reference to any other law but the law of the jurisdiction of that court. On the other hand, it can be argued that the “law of the Court” should include the choice of law (conflicts), and that reference should be made to the law of another country which controls the case.218

On appeal to the Second Circuit, the court chose this latter approach and held that the “law of the court” must include the law of the State of New York (not any kind of federal common law) and that New York courts in contract cases:

apply a “center of gravity” or “grouping of contacts approach” . . . Under this approach, courts may consider a spectrum of significant contacts, including the place of contracting, the places of negotiation and performance, the location of the subject matter, and the domicile or place of business of the contracting parties.219

The court then held that under the above tests, South African law should apply to determine whether the “willful misconduct” rule should apply to impose enhanced liability upon the master for the stealing by an

219. Id. at 1031.
employee. The case was then remanded to the district court. From ought that appears, it would seem that this "choice of law" issue was never raised in the trial court, or if it was, it was totally disregarded by the trial judge in crafting his decision.

If the Brink's Limited holding becomes widely adopted (which it likely will) then plaintiff's counsel's will have to determine not only the domestic law of two or three possible jurisdictions, but also the choice of law rules of these jurisdictions in order to select the most "generous" jurisdiction.

G. Indemnification of the Airline by Third Party Contractors

An assignee's cross claim against an air carrier for indemnity or contribution is also subject to the two year rule, and even if the consignee has committed fraud or is guilty of wilful misconduct the two year rule will not be extended.220

IV. THE LAUSANNE CONVENTION

The Lausanne convention221 governs the transportation of domestic and international mail. The Convention provides that "[i]n case of loss of a registered letter, the sender shall be entitled to an indemnity the amount of which shall be fixed at 40 francs ($15.76) per item."222 In the case of Lerakoli, Inc. v. Pan American World Airways223 eleven packages containing diamonds were delivered to the U.S. Postal Service for delivery in Belgium. The postal service put the packages in three separate mail sacks and delivered them to Pan American Airlines. Two of these mail sacks were never delivered in Belgium and were never recovered. The third sack was delivered in Germany, but the diamond packages were missing from the sack. The shipper sued the Postal Service and Pan American. The court held that the Lausanne Convention limited recovery from the Postal Service. The court then went on to hold that the protection of the Lausanne Convention extended to Pan American based upon an un-reported slip decision of a New York district court, Caribe Diamond Works, Inc. v. Eastern Airlines, Inc.224 The judge in the slip decision found that Eastern Airlines was not liable for some missing cargo, but in dicta the judge noted that if the United States Postal Service was a bailee, then Eastern Airlines would be a sub-bailee and "would be

221. United States Postal Union Convention, Jan. 1, 1976, 27 US.T 345, T.I.A.S. No. 5231
222. Id. at 396.
223. 783 F.2d 33 (2d Cir. 1986).
224. No. 71-2875 (S.D.N.Y. June 24, 1974).
a party to all of the express or implied rights and privileges of its transferor (USOS) arising under the original bailment."225 The court in Lerakoli agreed with this bailment theory and it also advanced the view that Pan American was an agent, and:

Here, the Lausanne Convention, as part of the federal regulatory framework for the handling of international mail, prescribes some of the terms to which a sender of registered mail agrees when delivering a parcel to the USPS for transport. These terms form the equivalent of a contractual agreement between the sender and the USPS limiting the liability of the USPS, and, pursuant to agency principles, that limitation is passed on to any party performing services for the USPS.226

The court went on to cite the cases of Reed v. Wisner and Baker v. Lerdell and Julius Young Jewelry (previously discussed) extending the protection of the Warsaw Convention to employees and agents.

It is to be noted that the Lausanne Convention does not contain any clause allowing the extension of the Convention to agents and employees; the Lausanne Convention is as neutral as the Hague Conventions (COGSA) about extending its umbrella of protection. Further, if the Lerakoli case is correct, then one must wonder about all of the cases under COGSA which have spent so much time and labor trying to find a "contractual" umbrella when the common law ideas of bailment and agency do the job without any quibbling over contractual wording.

V. Conclusion

Under proposed amendments to the Carriage of Goods by Sea Act the definition of the term "performing carrier" would be expanded to read:

(iii) The term "performing carrier" means a party who performs or undertakes to perform any of the contracting carrier's responsibilities under a contract of carriage, including any party that performs or undertakes to perform or procures to be performed any incidental service to facilitate the carriage of goods, regardless of whether it is a party to, identified in, or has legal responsibility under the contract of carriage. The term includes, but is not limited to, ocean carriers, inland carriers, stevedores, terminal operators, consolidators, packers warehousemen, and their servants, agents, contractors, and sub-contractors. A contracting carrier may also be a performing carrier.227

Under this expended definition, there would seem to be little doubt that warehousemen, stevedores, inland carriers, etc., and their agents, ser-

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225. Id. at 18-19.
226. Id. at 36.
vants, and employees would be covered by the same limitations of liability as would be the carrying shipline without the inclusion of a “Himalaya clause” in the bills of lading. It has been suggested, however, that this proposed legislation has little chance of being adopted.\textsuperscript{228} Even if this proposal is adopted, it would have no direct impact, of course, on the aviation industry and its servants, agents, and employees. In the absence of legislative changes, perhaps the bailment and agency theories of the \textit{Lerakol}\textsuperscript{229} decision could be utilized to protect the agents and independent contractors of airlines in the handling of cargo.

\textsuperscript{228} Id at 609-22.
\textsuperscript{229} 783 F.2d 33 (2d Cir. 1986).
Who Should Pay for Agency Adjudication? A Study of $200,000 Filing Fees at the Surface Transportation Board

Peter A. Pfohl*

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And having looked to Government for bread, on the first scarcity they will turn and bite the hand that fed them.¹

In 1995, after one hundred and eight years of existence, the nation’s oldest regulatory entity, the Interstate Commerce Commission (ICC or Commission) was terminated.² With the enactment of the ICC Termina-

¹ Edmund Burke, THOUGHTS AND DETAILS ON SCARCITY 31 (1975)
tion Act\textsuperscript{3} (ICCTA), Congress replaced the ICC with the independent, three-member Surface Transportation Board\textsuperscript{4} (STB or Board) to perform the core rail and trucking regulatory responsibilities formerly conducted by the ICC\textsuperscript{5}.

The ICC was originally created in 1887, due in large part to concern about the monopoly status of the railroads and to help protect railroad customers, known as "shippers," and communities from abuses by the railroads who possessed a great deal of economic power over them.\textsuperscript{6} The protection of shippers and others from unreasonable rates that might be charged by railroads is a stalwart of the nation's rail transportation policy.\textsuperscript{7} For over one hundred and ten years, shippers and the public have gone to the ICC/STB seeking prescriptive rate relief from railroads.\textsuperscript{8} Today, the STB is the only forum where shippers and communities can seek redress from many railroad abuses, as the federal government has sole authority over economic regulation of interstate rail transportation.\textsuperscript{9}

While President Clinton supported the ICCTA, he did not support


\textsuperscript{4} The STB is an independent government entity created in 1995 by the ICCTA. While independent, the Board is technically established within the Department of Transportation (DOT). The legal authority for the establishment of the STB is found at 49 U.S.C. § 701(1996). See Don Phillips, ICC Fading But Won't Disappear, WASH. POST, Dec. 8, 1995, at A25 (reviewing congressional debate on the ICCTA and the proposed establishment of the new STB to handle residual regulatory functions formerly conducted by the ICC).


\textsuperscript{6} See H.R. REP. No. 104-311, at 90 (1995); See S. REP. No 104-76, at 2 (1995) (noting that the ICC "originally was created to protect shippers from the monopoly power of the railroad industry").

\textsuperscript{7} The Interstate Commerce Act, as reaffirmed by the ICCTA, proclaims that "it is the policy of the United States Government . . . to maintain reasonable rates where there is an absence of effective competition and where rail rates provide revenues which exceed the amount necessary to maintain the rail system and to attract capital." 49 U.S.C. § 10101(6)(1994).

\textsuperscript{8} The STB has general authority to establish reasonable rates by market dominant rail-road common carriers. See 49 U.S.C. §§ 10701-10709(1994). See infra notes 42-49 and accompanying text (discussing the statutory components of pursuing a rate case before the STB).

\textsuperscript{9} See 49 U.S.C. § 10501(b)(1994)(the "transportation by rail carriers, and the remedies provided in this part with respect to rates, classifications, rules (including car service, interchange, and other operating rules), practices, routes, services, and facilities of such carriers . . . is exclusive"); San Antonio, Tex. v. Burlington N., Inc., 650 F.2d 49, 53 (1981) (noting that the ICC (now STB) has principle jurisdiction to determine the reasonableness of rail rates and that "Congress entrusted special authority in the Commission to determine questions of railroad ratemaking").
the creation of the STB; he preferred legislation that would significantly deregulate transportation industries. In early 1996, the President's first publicly manifested his lack of support for the newly created STB in his fiscal year (FY) 1997 budget submission to Congress. The President's budget requested only a fraction of the STB's annual budget from general treasury appropriations. Instead, the President requested that virtually all of STB's funding "be derived from user fees collected from the beneficiaries of the Board's activities" pursuant to the Independent Offices Appropriations Act (IOAA), which authorizes agencies to prescribe and collect fees for their services.

The STB did not wait for Congress before acting itself on the President's budget proposal. In the spring of 1996, while the President's funding plan for the STB was pending in Congress, the Board issued a

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10. See Statement By the President, Office of the Press Secretary, December 30, 1995. Upon signing the ICCTA into law, the President expressed his "disappoint[ment]" with the legislation. Id. The President remarked, "[w]hile [the ICCTA] eliminates the ICC, it creates a new independent agency, the STB, within the Transportation Department. Overall, the bill falls short of my Administration's much bolder proposal for extensive deregulation of transportation industries." Id. During the House and Senate conference committee consideration of the ICCTA, DOT Secretary Federico Pena also objected to the ICCTA because it "eliminated the ICC in name only and continued too many of its functions and unnecessary regulations in a newly created independent agency." Letter from Secretary Federico Pena, U.S. Department of Transportation, to the Honorable Larry Pressler, Dec. 6, 1995, at 1. See Lisa Burgess, Rail Industry Awaits Decision on ICC, J. OF COM., Dec. 20, 1995, at 2B (noting that the Administration particularly was concerned about transferring the ICC's rail merger authority to a new independent board rather than to the Department of Justice). Compare David Barnes, For Congress and Transportation, 1995 was the Year That Wouldn't End, TRAFFIC WORLD, Jan. 1, 1996, at 8 (reviewing Secretary Pena's complaint that "[w]e're not eliminating the ICC") with David Barnes, Congress Kills ICC After Last-Minute Haggling, TRAFFIC WORLD, Jan. 1, 1996, at 10 (quoting Congressman Bud Shuster, Chairman of the House Transportation Committee as stating "[w]e are downsizing government by eliminating an antiquated federal agency, we are reducing unnecessary regulation and we are saving taxpayer dollars. . . ").


12. The President's budget requested $15,344,000 to fund the STB in fiscal year (FY) 1997. Id. The President's FY 1997 budget request called for $219,000 of the STB's annual budget to be collected through reimbursements from other agencies. Id. at 779. The remaining $15,125,000 was to be derived from user fees Id.


14. The President's budget submission for FY 1997 describes in detail the term "user fee." See FY 1997 Budget, supra note 11, at 53. As defined therein, user fee:

is a general term that refers to amounts assessed against identifiable recipients for special benefits derived from Federal activities beyond those received by the general public. Depending primarily on whether the user charge is based on the Government's sovereign power or business-type activity, it may be classified as a governmental receipt or an offsetting collection. Id.

Total federal government offsetting user fee collections in FY 1997 were expected to total $190.4 billion. Id. The FY 1997 budget requested a $1.4 billion increase in "user fees and other collections" over the prior year's levels, and an $11.2 billion increase in fees over a six year period. Id.
Who Should Pay for Agency Adjudication?

This article focuses on the new and increased rail complaint filing fees adopted by the STB in 1996. Part One provides background on the federal rail regulatory scheme and on the need for an adjudicatory forum for shippers and the public to go to in order to seek redress against railroad economic abuses in the form of unreasonable rail rates. Part Two reviews federal agency authority and the use of self-funding mechanisms under the IOAA. It then reviews the history of filing fees at the ICC/STB and the STB's 1996 user fee proceedings, including congressional attempts to block new complaint filing fees.

Part Three discusses the implications of these new fees, arguing that these new filing fees are against public policy and probably violate the IOAA. In addition to being unfair, the fees will likely discourage the public from submitting complaints and fail to provide offsets for the public benefits associated with filings. Also, similar charges assessed for processing complaints at other agencies and in common law courts fail to justify the STB's complaint fee increases, and the availability of a fee waiver is insufficient to safeguard potential complainants.

Part Four of this article proposes that if the Board's new complaint filing fees are to continue to be imposed, then at a minimum, the Board should: (1) establish fees on an actual cost basis, as opposed to the current flat fee basis; (2) provide for payment on a pay-as-you-go basis, rather than the current up-front payment basis; and (3) establish a "loser pays" system. These measures will help ensure that shippers are not required to pay for proceedings that are settled or otherwise concluded early and are not disproportionately forced to pay for a carrier's violation of the law.

15. See Ex Parte No. 542, Regulations Governing Fees for Service Performed in Connection with Licensing and Related Services — 1996 Update, 1 STB 179(1996). Decisions issued by the STB are not generally cited according to "bluebook" form. Accordingly, references to ICC/STB decisions in this article conform to the standard citation practice employed by the STB and practitioners before the Board, and not to the bluebook.
16. See Id. at 3 (proposed fee item 56(i)).
17. See Id. (proposed fee item 56(ii)).
18. See Id. (proposed fee item 61).
19. See Ex Parte No. 542, supra note 11.
I. THE FEDERAL RAIL REGULATORY STRUCTURE

A. THE COMMON CARRIER OBLIGATION

The United States’ rail network consists of approximately 175,000 miles of lines owned by major, regional, and short line carriers.20 Unlike many other modes of transportation, rail transportation is unique in that rail carriers own21 and maintain control over their transportation rights-of-way. Competitor railroads are not allowed to operate on a rail carrier’s line absent the express permission of the incumbent carrier or regulatory order. In contrast, other modes of transportation, including trucks and barges, operate on public rights-of-way, highways, and waterways, where there is unrestricted entry.22

In exchange for the privilege of obtaining a public charter23 permitting rail carriers to condemn private property necessary to construct their infrastructure, carriers agreed to operate as common carriers.24 A railroad’s obligation as a common carrier, which requires railroads to provide to the public, upon reasonable request, transportation service over its rail line,25 is a mainstay of federal rail regulatory policy. A fundamental corollary to this obligation is the duty to provide reasonable rates for the service. The duty provides that rates subject to the STB’s jurisdiction “must be reasonable.”26

21. See COLIN BARRETT, Practical Handbook of Transportation Contracting and Rate Negotiations 135 (1st ed. 1987).
22. See D. PHILIP LOCKLIN, Economics of Transportation 47 (7th ed. 1972)(noting that “[p]ublicly provided waterways, highways, airways, and airports are open to all users”).
23. See Id. at 873 (noting that “[c]ertificates of public convenience and necessity . . . are required before anyone may engage in transportation by rail . . .”).
25. Railroads’ private rights of way largely were/are obtained through the government’s eminent domain authority. Id. See LOCKLIN, supra note 22, at 124 (“It is to be observed that the power of eminent domain is the power to take the property of others for a public purpose. To take the property of one individual for the benefit of another individual would not be a valid exercise of the power of eminent domain.”)(Emphasis in original).
26. See 49 U.S.C. § 1101(a)(1994)(“[a] common carrier . . . shall provide transportation or service upon reasonable request.”). See also American Trucking Ass'ns v. Atchison, Topeka and Santa Fe Ry., 387 U.S. 397, 406 (1967) (“From the earliest days, common carriers have had a duty to carry all goods offered for transportation.”); Michigan Pub. Util. Comm'n v. Duke, 266 U.S. 570, 577 (1925)(A common carrier is required “to serve all, up to the capacity of his facilities without discrimination and for reasonable pay.”); 13 C.J.S. Carriers § 386 (1991) (“Every common carrier is under a duty to receive and transport any property tendered to it for transportation, provided the property is such as it holds itself out as willing to carry, or as it usually carries.”).
B. Transportation Regulatory Goals

Professor John Meyer in *The Economics of Competition in the Transportation Industries*, proposes four objectives for transportation regulation in this country. First, "regulation is intended to prevent unreasonable prices which produce excessive earnings" in those instances where transportation industries would otherwise have an incentive to abuse their monopoly position over shippers. Second, regulation is designed to prevent cut-throat competition that might lead to "abnormally low profits in transportation." Third, regulation is designed to prevent discrimination between customers. Finally, regulation is used as a means to ensure that "broad public need[s]" are met and that communities and businesses do not lose vital transportation service. Implicit in these objectives for regulation is the goal to either create an economic balance among individual industries who engage in and are dependent on transportation or "satisfy the transportation needs of the economy at a minimum cost in resources."

1. Rail Deregulation and Rate Complaints

In 1980, Congress enacted the Staggers Rail Act, which significantly changed existing federal regulatory policies affecting the railroads. The legislation was enacted primarily in response to the lagging financial position of rail carriers and to help the railroads compete more effectively with other modes of transportation. In the late 1970s the railroads were finding it difficult to compete for service against the motor carriers, barges, and pipelines. In response to these competitive problems, the Staggers Act significantly reduced the federal regulatory structure for railroads. The Staggers Act, however, was retained as a core principal

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28. Id. at 11.
29. Id. at 11-12.
30. Id. at 12.
31. Id.
32. Meyer, supra note 27, at 12.
34. See H.R. Rep. No. 104-311, at 90 (1995) (noting that "by the 1970s, the railroad industry was on the brink of financial collapse").
35. See Id. at 90-91.
36. Id. The Staggers Act has resulted in a dramatic turnaround in the financial stability of the railroad industry. See H.R. Rep. No. 104-311, at 91 (1995) (noting that the Staggers Act has "produced a renaissance in the railroad industry"). The industry now enjoys an approximately eight percent return on investment under STB return standards (as opposed to a four percent return immediately prior to 1980) and has a market share of approximately 38 percent. Id.; See ICCTA Hearings, supra note 20 at 211-12 (testimony of Joseph Canny, Deputy Assistant Secretary for Transportation Policy, U.S. Department of Transportation).
rate protection for shippers who are dependent on a single railroad for service and who have few realistic competitive service options.\textsuperscript{37}

The ICCTA continued the deregulatory policies of the Staggers Act.\textsuperscript{38} The House Report to the ICC Termination Act explained that the Act was to “build on the deregulatory policies that have promoted growth and stability in the surface transportation sector.”\textsuperscript{39} As for the rail industry, Congress retained only those regulations that were deemed “necessary to maintain a ‘safety net’ or ‘backstop’ of remedies to address problems of rates, access to facilities, and industry restructuring.”\textsuperscript{40}

2. The Limited Amount of Traffic Subject to Rate Regulation

As a result of the reforms of the Staggers Act and the ICCTA, a majority of rail traffic today moves under private contract between the carrier and the shipper.\textsuperscript{41} This traffic is not subject to government regulation.\textsuperscript{42} Regulatory relief is only available where the movement is not under contract and where a carrier has such a large share of the market that competition fails to effectively control rates.

The Board will consider the reasonableness of a challenged rate only if the shipper can prove that the carrier possesses market dominance over the transportation movement.\textsuperscript{43} While a market dominance proceeding at the STB involves the consideration of lengthy and complex economic

\textsuperscript{37} See Id. at 91 (noting that the protections kept for “captive shippers... have worked well to maintain a balanced transportation system”). In Rates on Iron Ore, Randville to Escanaba Via Iron Mountain, 367 I.C.C. 506 (1983), the ICC reviewed congressional policy behind the Staggers Act, stating:

Although Congress gave the railroads great flexibility in ratemaking matters, it did not give them total freedom. Congress was clearly concerned with the impact its changes would have on captive shippers. A specific goal of the Act was “to provide a regulatory process that balances the needs of carriers, shippers, and the public.” Even more specific is the statement that: “[t]he conferees intend that (the Rail Transportation) policy include the encouragement and promotion of the transportation of coal by rail in accordance with the objective of energy independence at rates which do not exceed a reasonable maximum where there is an absence of effective competition.”

\textit{Id.} at 536 (citations omitted).


\textsuperscript{39} \textit{Id.}

\textsuperscript{40} \textit{Id.}

\textsuperscript{41} ICCTA Hearings, \textit{supra} note 20, at 213 (testimony of Joseph Canny, Deputy Assistant Secretary for Transportation Policy, U.S. Department of Transportation).

\textsuperscript{42} See 49 U.S.C. § 10709 (1994). Section 10709(a) provides that “[o]ne or more rail carriers providing transportation... may enter into a contract with one or more purchasers of rail services to provide specified services under specified rates and conditions.” Under § 10709(b), parties entering into such contracts “have no duty in connection with services provided under such contract other than those duties specified by the terms of the contract.”

\textsuperscript{43} 49 U.S.C. § 10707(a) and (b) (1994). Under the statute, ‘market dominance’ means an absence of effective competition from other carriers and modes of transportation for the transportation to which a rate applies. \textit{Id.} at § 10709(a).
and legal issues, the basics of a case requires two general inquiries — one quantitative and the other qualitative in nature. First, a finding of market dominance will be found only if the rate exceeds a revenue to variable cost percentage of one hundred and eighty percent for the transportation in question. If so, the STB must next determine if the rate is unreasonable under the Board's standards. With this second market dominance standard, the Board is inquiring whether firms are forced to perform up to standards at reasonable prices or lose desirable business by considering whether the defendant carrier's rates are constrained by any one or a combination of at least four types of competition: intramodal, intermodal, product, or geographic competition. If both prongs of the market dominance test are met, the Board has authority to prescribe a maximum rate to be followed by the carrier.

Overall, approximately eighteen percent of all rail traffic is subject to a rate reasonableness challenge and very few maximum rate challenges are brought before the STB. While there is limited public information available on rail rate complaint adjudications, in the year 1993, for instance, the ICC issued only sixty-five rate decisions. Despite the low number of rate challenges, the presence of rate relief statutes is vital to many shippers who are “captive” to one railroad. Even if a case is not brought, the very ability to bring a rate complaint case can afford shippers an important leverage tool in their contract negotiations with the railroads.

44. For a detailed review of how the Board regulates rail market dominance see Stephen J. Thompson, Rail Market Dominance: Is ICC Regulation Still Needed?, CONGRESSIONAL RESEARCH SERVICE, at 38-40 (94-775E, Apr. 18, 1995).
46. Id. at § 10707(c)(1994). See also, Id. at 10707(d)(1)(A) and (B)(1994).
48. Id. at 131-135.
49. 49 U.S.C. § 10707(c) (1994).
51. See Barrett supra note 21, at 69 (noting that “[i]f shippers and/or carriers fail to negotiate satisfactory arrangements in the competitive marketplace, the government will not normally intervene to help them.”).
52. See Kenneth M. Mead, Transferring ICC's Rail Regulatory Responsibilities May Not Achieve Desired Effects, United States General Accounting Office, GAO/T-RCED-94-222, 4-5 (June 9, 1994).
C. Industry Dependence on Railroads and the Cost of Transportation

The ability of a shipper to choose among different carriers within and among rail, truck, and water modes of transportation provides shippers a distinct advantage in obtaining low-cost service. In many industries, however, shippers cannot rely on truck\textsuperscript{54} or water carriage\textsuperscript{55} for the shipment of a particular commodity for a specific origin and destination.\textsuperscript{56} Department of Justice (DOJ) guidelines governing railroad mergers provide a handy reference as to how competition for transportation service impacts bulk commodity shippers:

For railroad mergers, the analysis begins with identification of the affected routes. For two railroads with largely parallel routes, the logical starting point for defining a market is the carriage of a particular commodity from one point (called an origin) to a second point (called a destination) by the merging railroads.

Once the affected routes are identified, the analysis generally focuses on an evaluation of the other rail, intermodal, product, and source competition options available to shippers. Intermodal competition is the ability of a shipper to substitute another mode of transportation, usually truck or water carriage, for the shipment of a particular commodity between a particular origin and destination. If truck or water service is available and is a close substitute for rail carriage for certain commodities, these competitive alternatives would prevent a rail carrier from raising its rates for these commodities. For other commodities, however, trucks may be at a significant disadvantage to rail where, for example, the distance the commodity is shipped is great, the volume of the commodity shipped is large, or the value of the commodity as compared to its weight is small.\textsuperscript{57}

1. Captive Traffic

Many industries are highly dependent on rail for their transportation needs, including those that ship bulk commodity products such as coal, grain, chemicals, and plastics. Over five billion bushels of grain products

\textsuperscript{54} For example, a railroad car contains the equivalent of over three truck shipments of grain. \textit{See Id.} at 358 (testimony of Russell J. Kocemba, National Grain and Feed Association).

\textsuperscript{55} To utilize barge or ship vessel movements, of course, a shipper needs to be located near a river or other body of water that can be feasibly used to transport products or goods. \textit{See Id.} Some waterways are also closed to access during certain times of the year due to freezing weather. \textit{Id.}

\textsuperscript{56} \textit{See Locklin, supra} note 22, at 899 (noting that “[i]n the railroad field there are many commodities for which motor transport or transportation by water is not a substitute. . .”).

\textsuperscript{57} \textit{See TCCTA Hearings, supra} note 20, at 130-31 (testimony of Steven C. Sunshine, Deputy Assistant Attorney General, Antitrust Division, United States Department of Justice).
are shipped by rail annually.\textsuperscript{58} In certain states, virtually all movements of grain to the markets is shipped by rail. In North Dakota, for example, individual farmers bring grain to almost five hundred county grain elevators where the good is processed and shipped onward to the markets.\textsuperscript{59} All together, eighty percent of grain commodities are shipped from the elevator to the major markets via rail, and the vast majority of these elevators are served by only one railroad.\textsuperscript{60}

The plastics industry transports sixty billion pounds of plastics materials by railroad annually.\textsuperscript{61} Plastics transportation accounts for over $1.1 billion in revenues for the railroads.\textsuperscript{62} These transportation costs are significant for the industry. Transportation is the second single largest cost component of producing plastics resins, or approximately twenty percent of the total costs of production.\textsuperscript{63} Railroads also ship ten million tons of raw clay materials in the United States each year.\textsuperscript{64} Shipment of clay via railroad constitutes eighty percent of the clay that is shipped in this country.\textsuperscript{65}

Shippers of bulk commodities are dependent on the rail industry for service.\textsuperscript{66} Because of their dependence on rail as a sole means of transportation, many shippers must pay disproportionately higher transportation costs than do shippers who have competitive service options. These transportation costs, however, are not only of concern to individual shippers. Ultimately, high transportation costs are paid for by consumers through higher end product costs.\textsuperscript{67}

\textbf{a. The Dependence of Coal Shippers on Rail}

Rail transportation is probably more economically crucial for electric utilities than for any other industry. More than eighty percent of all coal production in the United States is purchased by electric utilities as a pri-
mary fuel source.\textsuperscript{68} In 1994 over 6.6 million carloads of coal were moved by rail.\textsuperscript{69} Rail is the only transportation option for most utilities which transport coal. Of the nation's four hundred and fifteen electric utilities that use coal as a power fuel source, two hundred and eleven are served by a single railroad, with the remainder enjoying a second railroad or water-borne transportation options.\textsuperscript{70} There are very few service options for utilities because there are only a few railroads offering service. Ninety percent of all coal movements shipped to individual coal burning facilities are made by the nation's four largest rail carriers who control the means of service to power generation plants.\textsuperscript{71}

Coal transportation costs are significant for electric utilities. Seven billion dollars is spent annually by utilities on coal transportation.\textsuperscript{72} Coal transportation costs alone account for an average of twenty-five percent of the cost of generating power, and in some regions, these costs account for almost fifty percent of a utility's power generation costs.\textsuperscript{73}

Electric utilities are regulated at the state and local levels of government on the rates charged to their customers, the consuming ratepayers. While utilities are required to keep their costs to a minimum, any increased transportation costs are passed on directly to ratepayers in the form of higher electricity rates. For example, if an individual utility burns ten million tons of coal annually at its power generation plant, for every dollar per ton of coal in transportation increases, ratepayers must pay ten million dollars more each year on their electricity bills. Likewise, for every dollar saved in transportation costs, the ratepayers save ten million dollars annually.

II. USER FEES AT THE SURFACE TRANSPORTATION BOARD

A. THE IOAA AND FEDERAL AGENCY USER FEES

The STB currently prescribes and collects user fees pursuant to the

\textsuperscript{68} Resource Data International, Inc., \textit{The Dependence of Industry on Railroads: The Coal Transportation Industry}, at 1. [Hereinafter RDI Study]. While other sources of fuel are available for utilities, e.g., nuclear power, natural gas, or hydro-power, coal is now, and is expected to remain a lower cost fuel. It is also impracticable for utilities that have built coal burning electric production facilities to switch to another fuel.

\textsuperscript{69} ICCTA Hearings, \textit{supra} note 20, at 384 (testimony of Joseph E. Lema, Vice President for Transportation, National Mining Association).

\textsuperscript{70} \textit{Id.}

\textsuperscript{71} RDI Study, \textit{supra} note 68 at 3. The four railroads that control the nation's coal movements are: Union Pacific, Burlington Northern Santa Fe, CSX Transportation, and Norfolk Southern. \textit{Id.}

\textsuperscript{72} \textit{Id.} at 1.

\textsuperscript{73} \textit{Id.} at 4.

IOAA. The IOAA permits agencies to prescribe fees that are "fair" and based on government costs, the "value of the service or thing to the recipient," the "public policy or interest served," and "other relevant facts." Office of Management and Budget (OMB) guidelines provide that user charges pursuant to the IOAA are to be "assessed against each identifiable recipient for special benefits derived from federal activities beyond those received by the general public." The IOAA is applicable to all federal agencies, except to "mixed-ownership government corporations."

1. Determining the Amount of Charges to be Assessed

In determining the amount of user charges to assess, agencies are expected to collect the full cost to the government of providing the service. However, sometimes agency services provide both a special benefit to an identifiable recipient and a benefit to the general public. In those instances, agencies must determine if the public benefit is "in-


§ 9701. Fees and charges for Government services and things of value
(a) It is the sense of Congress that each service or thing of value provided by an agency...is to be self-sustaining to the extent possible.
(b) The head of each agency...may prescribe regulations establishing the charge for a service or thing of value provided by the agency. Regulations prescribed by the heads of executive agencies are subject to policies prescribed by the President and shall be as uniform as practicable.
75. Id. at § 9701(b)(1) and (2) (1983). See Ayuda, Inc. v. Attorney Gen., 848 F.2d 1297, 1300-01 (1988)(stating that the IOAA phrase "service or thing of value" is to be construed broadly, and that new filing fees established by the Attorney General for administrative appeals of Immigration and Naturalization Service deportation orders was proper).
76. User Charges, Office of Management and Budget Circular No. A-25, at 6, July 8, 1993. [hereinafter OMB Circular]. The OMB Circular gives three examples of when a user charge may be imposed, including when a government provided service:
(a) enables the beneficiary to obtain more immediate or substantial gains or values (which may or may not be measurable in monetary terms) than those that accrue to the general public (e.g., receiving a patent, insurance, or guarantee provision, or a license to carry on a specific activity or business or various kinds of public land use); or
(b) provides business stability or contributes to public confidence in the business activity of the beneficiary (e.g., insuring deposits in commercial banks); or
(c) is performed at the request of or for the convenience of the recipient, and is beyond the services regularly received by other members of the same industry or group or by the general public (e.g., receiving a passport, visa, airman's certificate, or a Custom's inspection after regular duty hours).
77. Id. at 4a. The OMB Circular also does not apply to the federal legislative or the judicial branches. Id.
78. Id. at 6a(2).
dependent of” or “merely incidental to” special benefits incurred. If the public obtains a benefit that is merely incidental to benefits enjoyed by an identifiable recipient, an agency is expected to collect the full cost of providing the benefit. On the other hand, if the “identification of the specific beneficiary is obscure” and the service provided primarily benefits the public at large, no charges should be imposed. The Supreme Court has held that under the IOAA, an agency may charge a fee only for services that confer a special, private benefit on an identifiable beneficiary, and that the fee may not exceed the agency’s costs. Any charge not directly related to a private benefit is considered to be a tax. Congress alone, and not federal agencies, may impose taxes.

Under the IOAA, user fees can be understood as a useful economic tool used to reduce the subsidization by general taxpayers for aspects of an agency’s operations that are solely enjoyed by beneficiaries of that agency’s services. Such fees are designed to ensure that “only the individuals or entities benefitting from the goods or services provided by the government pay for those goods and services.” In this sense, many user fees “promote economic efficiency by simulating a market test for commercial products” and “at the very least, user fees create an incentive for fee payers to let government agencies know if their programs are being operated in a cost-efficient manner.”

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79. Id. at 6a(3).
80. Id.
81. OMB Circular, supra note 76, at 6a(3). The Supreme Court has held that the rule to be applied in such cases is as follows:

An agency may not charge more than the reasonable cost it incurs to provide a service, or the value of the service to the recipient, whichever is less. National Cable Television Ass’n v. FCC, 554 F.2d at 1104-07 (D.C. Cir. 1976). If the service provides both a specific benefit to an identifiable beneficiary and an independent benefit to the public, then the agency must prorate its costs, lest the specific beneficiary be charged for agency costs attributable to the public benefit. National Cable Television Ass’n v. United States, 415 U.S. 336, 343 (1974); Electronic Indus. Ass’n v. FCC, 554 F.2d 1109, 1115 (D.C. Cir. 1976).

82. National Cable Television Ass’n v. United States, 415 U.S. 336 (1974). See supra notes 75-81 and accompanying text (explaining the “incidental” versus “independent” benefit distinction made when assessing the propriety of imposing a user fee).
83. National Cable Television Ass’n, 415 U.S. at 343.
84. See generally, Clayton P. Gillette and Thomas D. Hopkins, Federal User Fees: A Legal and Economic Analysis, 67 B.U.L.Rev. 795, 814-816 (1987) (describing in detail the economic theory of imposing user fees and how “efficient pricing” policies can ensure that the costs of providing agency services are fairly distributed between agency beneficiaries and general taxpayers).
85. Administrative Conference of the United States, Federal User Fees, Proceedings of a Symposium (Thomas D. Hopkins, ed., 1988) 1 (introduction by Marshall J. Breger) [hereinafter ACUS User Fee Symposium]. Professor Breger notes that besides fairness considerations, user fees “promote economic efficiency by simulating a market test for commercial products” and “[a]t the very least, user fees create an incentive for fee payers to let government agencies know if their programs are being operated in a cost-efficient manner.” Id. A review of the papers included in the ACUS User Fee Symposium provides an excellent overview of what user fees are intended to accomplish, the implementation of user fees at various federal agencies, and a glimpse of how their implementation might be improved.
fees are thought to be “fairer” than paying for certain agency operations through general United States Department of Treasury appropriations.

2. Agency Use of User Fees

Federal agencies employ many different types of user fees which fall into four general categories: charges for benefits and services, rents, royalties, and sales of products, regulatory fees, and benefit and liability based taxes. Almost two hundred billion dollars in user fees is collected annually by agencies. The amount and the extent to which user fees are imposed varies from agency to agency. For example, the Securities and Exchange Commission, the Federal Energy Regulatory Commission (FERC), the Nuclear Regulatory Commission (NRC), and the Patent and Trademark Office assess fees on agency users that cover the agencies’ entire annual operation costs. Meanwhile, of the STB’s approximately fifteen million dollar annual budget, approximately three

86. See Congressional Budget Office, The Growth of Federal User Charges 42-55 (Aug. 1993) [hereinafter User Charges]. Information on individual federal agency collection of user fees is difficult to obtain, due mainly to the fact that there is no central government office that collects such data. See id. at 39-41. However, the Congressional Budget Office (“CBO”) in User Charges and in its update to that study published in 1995, Congressional Budget Office Memorandum, The Growth of Federal User Charges: An Update (Oct. 1995) [hereinafter User Charges Update] has conducted a comprehensive review of user fees, their role in the federal budget, and their growth since 1980. A complete review of all user fees employed by federal agencies is beyond the scope of this paper.

87. Among other things, charges for benefits and services include, “business-type fees,” including fees for postal services; insurance premiums (including health, federal savings and loan depository, federal pension, disaster, and veterans life insurance); and other benefits and services (including such things as charges for park admission, recreational facilities, and agency research and technical services). See User Charges, supra note 86, at 42-45; User Charges Update, supra note 86, at 6-9.

88. Charges for rents and royalties include, fees for use of federal lands for activities such as fee grazing and the rights to extract hardrock minerals, oil, and gas. Sales of products include the sale of timber, sales of federal power, and royalty payments for hardrock minerals, oil, and gas sales. See User Charges, supra note 86, at 45-47; User Charges Update, supra note 86, at 9-10.

89. Regulatory fees include a wide variety of fees such as patent and trademark, inspection and licensing, immigration, passport, inspection and licensing, and filing and registration fees. See User Charges, supra note 86, at 48-53; User Charges Update, supra note 86, at 10-15.

90. Benefit based taxes include: trust and special funds including airport and airway, highway, harbor maintenance, and recreational trails fees. Liability based taxes include: Superfund program cleanup, leaking underground storage tank, and black lung disability based taxes. See User Charges, supra note 86, at 53-55; User Charges Update, supra note 86, at 15-17.

91. See FY 1997 Budget, supra note 11 (defining the term “user fee” and reviewing annual federal agency user fee collections).

92. See User Charges, supra note 86, at 50-51; User Charges Update, supra note 86 at 13-14. For other agencies, such as the Federal Communications Commission (“FCC”), the Commodity Futures Trading Commission, and the Consumer Product Safety Commission, fees cover a large portion of their annual budgets. User Charges Update, supra note 86, at 15.
million dollars, or twenty percent of its total operating costs are paid for by various user fee charges.\textsuperscript{93}

a. Different Forms/Levels of Agency Filing Fees

Complaint filing fees such as those paid to the STB for railroad rate complaints are considered a form of a regulatory fee. Other federal agencies impose similar regulatory filing fees. The Federal Maritime Commission (FMC), for instance, charges nominal filing fees for formal and informal complaints.\textsuperscript{94} The Department of Justice (DOJ) and the Federal Trade Commission (FTC) charge a forty-five thousand dollars filing fee for reviewing proposed mergers under the antitrust laws; this fee covers the entire costs of reviewing the mergers.\textsuperscript{95} The Immigration and Naturalization Service imposes a nominal fee for reviewing immigration applications.\textsuperscript{96} The Department of Treasury imposes ruling and determination fees.\textsuperscript{97} However, neither the FCC nor FERC assess filing fees for adjudicating complaints.\textsuperscript{98}

B. User Fees at the STB

User fees were originally implemented by the ICC (the STB’s predecessor) in 1966.\textsuperscript{99} While the ICC initially imposed fees for thirty-four services,\textsuperscript{100} today, the STB imposes fees for one-hundred and one different services.\textsuperscript{101} Because the Commission believed that one-half of the benefit of its services was conferred upon the public at large, prior to 1984, the agency charged private beneficiaries of those services only fifty percent of its costs.\textsuperscript{102} The ICC sought to modify this policy in a 1984 proceeding.\textsuperscript{103} In that proceeding, the ICC determined that the full costs of its programs would be recovered through fees unless the OMB Circu-


\textsuperscript{94} The FMC charges a fee of $166 for the filing of formal complaints, 46 C.F.R. § 502.62 (1994), and $68 for informal complaints, 46 C.F.R. § 502.304(b) (1994).


\textsuperscript{96} See 8 U.S.C. § 1356 (1997); 8 C.F.R. § 103.7 (1997); User Charges, \textit{supra} note 86, at 49; User Charges Update, \textit{supra} note 87, at 12.


\textsuperscript{98} See 47 C.F.R. § 1.1102-5 (1996) (listing FCC’s schedule of charges for filings for common carrier services). The FERC’s user fees are set forth at 18 C.F.R. Pt. 381.


\textsuperscript{100} See Id. at 587-93.

\textsuperscript{101} See Ex Parte No. 542, \textit{supra} note 15, at 225-30.

\textsuperscript{102} See Ex Parte No. 246 (Sub-No. 2), \textit{Fees for Services Performed in Connection with Licensing and Related Services}, 1 I.C.C.2d 60 (1984).

\textsuperscript{103} Id. at 63. Among the fees proposed for the first time by the ICC to be collected, included the labor costs associated with performing a service, and government overhead and associated administrative costs. Id.
lar was found to mandate a lesser charge.104

1. The History of STB Complaint Filing Fees

Filing fees for railroad rate and other complaints were among the user charges adopted by the Commission for the first time in its 1984 user fee proceedings. The Commission defended its right to collect complaint filing fees, stating that the real beneficiary of an agency’s adjudication of rate cases was the private shipper, and not the public.105 The Commission noted that if other shippers or the public benefit in some way through rate complaint filings, those benefits were only “incidental to the primary purpose and function of settling the complainants’ particular claims.”106

a. The ICC Decision to Cap Complaint Filing Fees

Despite the Commission’s imposition of new complaint filing fees in 1984, because the ICC viewed such complaints as a form of enforcement and consumer protection, the Commission limited fees solely to direct labor costs, and the agency assumed the remainder of the adjudicatory costs.107 In two subsequent reconsiderations of its 1984 decision, however, the ICC determined that even charging for agency labor costs was inappropriate. The Commission found that charging for these costs might pose an impediment to shippers in the filing of complaints, and that to do so would “not be in the public interest given the public policy of maintaining reasonable rates and practices.”108 The Commission therefore reduced complaint filing fees to five-hundred dollars “to allay the potential chilling effect” of the fee on future rate complaints.109 From 1984 to 1996, the ICC/STB’s rate complaint filing fees remained capped at below their fully allocated costs, expanding to a maximum level of one-thousand dollars.

b. The STB’s 1996 Decision to Uncap Rate Complaint Fees

In 1996, the Board proposed a dramatic change in its prior policy of capping rail rate complaint filing fees. The STB recommended fee increases for formal complaints filed under the agency’s coal rate guidelines.

104. Id.
105. Id. at 108.
106. Id.
107. Ex Parte No. 246 (Sub-No 2), supra note 102, at 185.
108. Ex Parte No. 246 (Sub-No. 2), Regulations Governing Fees for Services Performed in Connection with Licensing and Related Services, at *8 (decided June 7, 1984) (unpublished decision located at 1984 ICC Lexis 414).
109. Ex Parte No. 246 (Sub-No. 2), Regulations Governing Fees for Services Performed in Connection with Licensing and Related Service, 1 ICC 2d 196, 198 (1984). The Commission noted “[a]t this level, some agency costs will be defrayed, but the filing fee should not represent an actual disincentive.” Id.
from $1,000 to $233,200.110 Meanwhile, for the first time, the Board split off all other non-coal related rate complaints and lumped them into a separate category. It proposed increasing these other complaint filing fees to $23,100.111 Additionally, the Board sought a new fee of $3,700 for appeals and petitions to reopen, reconsider, or revoke ICC decisions.112

The STB's fee proposal was based on two reported factors: a decision to uncap all fee items, in order to collect the full costs of agency services, and a revised 1996 cost study, which indicated significant labor costs that previously had not been included in the agency's fee computations.113 The Board indicated that new appeal fees were being implemented for the first time to cover the agency's costs of processing such appeals, because the appellant would receive a "special benefit" from having the Board reconsider his or her case.114

c. Congressional Response to the STB's Proposed Filing Fees

Congressional reaction to the Board's fee proposal was swift. During the Senate's consideration of FY 1996 transportation appropriations legislation, the Senate unanimously passed an amendment offered by Senator Byron Dorgan to prohibit the STB from implementing its proposed rate complaint filing fees.115 Senator Kent Conrad, co-sponsor of the Dorgan Amendment, proclaimed:

These fees that were announced earlier this year by that agency indicate that sometimes people completely take leave of their senses here in Washington when they have responsibility over an administrative function. If there was ever an example of an agency going off a cliff with respect to a proposal, these fees by the Surface Transportation Board are a perfect example.116

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110. See Ex Parte No. 542, Regulations Governing Fees for Service Performed in Connection with Licensing and Related Services—1996 Update, at 3.
111. Id. at 3-4.
112. Id. at 8-9.
113. Id. at 3-4. The Board's decision to remove caps from all fee items was specified as necessary to fulfill the STB's "statutory duty under the IOAA to insure that services that [the Board] provide to identifiable beneficiaries are self-supporting." Id. at 11.
114. Id. at 9.
115. 142 CONG. REC. S9143 (daily ed. July 30, 1996). The Dorgan Amendment stated as follows: "none of the funds appropriated in this Act or otherwise made available may be used to increase fees for services in connection with licensing and related services fees, pursuant to 49 CFR Part 1002, STB Ex Parte No. 542, for services in connection with rail maximum rate complaints." Id.
116. Id. at S9144 (statement of Senator Kent Conrad). Senator Dorgan described the fees as "not just out of line but way out of line" and "fundamentally unfair." Id. at S9143. While the Dorgan Amendment passed the Senate, the Amendment was ultimately dropped by the House/Senate Conference Committee. See CONF. REP. No. 104-785 (1996), at 68. The Conference Committee, while noting that it would be "imprudent" for Congress to impose restrictions on the amount or type of fees the Board could collect, cautioned that "the Board should be mindful of raising fees to unreasonable levels." Id.
In addition to the Dorgan Amendment, a number of Senators sent to the STB Chairwoman a letter urging the Board to reject the proposed filing fee increases. The letter proclaimed: “Such an increase is nothing short of absurd. Dramatic increases of this nature will make filings impossible for small shippers and consumers and effectively make the STB irrelevant in terms of providing shippers and consumers with a forum to seek relief.” 117

Others in Congress also urged the House and Senate appropriations committees to fund the STB through general Department of Treasury appropriations and to reject the President’s budget proposal118 to fund the agency almost entirely through user fees.119

d. The Board's Adoption of its Fee Proposal

After reviewing comments, the Board adopted its fee proposal in August 1996.120 The STB’s decision first noted that, contrary to some comments submitted by participants, its decision to impose fee increases was not the result of pressure from the administration to self-fund itself. Rather, the decision was described as a routine increase in fees that complied with the IOAA's mandate that fees be “based on the actual costs of providing a service.” 121

As to the coal rate complaint filing fee of $233,200, and the filing fee of $23,100 for all other rate complaints, the Board reiterated the ICC’s position taken in the 1984 proceeding that fees covering the entire cost of processing a complaint are appropriate. Any public benefits resulting from such complaints in the form of lower electricity prices, the Board said, were “incidental” benefits for which the Board was not required to provide. 122 The STB stated that its fee waiver regulations would permit

118. See supra notes 11-14 and accompanying text (reviewing the President’s FY 1997 Budget request to Congress for STB operations).
119. Senator Larry Pressler, chairman of the Senate Commerce, Science, and Transportation Committee, (the committee with substantive jurisdiction over the STB) in letter to the Senate Appropriations Committee noted that the administration’s proposal to fund the STB through “user fees” was “not viable as a proposed funding mechanism” since Congress had not authorized the STB to fully fund itself in this manner. Letter from Senator Larry Pressler to Senator Mark O. Hatfield (May 15, 1995). The chairman of the House Transportation and Infrastructure Committee, Congressman Bud Shuster, and Congressman James Oberstar, ranking member of the committee, sent a similar letter to the House Appropriations Committee. Letter from Congressman Bud Shuster and Congressman James L. Oberstar to Congressman Robert Livingston (May 2, 1996). The letter noted that the Board’s user fee proposal was estimated to produce only $3 million of the Board’s costs for the year, “and even this increase in fees [had] generated significant controversy.” Id.
120. Ex Parte No. 542, supra note 15.
121. Id. at 179-181.
122. Id. at 197. The Board noted that newly performed cost studies revealed that the
those who have limited financial resources to petition for a fee reduction or waiver.\textsuperscript{123} The Board asserted that these regulations would ensure that no one was denied the opportunity to file a complaint.\textsuperscript{124} To “soften the impact of increased complaint fees,” the STB also decided to phase in fees over a ten year period.\textsuperscript{125} Finally, the Board limited filing fees for appeals or petitions to reopen, reconsider, or revoke Board decisions to $150,\textsuperscript{126} noting that its proposed $3,700 fee for these types of filings was too high and would have a “chilling effect” on future filings.\textsuperscript{127}

i. Subsequent Modifications to STB’s 1996 User Fee Decision

The STB reconsidered its 1996 user fee decision that same year.\textsuperscript{128} Between the date of the original decision and the date of reconsideration, however, Congress took further action on the agency’s fee program. On October 9, 1996, the President signed into law the Federal Aviation Authorization Act of 1996.\textsuperscript{129} Section 1219 precluded the STB from raising rate complaint filing fees for “small shippers” until September 30, 1998.\textsuperscript{130} In response to this act, the Board determined that it would maintain all complaint filing fees at $1,000 for small shippers.\textsuperscript{131} However, the Board adopted a temporary filing fee of $23,300 for other formal coal rate complainants and $2,300 for any other rate complainant.\textsuperscript{132} These fees will be increased to the fully allocated cost levels over a ten year period.

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\textsuperscript{76} transportation law journal

\textsuperscript{123} Id. at 199.

\textsuperscript{124} Id. The STB’s fee waiver regulations are found at 49 C.F.R. § 1002.2(e) (1996).

\textsuperscript{125} Ex Parte No. 542, supra note 15 at 198. The Board thus tentatively set complaint filing fees at $23,300 for coal rate complaints and $2,300 for non-coal rate complaints. Id. The Board’s graduated fee schedule will increase fees ten percent annually, until they reach a fully allocated cost level. Id. However, recognizing that at the time of its decision Congress had not concluded its debate on STB funding for the year, until the Congress concluded legislative deliberations over the STB’s Budget, all complaint filing fees would tentatively remain at $1,000. Id. at 198 n. 6.

\textsuperscript{126} Id. at 202.

\textsuperscript{127} Id.


\textsuperscript{130} Id. at § 1219. The statute stated, in pertinent part: “[n]otwithstanding any other provision of law, the Surface Transportation Board shall not increase fees for services to be collected from small shippers in connection with rail maximum rate complaints. . . .” Id.

\textsuperscript{131} See Ex Parte No. 542, supra note 128. To determine whether a complainant meets the requirement of a “small shipper,” the Board will require that, upon the filing of a complaint, the shipper must include relevant information on its status as a “small shipper” for filing fee purposes. Id.

\textsuperscript{132} Id.
III. The Legality of $200,000 Agency Filing Fees

A. The STB’s Fee Determination Likely Fails to Meet STB and Court Precedents on Fee Increases

As outlined above, the STB has adopted a user fee program that has dramatically increased complaint filing fees. The Board’s new user fee program will allow it to recover the entire government administrative, labor, and other costs associated with processing rate complaint adjudications. These significant new fees clearly stretch the limits of what federal agencies are permitted to implement under the IOAA.

The new fees can potentially be challenged in court as inconsistent with the IOAA on three grounds. First, these fees will have a chilling effect on future rate complaint filings; second, the fees are contrary to requirements that fees be “fair”; and third, the fees fail to provide for necessary public benefit offsets.

To be fair, in the case of coal rate complaints, a $233,200 fee is only a fraction of the amount of money at stake in the controversy. Savings resulting from successfully litigated rate complaints can amount to millions of dollars annually for an electric utility and its customers. However, because of the complex administrative requirements necessary to successfully litigate a rate complaint case, litigation costs are extremely high.133 Also, because of the high amount of lost railroad revenues at stake, a defendant railroad will likely pour money into defending a rate complaint case by engaging in protracted discovery, motions to dismiss, etc. These factors make it extremely difficult to keep litigation costs down. Lawyer and economic consultant expenses associated with bringing a rate complaint case can amount to several million dollars for each case. Compounding these expenses with an escalated filing fee of several hundred thousand dollars, however, will certainly cause electric utilities to think twice about asserting their statutory right to reasonable rates.

1. The Chilling Effect of the New Complaint Filing Fees

For several reasons, the Board’s complaint filing fee increases should be of significant concern to the public because, by covering the entire cost of processing rate complaints, the STB likely will deter shippers from enforcing their statutory right to reasonable rates under the law.134

First, such a dramatic fee increase is unprecedented and contrary to established STB/ICC authority that complaint fees be set at a level below

133. See supra, notes 44-49 and accompanying text (generally discussing the statutory requirements necessary to prove a rate reasonableness case before the STB).

134. See 49 U.S.C. § 10101(6)(1994) (noting that the federal government had a duty “to maintain reasonable rates where there is an absence of effective competition. . .”).
their fully allocated costs.\textsuperscript{135} The ICC/STB has never imposed the full cost of complaints on petitioners.\textsuperscript{136} Instead, the agency has viewed rate complaints as an important means of enforcement and consumer protection necessary to maintain reasonable railroad rates and practices.\textsuperscript{137} In fact, in its 1996 decision, the STB decided to cap filing fees for appeals at $150 rather than at $3,700 as originally proposed, because of the "chilling effect" that the higher fee would have on future appeals.\textsuperscript{138} No such consideration was afforded to the imposition of significantly higher rate complaint filing fees.

Second, as stated by the District of Columbia Circuit, under the IOAA, "the agency must provide a 'public explanation of the criteria used to include or exclude particular [user fee] items.'\textsuperscript{139} An agency must also provide "how it determined which of its costs are recoverable, the justification(s) underlying its choice of cost allocation methods, and a reasoned basis for [its decision]."\textsuperscript{140} During its 1984 deliberations on complaint filing fees, the ICC conducted a number of studies on rate cases and concluded that its proposed complaint fee was exorbitant and would chill future rate complaints.\textsuperscript{141} In its 1996 user fee proceedings, the STB conducted no such studies.

Finally, the STB's new complaint filing fees ignore other impediments to bringing forward a rate complaint besides filing fees. Grain industry experts estimate that attorney fees, economic consultant fees, and other costs associated with challenging a rate under existing STB market

\textsuperscript{135} See supra, notes 107-109 and accompanying text (reviewing the ICC's 1984 user fee proceedings that capped user fees). Such a policy also may be at odds with the IOAA's requirement that fees be based on "public policy or interest served." 31 U.S.C. § 9701(b)(2)(c)(1994).

\textsuperscript{136} The Commission determined that even limiting fees solely to direct labor costs is against public policy because it discourages shippers from submitting complaints, and from seeking self-help. See supra notes 107-109 and accompanying text.

\textsuperscript{137} The Board's 1996 proposed coal rate filing fee increase barely mentions this prior concern about the potential chilling effect of charging more than a minimum amount for complaint filings. Instead, the proposal merely stated:

Agencies are always faced with the dilemma of balancing the IOAA's statutory requirement of full-cost recovery for services provided by the agency with the concerns that high fees would inhibit parties' ability to file proceedings before the agency. We propose to establish the policy that all Board fees will be set at the fully allocated cost level to comply with our statutory duty under the IOAA to insure that services that we provide to identifiable beneficiaries are self supporting.

STB Ex Parte No. 542, supra note 110 at 11.

While the Board set forth the proper balancing mechanism in its 1996 decision, the Board's decision neglected to apply the test or to engage in any balancing.

\textsuperscript{138} See supra note 126-127 and accompanying text.

\textsuperscript{139} Engine Mfrs. Ass'n v. EPA, 20 F.3d 1177, 1181 (D.C. Cir. 1994).

\textsuperscript{140} Id. at 1183.

\textsuperscript{141} See Ex Parte No. 246 (Sub-No. 2), supra note 109, at 198 (reviewing a study of 167 complaints studied by the Commission from the years 1980-1982 in order to determine the chilling effect of its proposal).
dominance standards are between $250,000 - $500,000. As noted above, the litigation costs associated with bringing a coal rate complaint can reach several million dollars. The ICC's decision on rate complaints in 1984 held that,

[i]n determining a chilling effect, i.e., the level at which the filing fee represents a significant factor in determining whether to bring a complaint, we are mindful that the filing fee is not the only cost of bringing an adjudication. For example, the fee must be considered in conjunction with other costs (such as attorney's fees) in deciding whether it is "worth it" to have a dispute formally adjudicated.143

The ICC's 1984 fee decision capped filing fees, in part, because it determined that increased fees, on top of associated litigation costs, would deter future filings. The STB did not address this important factor in its 1996 proceeding.

2. The Complaint Filing Fees are Contrary to the IOAA Requirement that Such Fees be "Fair"

The STB's new filing fees also implicate the IOAA statutory requirement that fees be "fair."144 The District of Columbia Circuit in Raton Gas Transmission Co. v. FERC,145 for example, considered a challenge to a $4,000 filing fee imposed by FERC on gas companies. FERC required gas companies to file with it notices of changes in their charged costs.146 The fees were originally set at $2,300.147 The Commission based its new fees on a recalculation of its costs of processing such filings.148 The court determined, however, that the IOAA "requires fees assessed for agency service to be cost-justified and fair . . . . Since the Commission has not furnished any explanation sufficient to put these concerns to rest, we cannot presently say that the new fees are consistent with the statutory mandates."149

In the STB's 1996 user fee proceeding, filing fees were not merely doubled, as was the case in Raton Gas, but were escalated over two hundred fold for coal rate complaints and twenty-three fold for all other complaints.150

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142. See ICCTA Hearings, supra note 20, at 369 (testimony of Russell J. Kocemba, National Grain and Feed Association).
143. Ex Parte No. 246 (Sub-No. 2) supra note 109, at 198.
146. The court in Raton Gas considered an increase ordered by FERC to cost filing charges for gas companies.
147. Id.
148. Id. at 618.
149. Id. at 619 (footnotes omitted).
150. Raton Gas involved a fact situation involving a uniform fee, and the overriding concern
3. The Fees Fail to Provide for Necessary Public Benefit Offsets

Under the IOAA, federal agencies must offset user fees with general appropriations to the extent that the general public is afforded a specific benefit.\(^\text{151}\) Any fee burden disproportional to a private benefit is considered to be a tax; only Congress may impose taxes.\(^\text{152}\) The ICC/STB has acknowledged that the general public enjoys an independent benefit through the filing of rate complaints in the form of maintaining reasonable transportation charges and practices.\(^\text{153}\)

For example, in *National Cable Television Association, Inc.*,\(^\text{154}\) the Supreme Court refused to sanction a fee arrangement sought by the FCC pursuant to the IOAA. In that case, the FCC proposed charging community antenna television systems thirty cents per subscriber for transmitting television programs over cable television lines.\(^\text{155}\) The proposed user fee was designed to support agency operations that otherwise would be paid for by federal appropriations.

The Court held that the fee proposal was improper, because under the IOAA, the agency could not simply add up its total costs of regulation and then “contribute a formula” to have industry pay those costs without factoring in its program’s public benefit offsets.\(^\text{156}\) The Court continued, “[c]ertainly some of the costs inured to the benefit of the public, unless the entire regulatory scheme is a failure, which we refuse to assume.”\(^\text{157}\) Such a “contrived formula” seems apparent with the STB’s complaint filing fees.

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\(^{151}\) *Engine Mfrs. Ass’n*, 20 F.3d at 1180 (D.C.Cir. 1994).


\(^{153}\) See e.g., *Coal Exporters Ass’n of the United States v. United States*, 745 F.2d 76, 81 (1984)(noting that, with the enactment of the Staggers Rail Act of 1980, “Congress recognized that sometimes competition would be insufficient to protect the legitimate interests of shippers, small carriers, and the public. . . .”); Mark H. Graven, *Recoupment of Regulatory Costs Through User Fees*, 55 *Geo. Wash. L. Rev.* 1000, 1006 (1987) (noting that supporters of legislation that initially created the ICC “wished to prohibit exorbitant rates, discriminations, and other evils and to set up a permanent administrative commission to hear complaints”) (quoting A. NEVINS, *GROVER CLEVELAND, A STUDY IN COURAGE* 355 (1932)).


\(^{155}\) *Id.* at 339-40.

\(^{156}\) *Id.* at 343.

\(^{157}\) *Id.*
B. COMPLAINT FILING FEES AT OTHER AGENCIES AND THE COURTS FAIL TO JUSTIFY THE STB’S COMPLAINT FEE INCREASES

Under the governing IOAA legal doctrine as described above, there is no doubt that the Board’s new filing fees are legally suspect. In addition to being subject to challenge under binding legal principles, other factors suggest that the agency’s escalated fee levels are wrong.

1. To the Extent that Other Agencies Charge Rate Complaint Filing Fees, Such Fees are Only Nominal

The STB’s decision to allocate to the complainant the entire cost of processing rate complaints is inconsistent with the practices of other federal agencies. Like the STB, the FCC, FERC, and FMC all adjudicate rate complaints filed against common carriers including telecommunications carriers, electric utilities, and natural gas pipelines. Neither the FCC nor the FERC assesses fees for filing complaints these complaints. The FMC charges a $166 filing fee for a formal complaint and charges $68 for an informal complaint.

2. Other Agencies Charging the Entire Cost of Processing Applications are Inapposite

Some federal agencies do charge for part or all of their adjudicative costs. The DOJ and the FTC jointly assess a flat $45,000 premerger filing fee on applicants. These fees are collected to offset the agencies’ costs of processing applications. Likewise, the Department of Treasury charges fees ranging from $250 to $350 for requests for rulings, opinions, or determination letters; the fees cover the agency’s costs of processing such letters.

There are several fundamental differences, however, between these fees and those imposed in 1996 by the STB for complaint filings. First, the DOJ/FTC fees and the Treasury Department fees are imposed by law, at the express statutory direction of Congress. The STB has no similar...

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158. The FCC’s statutory authority to regulate charges for communication service by common carriers can be found at 47 U.S.C. § 201 (1994); see also 47 C.F.R. § 1.1102-5 (1996)(listing FCC’s schedule of charges for filings for common carrier services). The FERC’s user fees are set forth at 18 C.F.R. Pt. 381 (1996).
160. See Id. at § 502.304(b) (1997).
162. See User Charges, supra note 86, at 49.
statutory authorization to impose on users the agency cost of adjudicating rate complaints. Second, while a Treasury Department determination or a DOJ/FTC merger opinion may provide benefits to petitioners and applicants, a rate complaint does not bestow a similar business advantage upon the complaining party. Rather, it effectively prevents the unlawful practices of a defendant railroad and mandates statutory compliance with the law. In this regard, an agency determination assisting individuals to further their personal/business plans arguably implicates less important public interest considerations than does the filing of a defensive rate complaint.

3. Common Law Courts Eschew Cost-Based Fees as Unfairly “Rationing Justice”

The 1984 ICC decision capping rate complaint fees noted that this fee is similar to a fee charged by a court to file a complaint.¹⁶⁴ To be sure, it is customary for courts to require that a complainant pay costs associated with litigating a case.¹⁶⁵ However, as stated in Corpus Juris Secundum, “if they bear no reasonable relationship to the expenses of the administration of justice, they are unreasonable impediments to the access to justice in violation of constitutional provisions prohibiting the sale of justice.”¹⁶⁶

Courts have opposed cost-based user fees for judicial proceedings because courts provide a public service that the public as a whole should fund.¹⁶⁷ A court will charge a litigant the entire costs of processing a case only when it is levying sanctions in response to an abusive litigation practice. As stated by the District of Columbia Circuit:

[m]indful of [the] underlying philosophy of the need to permit access to the courts, we are loathe “to stifle the enthusiasm or chill the creativity that is...
the very lifeblood of the law.” Eastway Const. Corp. v. City of New York, 762 F.2d 243, 254 (2d Cir. 1985). Sanctions for bringing a case or an argument into court ought to be reserved for unusual circumstances. The sanction device is not to be simply another weapon for battling litigators to use, an additional poker chip which allows a player to stay in the game for one more hand. Sanctions for one party’s wasteful use of the judicial system must not be allowed to become a basis for the other party to reply, “Wastrel,” you have cost me and I am determined to cost you.168

This rationale should likewise guide the setting of filing fees at the STB.

C. THE ABILITY TO SEEK A FEE WAIVER DOES NOT ADEQUATELY SAFEGUARD COMPLAINANTS

Under STB regulations, a fee reduction or waiver can be requested by a complainant where an action is “in the best interest of the public,” or that payment “would impose an undue hardship.”169 However, requests for a fee waiver or reduction are to be granted only in “extraordinary situations” and a showing that the waiver is in the best interest of the public or that payment of a fee would impose an “undue hardship” upon the requester170 A shipper seeking to protect itself against economic abuses by common carriers should not be obligated to show that the situation is “extraordinary.”

IV. ALLEVIATING THE BURDEN OF NEW FILING FEES

Based on the numerous factors discussed in part II of this article, the 1996 complaint filing fees implemented by the Board should be rescinded. There is no doubt that the public pays the price through costs of any increase in railroad freight rates. Is it right to close a shipper’s access to the only forum available to adjudicate rate disputes by imposing a $200,000 filing fee? Bringing a suit to force common carriers to live up to their statutory obligation to provide reasonable rates should not be prejudiced in this manner. It is not right that the public, without whose support the railroads would never have been built,171 should be saddled with these additional litigation costs.

If the fees are to be continued, at a minimum, the Board should: establish fees on an actual cost basis, as opposed to the Board’s current flat fee basis; provide for payment on a pay-as-you-go basis instead of

169. See 49 C.F.R. § 1002.2(e) (1994).
170. Id. at § 1002.2(e)(2).
171. Almost fifty years ago, a federal government study estimated that public tax dollars subsidized the construction of railroad lines to the sum of approximately $1.3 billion dollars. LOCKLIN, supra note 22, at 137.
requiring an up front payment; and consider establishing a “loser pays” system.

A. **Complaint Fees Should Be Imposed on an Actual Cost Basis, as Opposed to a Flat Fee Basis**

The STB’s 1996 user fee decision based its $233,200 coal rate complaint fee on the agency’s estimated cost of adjudicating only two cases. The adoption of this crude basis for cost estimation for all future complaints ignores the fact that costs incurred by the STB vary substantially from case to case. The high fee assumes that every proceeding will be litigated to a final conclusion, and that no cases will settle.

Some other agencies have implemented user fees based on actual hours spent on individual tasks, rather than imposing flat fees. The Nuclear Regulatory Commission (NRC) charges users separately, even for similar services performed, based on the total amount of personnel hours devoted to specific tasks. The STB’s 1996 opinion did not reference consideration of this type of fee structure.

B. **The STB Should Provide for Payment for Complaints on a Pay-as-You-Go Basis**

The Board’s complaint filing fees are required to be paid up-front, when in reality, the vast majority of the Board’s work on a rate case occurs at the end of the proceeding, after all of the evidence has been submitted by the parties. STB rate cases can also extend several years in length.

If the new increased fees are to be imposed, they should be applied on a pay-as-you-go basis. OMB guidelines for agencies require fee collections to be made “in advance of, or simultaneously with, the rendering of services” rather than for agencies to be reimbursed after a service is performed. Imposing a segmented payment approach, under which fees would be collected as the costs of processing a coal rate complaint

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172. See STB Ex Parte No. 542, supra note 110, at 25. The STB stated that the average number of hours of labor spent by Board employees on these two cases was in excess of 2,700 hours. Id.

173. As stated by Professor Hopkins, who completed a comprehensive evaluation of federal user fees for the Administrative Conference of the United States:

Where the costs incurred by an agency vary substantially each time the task is undertaken . . . fees may better be assessed according to actual time expended. The NRC, for instance, perceives the inspection of each plant as a discrete task. Because of the various structural, engineering, and design differences among nuclear power plants, inspection or licensing approval time may vary significantly from plant to plant. Thus, the NRC requires its employees to keep substantial records. These time records are ultimately calculated into a final bill that is presented to the regulates at the conclusion of the Commission’s task. Gillette & Hopkins, supra note 84, at 849-50.

174. OMB Circular, supra note 76, at § 6a(2)(c).
are accrued, would satisfy the OMB requirements that collections be made “simultaneously” with the rendering of services, and would be less burdensome for the complainants. The NRC bases its fee system on just such a pay-as-you-go approach. Facility applications, permits, licenses, etc. are billed on quarterly or biannual intervals until the service in question is complete, or upon completion of agency review.175

The Board in its 1984 user fee proceedings noted that allowing a later collection of a fee was “not possible due to the serious administrative problems it would cause.”176 The Board did not mention the possibility of establishing a segmented collection approach in its 1996 proceeding. It is time for the STB to reevaluate the feasibility of establishing a pay-as-you-go fee system for complaint fees.

C. The Board Should Establish a “Loser Pays” System

In response to the interest expressed by commentors in imposing a “loser pays” system for paying the costs of processing rate complaint proceedings, the Board mentioned in its 1996 decision that the concept “may have merit” and that it would “consider” proposing a future rulemaking on the subject.177 The STB should develop a loser pays type system for complaint filing fees. Under the “English Rule”, attorney fees and court costs are paid by losers after cases are decided.178 The Supreme Court in Alyeska Pipeline Service Co. v. Wilderness Society,179 has cautioned that in American courts, “the prevailing litigant is ordinarily not entitled to collect a reasonable attorneys’ fee from the loser.” However, there are exceptions to this restriction. Under the antitrust laws, for example, there exists a fee shifting statute that allows only the plaintiff to recover the costs of litigation.180 This statute is designed to “encourage the bringing of low-probability cases.”181

175. See 10 C.F.R. Pt. 170 (1994). The NRC’s fee system includes review of applications for permits, licenses, and design approvals; license amendments and dismantling; renewal reviews; applications for spent fuel processing; applications for special projects; and inspection fees. Id. 176. Ex Parte No. 246, supra note 102, at 90. 177. Ex Parte No. 246 (Sub-No. 2), supra note 15, at 199. 178. See Alyeska Pipeline Serv. Co. v. Wilderness Society, 421 U.S. 240, 247 (D.C. Cir. 1975)(noting that “for centuries in England there has been statutory authorization to award costs, including attorneys’ fees. Although the matter is in the discretion of the court, counsel fees are regularly allowed to the prevailing party.”); Thomas D. Rowe, Jr., Study on Paths to a “Better Way”: Litigation, Alternatives, and Accommodations, 1989 DUKE L.J. 824, 887 (discussing generally the loser pay system and proposals in America to implement such a system); Philip J. Mause, Winner Takes All: A Re-Examination of the Indemnity System, 55 IOWA L. R. 26 (1969-70).
The STB should impose filing fees on losers in these proceedings. The Board, might impose upon the loser only the associated complaint filing fee charges rather than attorney's fees and other costs associated with bringing a rate complaint case. This cost allocation would make sense since it would recognize that a shipper is typically forced to file a complaint only after a railroad has abused its monopoly economic status. Therefore, a railroad who is proven to have abused its monopoly power should be required to absorb some or all of such fees. If a complainant lost the case, that party likewise could be held responsible for paying the fee.

V. CONCLUSION

The implementation of the STB's 1996 user fee program presents an interesting picture of an agency, facing increasingly tight fiscal constraints, attempting to sustain itself by recouping its cost of services. The issue addressed by this paper is whether the increased filing fees at the STB are legally proper, necessary, and/or in the public interest. Put differently, could the Board be pricing its services out of the reach of those whom the Interstate Commerce Act was designed to protect? As bluntly stated by the editor of Traffic World, a weekly trade publication on transportation,

"[t]o mandate the use of this agency with one hand and to impose exorbitant fees for that use with the other, is characteristic of the worst kind of monopoly. To point to the agency as a forum for relief while denying access to that forum through excessive charges is the height of hypocrisy." 183

At a minimum, by attempting to recoup the costs of processing rate complaints, the Board is likely alienating the very shipper constituents that it will likely need to sustain itself in the political battles ahead. 184

182. To ensure that an insolvent loser or a loser who might face financial hardship as a result of such a fee assessment, any change in this area may seek to accommodate through exemption such impoverished losers.
183. Jean V. Murphy, Absurdity, TRAFFIC WORLD, Apr. 15, 1996, at 6 (editorial).
ISTEA Reauthorization and the National Transportation Policy*

Joseph P. Thompson**

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I. Introduction

A. ISTEA Reauthorization and the National Transportation Policy

Near the end of a long and distinguished career of public service, shortly before his retirement from Congress, the Honorable Norman Y. Mineta, then Chairman of the Surface Transportation Subcommittee, at the 1995 Annual Dinner of the International Institute for Surface Transportation Policy Studies at San Jose State University said, “[T]he crucial question in transportation today is: What should government do? And what should it leave to others?” Mr. Mineta thus framed the paramount transportation policy issue facing us as we begin a new century. The answer we give to Mr. Mineta’s “CRUCIAL QUESTION” will undoubtedly affect the course that the Nation pursues well into the future. Soon, reauthorization of the Intermodal Surface Transportation Efficiency Act of 1991, Pub.L. 102-240 (ISTEA), either by enactment of the Administration’s bill, the National Economic Crossroads Transportation Efficiency Act of 1997 (NEXTEA) or one of the other proposals now before the Congress, will reveal how we embark upon the new century answering the Crucial Question. This paper will explore how the answer we give to the Crucial Question with ISTEA reauthorization legislation comports with the national transportation policy.

B. The Past as Prologue

Mr. Justice Holmes’ conclusion toward the end of the last century in The Common Law that, “[T]he life of the law has not been logic; it has been experience,” has new meaning in the field of transportation law and policy. What Mr. Justice Holmes called the “felt necessities of the time” may be seen in each generation’s framing and answering of what they perceive to be the crucial questions of their time. Does Abraham Lincoln’s analogy of “A House Divided” have renewed application today when we find ourselves half slave to publicly owned transportation and
half free enterprise? Will this generation’s answer to the Crucial Question propel us toward the former or return us to the latter? Indeed finding ourselves at a “crossroads,” will we opt for traditional capitalism, or something else?

C. THE NATIONAL TRANSPORTATION POLICY

It is said that physicists are searching for the Grand Unified Theory (GUT) to explain all the laws of the universe. I believe that we in transportation ought to be seeking the Grand Unified Transportation Theory (GUTT) to heal the artificial division that exists in American transportation policy today and to return us to our free enterprise roots. Saying that we have a National Transportation Policy (NTP) is like saying we have a Rule Against Hearsay. In Title 49 there are currently five transportation policies: Rail Transportation Policy, §10101; National Transportation Policy, §13101; Air Commerce and Safety Policy, §40101; National Mass Transportation Policy, §5301; and National Intermodal Transportation System Policy, §5501. Additionally, the U.S. Dept. of Transportation (USDOT) published its National Freight Transportation Policy in the Federal Register on Jan. 6, 1997.1

D. HISTORY OF THE NATIONAL TRANSPORTATION POLICY

Professor Farris traced our NTP to the Treaty of Paris in 1763 and the passage of the Northwest Ordinance in 1787.2 Free enterprise capitalism was the key to our transportation industry growth, with Adam Smith’s “Invisible Hand” receiving occasional support from the taxpayers for turnpikes, canals and railroads. When the excesses of human nature grew unacceptable, during the age of the Robber Barons, regulation by government was the response of that generation to those “felt necessities of the time.” Private ownership of industry, however, was retained, except for those natural monopolies like water, sewer and power. Uniquely, America rejected the notion that the government would own our transportation industries.3 Although the railroads were nationalized during

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3. See, generally, HARVEY A. LEVINE, National Transportation Policy: A Study of Studies (1978) (chapters 1, 4, and 5 discuss in greater detail this policy); PHILIP D. LOCKLIN, Economics of Transportation (5th ed. 1960); DUDLEY F. PEGRUM, Transportation Economics and Public Policy (1963) (chapters 3, 16, and 20 highlight the United States and its attempts to regulate transportation policy); ROY J. SAMPSON & MARTIN T. FARRIS, Domestic Transportation: Practice, Theory and Policy (3d ed. 1975); GEORGE W. WILSON, Economic Analysis of Intercity
WWI, even one of our most gifted orators, William Jennings Bryan, could not convince the American people that the "Plumb Plan" of joint federal-state ownership was preferable to privatization. Despite its many faults, the American people chose capitalism rather than switching to statism or socialism. The Transportation Act of 1940 was the first express transportation policy by Congress. However, almost each session of Congress since has added to or altered transportation policy, yielding a result that one should expect when political decision-making seeks solutions attempting to please every transportation need of a diverse, growing population. Consequently, the NTP is taught to transportation students as "somewhat vague" and containing "numerous conflicting provisions."5 As Professors Coyle, Bardi and Novack conclude in their transportation textbook:

The federal government's policy toward transportation is a composite of these federal laws, rules, funding programs, and regulatory agencies; however, there is no unified federal transportation policy statement or goal that guides the federal government's actions.

In addition to the Congress and the president, there are more than 60 federal agencies and 30 congressional committees involved in setting transportation policy. There are two independent regulatory agencies that interpret transport law, establish operating rules, and set policy. Lastly, the Justice Department interprets statutes involving transportation and reconciles differences between the carriers and the public. Each of these groups has made decisions that have affected the development of transportation.6

Whether in war or peace, the NTP reflected rising concern with transportation problems in the United States and in other developed nations.7

E. Evolving Transportation Policy

Of the many commentators, Professor James C. Nelson has given us

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Footnotes:

6. Id. at 104.
enlightening perspective on the NTP’s evolution.8 Writing during the Kennedy administration, Professor Nelson said “recent studies of regulatory agencies and public policy in transportation attest eloquently to the continuing public interest in the long-standing issue of the appropriate role for government in the transportation sector of the economy.”9 At that point in time he saw “little legislative action,” but that was quickly changed as Congress tackled mass transit problems. However, Professor Nelson did raise the “Crucial Question” by saying, “The question of the proper role of the government in the allocation of traffic and resources in transport” was worthy of “a general review and evaluation.” He saw two roles for government in transportation: promotion and regulation.

In the United States, government shares with private enterprise the costs and risks of providing transport in a mixed system of public and private enterprise. Governments generally participate by furnishing the basic ways (and some terminals) while private enterprise conducts carrier operations over public facilities. Mixed enterprise is characteristic of air, highway and water transport but not of pipeline and railway transport. As most countries operate railway under public enterprise, this country’s mix of private and public enterprise is unique.

The Crucial Question presented itself time and again in the post-war era, and so many studies were made that studies of the studies appeared.10 Every aspect of transportation has been examined and re-examined. Reflecting its importance to the economy and society, commissions and committees have devoted forests of paper and vast resources to this endeavor. Regardless of the report or study, they all recognize the role of federal tax dollars on our transportation systems.11

II. SUBSIDIES

A. TRANSPORTATION SUBSIDIES AND POLICY

Call it aid, grants, assistance, tax breaks, or subsidies, there is little difference from a policy perspective. However, since “subsidy” has be-

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9. id.


11. GUESS, at 1-2. Professor Guess concludes that “federal aid remains the dominant force in shaping activities by state and local transit agencies” but “the incentives provided are often irrational from the perspectives of efficiency and effectiveness.” Id. See also JONES, supra note 7. Professor Jones concludes that federal subsidies have not stabilized the industry; it is necessary for changes in transit’s basic way of doing business if mass transit is to play a significant role in the future of urban transportation. Transit subsidies are necessary and appropriate, however endlessly increasing is neither.
come a dirty word, we seldom see it used. Instead, "private-public partnership" has emerged as a popular phrase to use. How do transportation subsidies distort our transportation systems? First, however, can we agree on a definition of "subsidy"? It has been authoritatively said about subsidies:

One remarkable attribute of Government subsidies is the capacity of the very words themselves to conjure up marvelously diverse images in different minds. To most economists the subsidy is a useful fiscal instrument whose major purpose is to improve the private sector's allocation of resources among their alternative uses. To many laymen, on the other hand, subsidies are an elusive and worrisome phenomenon, frequently hidden from the general view and often suspected of being used more for private gain than for the public good. These widely divergent viewpoints appear to come mainly from differing perceptions of the efficiency with which private markets function. To the laissez-faire enthusiast there is little or no legitimate role for subsidies since, as he sees the world, free markets do the best job of organizing production to satisfy present and future consumer demands. Others, worried about the lack of strong competitive pressures for efficiency in concentrated markets and perceiving pervasive externalities, both beneficial and harmful, which are not taken into account by private business, actively support extensive Government intervention, through subsidies and other means, in the operation of private markets. 12

And, another highly respected economist said in the same study:

Congress is not always adequately equipped to evaluate expenditure programs; the device of holding hearings is far from being a complete substitute for objective evaluation. All too often hearings are dominated by the special interests who expect to benefit from them rather than by those who have to pay for them; thus representatives of nonfarm sectors are rarely heard by the congressional committees on agriculture. . . . Another reason why special benefit programs need particular attention is the inertia in our political system, which tends to preserve such programs long after their initial justification (if indeed there was one) has disappeared. These programs tend to create vested interests, whose anguished cries of ruin at the slightest suggestion of reform are usually loud enough to drown out the voice of reason. Even if a program is widely conceded to be unsatisfactory, Congress is likely to let sleeping dogs lie by extending it unchanged rather than reforming it; the recent extension of the Sugar Act is one example. The laxity of our rules concerning political contributions may well aggravate the problem of inertia. 13 (emphasis added)

B. The Taxpayers' Ideal Subsidy

These definitions of "subsidy" are as sound today as they were when those economists testified to the Joint Economic Committee of the Congress. Inducing private sector behavior with transportation subsidies has long been a feature of American politics and government. For the individual a particular subsidy may be "good" or "bad," depending on whether he pays for it or receives it. But for the Nation, a particular subsidy may diminish an "inherent advantage" of one mode of transportation to the advantage of a competing mode. We need to ask: Who actually benefits from the subsidy? The Grandfather of all transportation subsidies may have been the land grants to the railroads. In this case it was we taxpayers who enjoyed the profits. Professor Nelson described the fiscal ramifications of the land grants and other subsidies to the railroads, in exchange for reduced freight rates (under former Section 22 of the Interstate Commerce Act) for government freight and military passengers. By June 30, 1943, the rail rate breaks for the taxpayers were estimated to be $580 million, "a sum several times the value of the granted land at the time land grants were awarded and in excess of the sums derived by the railroads from the grants." Thus, this precedent-setting transportation subsidy proved that the taxpayers could actually profit from a Congressional deal to promote transportation, \textit{viz}., infrastructure improvements. In other words, with private sector profit motives allowed to control, the promoters and the taxpayers (investors) both made huge profits. Have we learned from our history? Did subsequent Congressmen make equally advantageous agreements for later generations of taxpayers?

C. Subsidies Distort Transportation Industry Result

Before the railroad land grant subsidies, canals had been constructed by state agencies and operated with tolls recovering capital and operating costs. But just as highway subsidies would later affect the railroads' profitability, since about 1880, by which time the railroads had largely superseded the canals, the federal and state governments have provided improved waterways entirely free of user charges except on the St. Lawrence Seaway. Like a house of cards, tinkering with one card inevitably affects the whole transportation structure.

Even earlier, private turnpikes provided main highways on a commercial basis; but, since 1850, highways have been provided by state and local governments with ever-increasing federal aid (since 1916) for construction of limited federal-aid systems and with user fee support in the modern period.\footnote{Federal transportation outlays for all modes increased from $23.961 billion in 1980 to...} Finally, the federal government early undertook to pro-

\footnote{NELSON, supra note 8, at 423 n. 3.}
provide the civil airways and facilities, with the synergistic benefits accruing to the airlines. As Professor Nelson concluded, "Over the years, tremendous sums have been spent by government in making way and terminal facilities available for use by private carriers; in giving direct subsidies to certain classes of carriers; and in engaging in expensive scientific research, and development for national security, making as a by-product much valuable technology available to the air carriers without charge to them."16

The national purposes for giving financial assistance to transport development are important factors in this evaluation. Clearly, railroad grants had the unique national objective of stimulating initial settlement of undeveloped lands in the West by rapid development of a new transport technique, greatly reducing long-distance costs and increasing service speeds. Air transport aid sought improved postal communication, rapid introduction of a new technology, adequate equipment, aircraft manufacturing facilities and skilled personnel for national defense. Federal highway aid had improvement of rural postal services and stimulation of interstate commerce as its principal purposes; in addition, an underlying national defense interest has existed in a highly developed system of interstate highways adequate for the needs of commerce and the military.

State highway investment largely has been in response to the way-service demands of a rapidly multiplying ownership of motor vehicles. The principal objectives for inland waterway improvement, including the no-toll policy, have been to give landlocked areas lower freight rates and to furnish additional competition for the railroads. The overall historical record indicates that perhaps the strongest motive for federal transport subsidies has been to bring about, more rapidly than otherwise would occur, the economic and social benefits of improvements in transport service and of lowered transport costs when entirely new transport technology became available. This was true of federal aids for highway and air transport development. That motive also stimulated the land grants to railroads, but with the significant difference that a century ago far greater emphasis was necessarily placed on land settlement and resource development in pioneering areas. The introduction of modern air, highway and waterway transport came long after the railroads had already opened up most of the remote and under-developed regions of this country. The grant of subsidies to those modes was intended to exploit their technologies at a faster rate than market demand could accomplish so that the

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16. NELSON, supra note 8, at 418.
economy might earlier have the new types of services and competitive transport.¹⁷

Professor Nelson also concluded that as a broad generalization, the American system of mixed enterprise in transport has worked tolerably well. He said that it has produced a fully-developed, large-scale, multiservice and essentially competitive transport system that is the envy of most countries. Of course, when he wrote the United States was not the world’s largest debtor nation! In general, he stated, the promotional policies accomplished their purposes and the government has made a truly important contribution to the American transport system. But as government promotion also has created excess facilities and inefficient transport, this by no means implies that the best and most efficient system has resulted. Nor does it mean that past policies necessarily should be continued indefinitely.¹⁸

But, looking objectively at the justification for continuing subsidies to domestic transport, it seems clear that most historical reasons for subsidies have disappeared long ago. There is, Nelson said, no present need for land grants to stimulate initial development of railways. Also, motor transport is now a mature and thriving industry, operating over highways with high-type surfaces throughout the land. Although expanding traffic and urban congestion obviously require highway expansion, plainly there is no longer any need for public subsidies to introduce the advantages of motor transport to the American economy! He believed that most needed highway development would come as rapidly as can be economically justified in response to effective demand on the basis of appropriate user fees and tolls. The quick additions of modern highways in congested areas by state-owned toll road authorities suggest that the required facilities would come sooner on a full commercial basis than under existing so-called free-road policies.

Air transport, he said, should no longer be regarded as an infant industry in need of developmental subsidies, except for non-economic subsidization of local and metropolitan airlines to give rural and urban communities more advantages of the air age. The rapid introduction of airline technology did not cease, nor even slacken, with cessation of air-mail subsidies to the trunk lines. He predicted that placing user fees on the civil airways over a period of time would not seriously impede beneficial innovations.

The traffic growth experienced by barge lines on well-located waterways suggests that free channel and lock services are no longer essential to intensive use of inland waterways. Since the traffic on marginal water-

¹⁷. Id.
¹⁸. Id.
ways does not rise to efficient levels without user fees, serious questions can be asked concerning the economic justification of continued investment in such waterways. 19

Professor Nelson believed that the beneficial general results of this country's policy of stimulating economic development through encouraging adequate, efficient and competitive transport with subsidies have long ago been achieved. Today, he said, the problem of transport policy is radically different than during the 1830-1930 period. He also said, “Insufficient attention has been given to this fact in formulating transport policies in recent years.”

The transport problem today, and in the foreseeable future, is to promote the right economic development of each of the five contending agencies, including coordinated services by two or more modes. The primary aim of policy can no longer be to foster initial economic development of the western regions, nor even to hasten the introduction of new transport industries by means of subsidies. This is not to say that transport modes now not visualized will never be invented. Rather, present-day policymakers face well-defined and critical questions growing out of the existing relations among carriers, the current promotional and regulatory policies, and the competitive structure of transport. Thus, it would seem wholly unreasonable to leave the question of what subsidies may be desirable for promoting rapid development of a new transport mode until someone invents it and operations appear to be practicable. 20

III. THE PAST GOVERNMENT ROLE: REGULATION

The remaining general problem of government relations to transport is how best to promote adequate and efficient transport by self-sustaining modes, all paying appropriately adjusted user fees or providing their own way. 21 The concept of “self-sustaining modes” of transportation has, however, come to mean two completely different things, depending on whether the carrier is in the public or private sector. In the corporate form a carrier can seek out a variety of sources of income in the marketplace, whereas the public sector carrier lacks the freedom to engage in commercial activities. So, since farebox revenues are usually a small portion of total costs of operation (and a smaller portion of overall expenses), taxpayers subsidies are thought to be the only way to keep the operation moving. However, as recent calls for freight revenue for Amtrack reveal, if the public sector carriers were returned to the private sec-

19. Id.
20. Id. at 419.
tor, and enough other revenue attracted, e.g., freight revenues, then the need for taxpayers subsidies would diminish or cease altogether. It is when we answer the Crucial Question by saying that transportation must solve social problems (e.g., Welfare to Work; Spare the Air; Rebuilding America) that we justify continued taxpayer subsidies.22

Professor Nelson asked: "How, then, can the role of government in transport be adjusted to serve a more economic purpose?" And he answered the Crucial Question in this way:

Is it assumed that government’s role is ideal when it encourages provision of essential transport at the least total costs, including social costs. Over the long run, the role of government can become more economic only to the extent that promotional and regulatory policies are designed to be fully consistent with achieving maximum overall economy in transport and high standards of efficiency in each of the several modes. The national transport problem of today is not to stimulate an initial supply of efficient techniques of transport nor to encourage development of vast underdeveloped land resources, but rather it consists of facilitating the right economic development of each mode of transport, including the essential public way and terminal facilities. Consequently, in the promotional sphere government should not continue subsidy after its economically valid purposes have been accomplished. And so much of the nation's capital is involved in public transport investments that they should be limited by fully economic investment criteria and by universal user fees, properly adjusted to the conditions of utilization and to require all transport alternatives and resource costs involved to be considered in expanding public transport facilities.23

After WWII a series of detailed government reports analyzed how we failed in practice to attain the goals of the NTP.24 Professor Farris identified two types of NTP: "informal institutional policy" and "formal statutory policy."25 In a detailed analysis which is equally valid today, he

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25. FARRIS, at 425.
concluded that the NTP is incomplete and inconsistent and contains indefinable terms. He concluded:

Undoubtedly the national transportation policy is a fiction. As stated in the declaration, it has many shortcomings. It is incomplete, inconsistent, and indefinable. From the point of view of containing generally acceptable ideas, the declaration of national transportation policy is a fact. It does contain acceptable goals and it does establish ideals to be sought. Although one may be critical of the goals and ideals, it is a fact that they are indeed present in the declaration. In a word, national transportation policy is both a fact and a fiction.

Written when the USDOT was new, Professor Farris accurately predicted that “the executive branch will assume a larger and more forceful role than in the past.” Since then, the Crucial Question has been answered time and again by increasing the federal government’s role in transportation. For example, the President’s Executive Order No. 12893, Jan 26, 1994, requires the agencies to “seek private sector participation in infrastructure investment and management,” but reliance on taxes, rather than user fees, e.g., farebox revenues (the passengers’ “co-pay” in current parlance) is the choice our elected representatives make as they promise to satisfy everyone’s transportation needs. Meanwhile,

26. Id. at 427-31.
27. Id. at 432.
28. Id. at 425.
30. Executive Order No. 12893, Jan. 26, 1994, “Principles of Federal Infrastructure Investments,” §2(c): Private Sector Participation. “Agencies shall seek private sector participation in infrastructure investment and management. Innovative public-private initiatives can bring about greater private sector participation in the ownership, financing, construction, and operation of the infrastructure programs referred to in section 1 of this order. Consistent with the public interest, agencies should work with State and local entities to minimize legal and regulatory barriers to private sector participation in the provision of infrastructure facilities and services.” No definition of “public-private initiatives” is found, or how they may differ from “private-public partnerships.”
these criticisms of the NTP remain accurate.31 There are so many exceptions made to the NTP by the demands of our political process that we honor it more in the breach than the observance.32 We give lip service to the goal, but reveal our selfish selves by our conduct. Our elected representatives summon us to attack the "federal pot of funds." Ironically, we demand unlimited transportation services at the same time that we demand that government balance its budget. How can we have both? Are we in effect a society "trapped in a preoccupation with the public rather than the private" in seeking transportation problem solutions?33

IV. INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT

ISTEA "broke new ground" in how America's States and metropolitan regions approach transportation planning and investment decision-making, according to the USDOT.34 According to President George Bush, it was a "jobs" bill, as he said at the ISTEA signing ceremony.35 ISTEA's hallmarks may be found in its "Declaration of Policy," the very first paragraph of which states:

It is the policy of the United States Government to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy, and will move people and goods in an energy efficient manner.36

As Professor Farris recognized, the internal inconsistency of the NTP of trying to be economically efficient while satisfying all of the transportation expectations of every person in the Nation continues to make impossible an acceptable answer to Mr. Mineta's Crucial Question. Advocates of competing modes and needs want the available funds spent on their "felt necessities" and not those of someone else. Transportation thus be-

31. George Eads, Economists versus Regulators, Perspectives on Federal Transportation Policy 101 (1975). Professor Eads' "conviction" is that "the market, though imperfect, works better than the sort of regulation society is likely to get, barring commissions composed of omnipotent, omniscient, benevolent dictators." Id. at 108. See also, Thomas A. Till, National Transportation Policy: The Need for a Clear Concept, Proceedings: Fifteenth Annual Meeting Transportation Research Forum 18-22 (1974); Herman Mertins, Jr., National Transportation Policy in Transition (1972).
comes a means to an end, e.g., urban redevelopment, air pollution mitigation, unemployment reduction, infrastructure improvement, etc. Transferring "social costs" to transportation systems to solve myriad social problems and achieve non-transport goals distorts the reality of transportation.\textsuperscript{37} Taxpayers want to know what the government is doing taking over the responsibility for unprofitable transportation systems when a free enterprise solution exists in an equitable division of freight revenues between the various modes.\textsuperscript{38}

V. ISTEA, NEXTEA, BESTEA, HOTTEA, OR JIM JONES' KOOALID

NEXTEA seeks to "continue the successful federal role in developing a national intermodal surface transportation system through programs that ensure the safe and efficient movement of people and goods, improve economic productivity, preserve the environment, and strengthen partnerships among all levels of the government and the private sector."\textsuperscript{39} Of course, if by "success" you mean increasing tax burdens to finance nationalized industry, then NEXTEA could become a "successful" successor to ISTEA. The public debate on ISTEA reauthorization curiously omits mention of the Crucial Question. The "web of alliances and interests"\textsuperscript{40} clash with the coalitions in what Traffic World describes as a "titanic struggle" over the federal pot 'o funds to be appropriated in the "mother of all transportation bills."\textsuperscript{41} Each coalition accuses the other of being "self-serving," while touting their own proposal as best for the public. However, all of them urge greater government subsidies, and therefore, higher tax burdens. Underlying this struggle lies the Crucial Question and the internal inconsistencies in the NTP. The "Divided House" of transportation policy continues to worsen as ever larger taxpayer subsidies (ISTEA-type "investments") are required to fund what would otherwise be bankrupt businesses. It seems as if an "Iron Curtain" has been erected by those advocates of taxpayer funded transportation, creating an artificial barrier between nationalized transporta-

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\item[37.] Patrick O'Sullivan, \textit{Transport Policy: Geographic, Economic and Planning Aspects} 82-107 (1980). The author calls nationalization a form of "constitutional intervention" and a "widely anathematized fate worse than death for private enterprise." It has, however, often been seen as a solution "sought eagerly by owners anxious to convert the failing yield of an ailing enterprise into the secure return of government bonds offered in compensation for their ancient property." \textit{Id.} at 108.
\item[38.] Robert Heilbroner \& Lester Thurow, \textit{Economics Explained} 114 (1994).
\item[39.] Hearing on Senate Bill 468, 105th Cong. 1 (1997). The full text is found on the Internet at \texttt{http://ftp.loc.gov/pub/thomas/cl05/s468.rcs.txt}. A section-by-section analysis is also available. One coalition, the Surface Transportation Policy Project has written at Website at \texttt{http://www.istea.org}.
\item[40.] \textit{Cong. Quarterly}, March 8, 1997, at 583.
\item[41.] \textit{Traffic World}, March 24, 1997, at 6-7.
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tion and free enterprise transportation. While a privatization revolution is occurring around the world, private sector transportation in the United States is being consumed by politically fueled notions of public ownership which history has shown are not sustainable over the long haul.\textsuperscript{42} Metropolitan Planning Organization (MPO) transportation planners say that they are prohibited from even considering private transportation options. Why argue the “Question of Money”\textsuperscript{43} when we should be focusing on a sustainable NTP? How can we justify our NTP if we fail to debate Mr. Mineta’s Crucial Question? Mr. Justice Douglas said, “there is no free speech in the full meaning of the term unless there is freedom to challenge the very postulates on which the existing regime rests.”\textsuperscript{44} Some say that we cannot question public ownership of transportation, and any mention of it is “off limits.” Artificial barriers to truth, insulating the “untouchables” of their adherents, precludes our ability to attain our goals, warps the notion of the “public interest” to something short of it, deflects tax dollars for private gain, and traps us behind a politicized Iron Curtain and in a “House Divided” against ourselves. Mr. Justice Douglas reminds us of John Stuart Mill’s famous logic:

But the peculiar evil of silencing the expression of an opinion is, that it is robbing the human race; posterity as well as the existing generation; those who dissent from the opinion, still more than those who hold it. If the opinion is right, they are deprived of the opportunity of exchanging error for truth: if wrong, they lose, what is almost as great a benefit, the clearer perception and livelier impression of truth, produced by its collision with error.\textsuperscript{45}

Our debate on ISTEA reauthorization, and the NTP, must first answer the Crucial Question because until we decide if we want the public sector or the private sector to handle our transportation needs we are going to suffer the ills of fundamentally inconsistent policy and conflicting goals, and all the adverse financial consequences which follow from them.\textsuperscript{46} If we fail to have a sound foundation upon which to erect our transportation systems, why should our fate not be the same as that of the Soviet Union? A debate which does not address the primary issue, which skirts the Crucial Question, is not what we should expect in America.\textsuperscript{47}

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  \item \textsuperscript{42} \textit{William O. Douglas, The Right of the People} (1958).
  \item \textsuperscript{43} TRAFFIC WORLD, May 19, 1997, at 11.
  \item \textsuperscript{44} John D. Donahue, The Privatization Decision: Public Ends, Private Means (1989).
  \item \textsuperscript{45} Id. at 14.
  \item \textsuperscript{47} \textit{William E. Thom}, LAW AND ECONOMIC REGULATION IN TRANSPORTATION 322-27 (1986).
\end{itemize}
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To those who say they refuse to discuss the Crucial Question, we should reply in President Jefferson's philosophy, stoutly maintained by generations of Americans over the years that “Truth is the proper and sufficient antagonist to error.” On January 16, 1787, he wrote:

I am persuaded myself that the good sense of the people will always be found to be the best army. They may be led astray for a moment, but will soon correct themselves. The people are the only censors of their governors; and even their errors will tend to keep them to the true principles of the institution. To punish these errors too severely would be to suppress the only safeguard of the public liberty. The way to prevent these irregular interpositions of the people, is to give them full information of their affairs through the channel of the public papers, and to contrive that those papers should penetrate the whole mass of the people. The basis of our governments being the opinion of the people, the very first object should be to keep that right; and were it left to me to decide whether we should have a government without newspapers, or newspapers without a government, I should not hesitate a moment to prefer the latter.

We debate everything else in the NTP, e.g., how to raise the taxes, where the subsidies will go, what demonstration projects will each Congressman win for his district, but we won't touch Mr. Mineta's Crucial Question. NEXTEA proposes to encourage “private sector participation” in accomplishing ISTEA's goals. While the world is experiencing a privatization revolution, we torture ourselves about balancing the federal budget while we encumber ourselves with nationalized transportation.

VI. “ASK NOT WHAT YOU CAN DO FOR YOUR COUNTRY; WHAT CAN YOUR COUNTRY DO FOR YOU”

As a philosophy of government, ISTEA is diametrically opposite to that contained in President Kennedy's Inaugural Address, Jan. 20, 1961. Our democratic split personality, legislative hypocrisy, akin to subsidizing tobacco farmers while financing lung cancer research, appears to be a primary philosophy underlying ISTEA. We raise a double standard, saying as we deregulate transportation that only market conditions will set prices, while subsidies to public sector carriers continually increase. Each of the currently pending proposals include the unstated presumption that publicly-owned transportation industries are acceptable. These are (1) the

48. Id. at 11.
49. 49 U.S.C. §5303 (1994); See, Letter from Transportation Secretary Rodney Slater to Speaker of the House Newt Gingrich, March 12, 1997, (transmitting the Administration’s bill to the Congress, found at the Internet site for NEXTEA at HTTP://FTP.LOC.GOV/PUB/THOMAS/C105/S468.RCS.TXT.).
Administration's National Economic Crossroads Transportation Efficiency Act (NEXTEA), S.468, H.R.1268; (2) the Streamlined Transportation Efficiency Program for the 21st Century (STEP 21) by Sen. John W. Warner, R-Va., and Rep. Tom DeLay, R-Tex., S.335, H.R.674; (3) the Surface Transportation Authorization and Regulatory Streamlining Act (STARS 2000), by Sen. Max Baucus, D.-Mont., S.532; and (4) the ISTEA Reauthorization Act, by Sen. John H. Chafee, R-R.I., S.586. According to the Federal Highway Administration estimates, the following sums are the average yearly federal subsidies that we will spend under these four proposals, compared with ISTEA51:

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<tr>
<td>ISTEA</td>
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<td>NEXTEA</td>
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<td>STEP 21</td>
<td>$25,516,563,000</td>
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<td>STARS 2000</td>
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<td>S.586</td>
<td>$24,327,204,000</td>
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A late entry is BESTEA, the "Building Efficient. Surface Transportation and Equity Act," proposed by House Transportation Infrastructure Committee Chairman Bud Shuster (R-Pa.). Which provisions, if any, of these competing bills passes and then emerges unscathed from Conference Committee remains in doubt as this is written. The simultaneous outcry is that America must invest in its infrastructure and balance its budget. If we default to a nationalized industry platform, premised upon tax revenues to fund operations, how can we do both? If nationalized housing did not succeed, why should we expect nationalized transportation to be successful? There are, of course, many proper things that government should do for transportation.52 But, 'what should it leave to others'?

VII. RICKSHAWS, LUNAR ESCALATOR AND BULLET TRAINS

Recent history has shown that planning by Big Brother, with the adhesion of the federal government, and even with the support of a totalitarian dictatorship, is not sustainable over the long run. Only Adam Smith's "Invisible Hand" has emerged as the supreme, although imper-

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51. CONG. QUARTERLY, 1067 (May 10, 1997).
52. GAO Report to Committees on Surface Transportation: Research Funding, Federal Role, and Emerging Issues, 105th Cong. 3 (1996). The GAO found that the USDOT provided $2.9 billion for surface transportation research programs from fiscal 1992 through fiscal 1996, which was about 2% of the Department's total budget for surface transportation programs. About $2.1 billion went to FHWA, which allocated nearly half of the funds for the Intelligent Transportation Systems program's projects. The GAO has also reported to Congress on the benefits of attracting investment funds from the private sector. GAO Report to State Infrastructure Banks: A Mechanism to Expand Federal Transportation Financing (1996).
fect, platform for successful social structure. Transportation policy as a vehicle for accomplishing other social goals distorts transportation efficiency, yielding problems which the Invisible Hand would have avoided. If transportation is used to achieve our Manifest Destiny, or to promote national security, then you will have trains through buffalo grazing lands and Defense Highways to move MX Missiles. Solving inner city decay, air pollution, unemployment, infrastructure entropy, poverty, discrimination, or tax iniquities are all admirable social goals, but adding the cost of doing so to passenger and freight fares distorts the truth about transportation. There is a difference between what we can do and what we ought to do. If we gave rickshaws to the unemployed we might get some people out of their cars and reduce the welfare rolls, but would that be acceptable in a democracy? If we ignored the cost and built a lunar escalator for sightseers and vacationers, we might please builders, engineers and the tourist industry but what offset would there be in terms of increased tax burdens on small business? If the rider’s “co-pay” (farebox contribution) covers only 2% of the fully amortized cost of his trip on the Bullet Train, then 98% must be coming from the rest of us. The rider may think he has transportation freedom, but it is only at the price of enslaving his society.

VIII. Political Means Transportation Policy Versus Marketplace

Professor Robin Paul Malloy has suggested a result of such policy. In defense of liberty, human dignity, and freedom, Professor Malloy has set forth a theory of law, economics, and the state which applies effectively to transportation as it does to urban development. Focusing on social distortions in urban planning when citizens face wrestling with The 800 Pound Gorilla called City Hall, Professor Malloy shows us what can happen whenever public ownership prevails over private ownership of property.

Just as monopolies can be bad for consumers of gasoline or cameras, so too can they be bad for individuals when a coercive power is a person (a parent over a child for instance), a group (the mafia or a collusion of chemical companies), or the state itself. A capitalist system of private ownership is, therefore, an essential element of a free society, because it is the only context in which the necessary balance between public and private can be

53. GÓMEZ-IBÁÑEZ, at 281. The case studies “provide strong evidence of private sector cost reductions in labor-intensive services.”


According to Professor Malloy, competing sources of power are essential for the preservation of an environment favorable to creativity, freedom, and spontaneous social order. He identifies marketplace competition as the essential element, and the adverse affects upon it made by public ownership.

When the product is government, competition means protecting the individual from the tyranny of the state while providing an institutional means, via government, for protecting the individual from private coercion. But as a competitive construct this model tells us something more. It says that there will be constant conflict between the competitive roles or boundaries of the private versus the public domain. Concepts such as public/private partnerships tend to break down and destroy these boundaries. The breakdown of such boundaries is detrimental because tension can produce positive externalities. As in the commercial marketplace, however, losing the will or means to compete can leave one increasingly at the mercy of other, more powerful players.57

He concludes that in the Nation today we have witnessed a loss of both will and means in the private sector because our values have changed or are being changed as we look to political means and the “expansion of the state” to accomplish goals like urban development.58 We are witnessing, he concludes, “the inevitable progression toward statism.”59

Without a commitment to a strong private sector as a counterbalance to the public sector, the power of the state is unlikely to be adequately restrained. Thus, the impersonal and spontaneous social order of the marketplace will give way to the pervasive intrusion of state planning and increasing reliance on the political rather than the economic means for the allocation of rights and resources in our society. Such a process of setting the political means over the economic means results in the elevation of personal status over impersonal market outcomes and leads to a new age of serfdom in which individual rights are subservient to the group, institutional, and organizational claims of the state.60

IX. ISTEA Goals vs. Marketplace

Accepted learning for graduate business students holds that too much expenditure on nonwealth creating activities by government may lower the capacity of a nation to create wealth out of which the former
activities are financed. Thus, our push toward statism and nationalized transportation undermines our ISTEA goal of enabling the United States to “compete in the global economy.” So, if we opt for public sector solutions, i.e., nationalization, we fall into the trap of mortgaging our children’s future so that we can have “cheap” transportation now. What is likely to follow from such a policy? Professors Gómez-Ibáñez and Meyer have shown that in both developed and developing countries, a “fairly similar cycle of private and public involvement” was found to occur in stages identified as follows:

1. Entrepreneurial
2. Consolidation
3. Regulation of fares and franchises
4. Decline in profitability
5. Withdrawal of capital and services
6. Public takeover
7. Public subsidies
8. Declining efficiency
9. Dilemma of subsidy cuts, fare increases, and service cuts
10. Privatization

X. A HOUSE DIVIDED AGAINST ITSELF CANNOT STAND

The double standard we have accepted for transportation in the United States has created a “House Divided.” We tell the private sector that they must be deregulated; no more government “Nanny” to protect carriers. Let insolvency reap its grisly toll. Bankruptcy Court waits with open doors. Laissez faire and caveat viator! Concurrently, no subsidy is spared for the public sector carriers. Transportation “entitlements” mean that the taxpayers will give everyone a “free” ride (or nearly so). Can we exist with both? Massive numbers of bankruptcies are acceptable in the private sector, while the taxpayers offer passengers “free” transit, e.g., “Free Light Rail Shuttle.” Taxpayers as “investors” in transportation “industry” accept systems that are insolvent from conception. Have we defeated the Soviet Union only to adopt their mistakes?

XI. WHERE ARE WE HEADING?

Executive Order No. 12893 directs the agencies to carefully examine all of the factors that our infrastructure investments cause in the economy and society. Section 2(a)(5) states, “[a]nalyses should consider not only

61. Dunning, Multinational Enterprises and the Global Economy (1993). (concluding that the globalization of business and its implications for fostering competitiveness between countries, may then force some societies to reappraise their priorities of resource allocation, particularly assessing wealth-creating and other activities). Id. at 529.
quantifiable measures of benefits and costs, but also qualitative measures reflecting values that are not readily quantified."^{63}

Economists and planners urge decisions based upon concrete results of past operations, or sound predictions of future events based upon scientific analyses. Planned urban development has become the entrenched model form of government. But we need to ask what "values that are not readily quantified" by economists and planners are being ignored as we plunge ahead with statism and nationalization of transportation systems in the United States. We need to re-think our policies in terms of our capitalistic roots. A new unit of measurement designated as the equivalent of our heritage of freedom, which we may call the "Jefferson," ought to be required of our infrastructure investment decision-makers under the President’s Executive Order. The significance of this precious "not readily quantified" value is seen in Abraham Lincoln’s tale of his first transportation enterprise. The institution of private property is the paramount characteristic of capitalism. This vital fact is the most crucial element of our successful economic philosophy, and has had immeasurable impact on our historical survival as a democracy. Lincoln certainly thought so.

For the rest of his life, Lincoln remembered the day he earned his first dollar. It opened up for him the possibilities of heading out on his own, not just to survive but to succeed.

"You never heard, did you, how I earned my first dollar? I was about eighteen years of age. I was contemplating my new flatboat, when two men came down to the shore in carriages with trunks. "Will you," said one of them, "take us and our trunks out to the steamer?" I was very glad to have the chance of earning something. I supposed that each of them would give me two or three bits. I sculled them out to the steamboat.

Each of them took from his pocket a silver half-dollar, and threw it on the floor of my boat. I could scarcely believe my eyes as I picked up the money. You may think it was a very little thing, but it was a most important incident in my life. I could scarcely believe that I, a poor boy, had earned a dollar in less than a day—that by honest work I had earned a dollar. The world seemed wider and fairer before me. I was a more hopeful and confident being from that time."^{64}

**XII. CONCLUSION**

How many “flatboatmen,” transportation “Horatio Algers,” future free enterprise transportation leaders, and private sector transportation entrepreneurs among the living, and in future generations of Americans,

---

63. Exec. Order No. 12893 (Jan. 26, 1994),
will we deny ourselves by accepting statism and nationalization of our transportation industries? What value should we place upon each one of them? Yes, difficult to quantify, but can we afford to ignore it as we formulate our NTP? How would the President have answered Mr. Mineta’s Crucial Question? The American people must insist that our government adhere to both the letter and to the spirit of the President’s Executive Order in our NTP for the next century. Let’s put the “Jefferson” into our cost-benefit analysis for infrastructure investments at all three levels of our government so that we may achieve the correct answer to the Crucial Question.
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Articles

Some Recommendations for a New Legal and Regulatory Structure for the Management of the Offense of Unlawful Interference with Civil Aviation

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I. INTRODUCTION

The single existing flaw in the regulatory structure applicable to terrorism and unlawful interference with civil aviation is the deplorable state to which the legal structure has sunk. Taken collectively, the Tokyo, Hague and Montreal Conventions appear to ensure the peaceful, orderly, and expeditious conduct of international air transport and the administration of swift and appropriate justice for those who unlawfully interfere with such operations. Unfortunately, this has not been the case as there is no uniformity in the States' actions regarding adjudication and extradition of offenses. No State can act alone, yet the States have not demonstrated that they can act collectively. International law which fails to implement its policies and requirements through States is impotent. In the words of Judge Abraham Sofear:

[T]he law applicable to terrorism is not merely flawed, it is perverse. The rules and declarations seemingly designed to curb terrorism have regularly included provisions that demonstrate the absence of international agreement on the propriety of regulating terrorist actively. On some issues, the law leaves political violence unregulated. On other issues the law is ambivalent, providing a basis for conflicting arguments as to its purposes. At its worst the law has, in important ways, actually served to legitimize international terror, and to protect terrorists from punishment as criminals. These deficiencies are not the product of negligence or mistake. They are intentional.2

Traditionally, responses to terrorism have been classified as peaceful

1. For a detailed discussion of these Conventions, see R.I.R. Abeyratne, Attempts at Ensuring Peace and Security in International Aviation, 24 Transp. L.J. 27 (Summer 1996).
2. See Abraham D. Sofear, Terrorism and the Law, 64 Foreign Affairs 901, 902-03 (Summer 1986).
and coercive. The United Nations Charter provides in Article 2(3) that all members shall settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered. This is reiterated in, inter alia, the 1970 Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States, which states:

States shall . . . seek early and just settlement of their international disputes by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements or other peaceful means of their choice . . . . The parties to a dispute have the duty, in the event of failure to reach a solution by any one of the above peaceful means, to continue to seek a settlement of the dispute by other peaceful means agreed upon by them.3

The Declaration provides that only after every effort has been made to deal with a terrorist attack by peaceful means should States resort to military action.

This view is, of course, by no means universal. In some cases—for whatever reasons, ideological, political or military—States immediately opt for a coercive response to terrorist activity and receive no greater admonition from the rest of the international community than a verbal condemnation. These “deviations,” however, do not detract from the general rule that peaceful remedies should be exhausted first. This is an area of law where one cannot expect to find an absolutely consistent practice.

There is another respect in which the peaceful and coercive responses are not on the same plane. This relates to the sources of the governing international laws. The rules governing the coercive responses are part of the law on the use of armed force. For the most part, this is customary international law (even though, of course, its roots may lie in treaties, particularly the UN Charter). It follows that these rules are binding on all subjects of international law, with the theoretical exception of those who “opted out” at the inception of the rules.

By contrast, the rules governing peaceful response are contained in treaties. This means that these rules have the advantage of being clearer and less ambiguous than the customary law on the use of force, but it also implies one important shortcoming: these rules are binding only on those States that have ratified or acceded to the relevant treaties and, even then, only on a strictly reciprocal basis. In other words, they are not universally applicable.

What we are left with is a rule which, in effect, says that peaceful

measures must be tried and exhausted before coercive measures are used. This rule, however, fails to compel States to exhaust any particular peaceful measures. In the absence of advance agreement, we are presumably thrown back on ad hoc negotiations, which may be more or less wholehearted.

II. THE PROBLEM WITH TREATIES AND PEACEFUL RESPONSES

All treaties enshrine the universal principle aut dedere aut judicare. This principle essentially means that contracting States on whose territory those reasonably suspected terrorist acts occur must either try them or hand them over to whichever other contracting State requests their extradition in accordance with the treaties. A State cannot, according to the treaties, allow terrorists to go free. Contracting States also have universal jurisdiction to try, within their territories, those suspected of acts of terrorism. However, it does not always happen that way.

There are four major problems with these types of treaties. First, not enough States are parties to the multilateral treaties. In particular, not enough States that actually count in this field are parties—that is, those States on whose territory terrorists seem consistently to end up. Italy, for instance, was not a party to the 1979 New York Convention on the Taking of Hostages at the time of the Achille Lauro affair. The 1984 hijacking of a Kuwait aircraft is another example where the hijackers were allowed to escape owing to the fact that Algeria was not a party to the relevant treaties and, accordingly, could not be compelled to “extradite or punish” them.

Second, there is the problem, which is by no means unusual, that both the multilateral and bilateral treaties contain no effective enforcement provisions. If a party fails to comply with the treaty—refuses to hand over a suspected terrorist, for instance—the other parties can do no more than apply the traditional peaceful sanctions authorized by the international community; not the kind of sanctions that could be expected to deter a firmly recalcitrant State. In the Achille Lauro case, where Egypt failed to comply with the 1979 New York Convention on the Taking of Hostages and Italy failed to abide by its 1983 extradition treaty with the United States, neither country faced relevant consequences.

A third problem with these treaties is that none of them (with a few exceptions) specifies that terrorist-type acts are not to be deemed “political offenses” and thereby exempted from extradition. This needs clarification because most terrorist acts are, of course, inspired by political motives. It is simply that the methods used are such that the advantages normally accorded to political offenses should not apply.

Finally, there is a fourth problem with these treaties: the obligations of the States’ parties to search for and arrest suspects are treated in an insufficiently rigorous way. These obligations are crucial because the “extradite or prosecute” rule can obviously be rendered meaningless if States allow suspects to remain hidden or to abscond.

The 1988 Maritime Convention, a significantly analogous instrument on the subject, imposes no specific obligation to search for suspects believed to be present in the territory of a State party. Regarding arrest, the Convention merely requires a State to arrest suspects “upon being satisfied that the circumstances so warrant” and “in accordance with its law.” The Convention repeats the language used in a number of the earlier treaties, the Hague Convention, the Montreal Convention, and the 1973 and 1979 New York Conventions. States are thus left a large measure of discretion to decline to arrest suspects for reasons more “political” than “evidential.”

On the positive side, it could be said that we have now reached a situation when there is general consensus among the international community that terrorism is to be condemned. The Peace Accord of 1995 between the Palestine Liberation Organization and Israel, and NATO’s presence in Bosnia-Herzegovina are recent results of universal attempts at recognizing the futility of violence and terrorism.

A further positive development is that the international community seems to be moving closer toward consensus on a definition of terrorism. Once we have an accepted definition, those who commit terrorist acts will no longer be able to escape the consequences of those acts by “defining them away,” claiming the acts are legitimate forms of national liberation warfare or other legitimate “irregular” warfare. A compelling example of this development is a resolution on terrorism adopted by consensus of the UN General Assembly in 1985. The resolution unequivocally condemned as criminal, “all acts, methods and practices of terrorism wherever and by whomever committed.” It also gave, in its preamble, certain clues as to what is encompassed by the term “terrorism as acts . . . which endanger or take innocent human lives, jeopardize fundamental freedoms and seriously impair the dignity of human beings . . . acts covered by the existing conventions relating to various aspects of the problem of terrorism,” including those already mentioned above.

In 1987, a further resolution condemning terrorism was adopted by the UN General Assembly, though this time with opposing votes from

6. Id.
8. Id.
the United States and Israel. This resolution actually proposed that a conference convene to agree on a definition of terrorism. The United States and Israel were opposed to this proposal, fearing that a definition might emerge distinguishing terrorism as something intrinsically different from the activities of national liberation movements. Indeed, it is clear that a number of third world States and other States have long taken precisely this view, that it is quite legitimate for those fighting for self-determination to resort to terrorist action. Our goal of consensus on the question of what constitutes terrorism is, therefore, still some distance ahead.

Another heartening factor is that we have at least some conventional framework for rational, peaceful responses to terrorist activity. We also have rules limiting resort to military responses, which at least put some brakes on those who would favor simply "eliminating" all those whom they characterize as terrorists. It is also encouraging that the idea that hijackers are pirates has never been accepted. Such an idea, at least in the way it has been advanced, would serve only to legitimize the use of force against anyone ideologically or politically opposed to the State purporting to exercise "universal jurisdiction" and to escalate the spread of violence in the world. While it is true that terrorists are in a way "modern enemies of mankind" and every State should endeavor to search for, try, and punish them on its own territory, this does not entail a license to use force in the territory of other States or against ships or aircraft of other States. If such a license were given by international law, our present conditions of relative anarchy would be at risk of turning into one of absolute anarchy.

Notwithstanding the above, it is disheartening that in an overall sense, the existing structure of law relating to terrorism has failed to provide the international community with an effective system of control of the offense from a legal perspective. As a first step, States should take serious note of United Nations General Assembly admonitions:

States [should] . . . contribute to the progressive elimination of the causes underlying international terrorism and to pay special attention to all situations, including, [inter alia], colonialism, racism and situations involving mass and flagrant violations of human rights and fundamental freedoms and those involving alien occupation, that may give rise to international terrorism and may endanger international peace and security.

The above provision refers to some elements of structural violence which

11. See e.g., the debates surrounding the adoption of Res. 40/61 and 42/159.
are believed by the General Assembly to stand in the way of the elimination of terrorism.

The problem of terrorism and the need for a practical approach to solving this problem was eloquently highlighted by the Ghanaian representative in the Security Council in a debate following the Israeli interception of the Libyan airplane in February 1986. He stated:

the international community, including the [Security] Council, must summon the necessary political will to delve into the reasons why the frustrations of the dispossessed are vented in this manner. A glib condemnation of terrorism alone, without a scientific and impartial study of its origins will not, we're afraid, eradicate the phenomenon.13

III. AN ENHANCED ROLE OF THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) IN AVIATION SECURITY

In the absence of legislative strength, one of the measures of assuring aviation security lies in a re-examination of the role played by ICAO in the field of aviation security. ICAO has adopted, through its 184 Contracting States, Annex 17 to the Chicago Convention which elicits Standards and Recommended Practices (SARPs) on international co-operation. Standard 3.2.1 requires each Contracting State to co-operate with other States in order to adapt their respective national civil aviation security programs—which are required to be established by Standard 3.1.1 of the Annex. The Annex contains several provisions which are calculated to ensure aviation security, provided the provisions are followed by all States. In practice, unfortunately, this does not happen.

As a further means of ensuring States' compliance with its SARPs in critical areas such as aviation security, ICAO has developed its Strategic Action Plan (SAP). This plan, when fully implemented, will ensure more co-operation among States in areas critical to civil aviation, such as security. It is therefore necessary to dispel the myth that State sovereignty grants States the absolute right to refuse to follow their international obligations as enshrined in the principles of international law.

A) THE ICAO STRATEGIC ACTION PLAN

The ICAO SAP is primarily aimed at promoting the principles enshrined in the Chicago Convention14 in the most efficient manner so that the challenges posed by modern exigencies of civil aviation are met. The SAP would accomplish the following:

1. ensure that ICAO maintains its position as the main standard-setting body for international civil aviation;
2. encourage national ratification of instruments of international air law and maintain a common aviation system worldwide;
3. ensure that ICAO continues to focus on the exploration and development of aviation issues of a multilateral nature in the fields of legal, economic and technical regulation and thereby remains a world forum for these issues;
4. identify priorities for ICAO and seek to ensure that sufficient resources are made available to respond to the major challenges concerned; and
5. develop a continued efficient and cost-effective mechanism in ICAO for the management of technical co-operation activities.  

The issues that have been identified by ICAO for the triennium 1996-1998 as requiring the above action are:

1) Communications, navigation and surveillance/air traffic management (CNS/ATM)
2) Airport and airspace congestion
3) Commercial developments and economic regulation
4) Financial resources
5) Unlawful interference
6) Human factors in flight safety
7) Environmental protection
8) Human resources
9) Enhancement of ICAO Standards
10) Safety oversight
11) Legal aspects of the challenges.

The legal aspects of these issues form separate studies by themselves and have been addressed in great detail elsewhere. Of primary relevance are the legal issues that underline the above objectives of ICAO in introducing the SAP to the international aviation community and seeking co-operation in its implementation. Such an analysis would enable States to


acquaint themselves with their legal responsibilities and duties towards compliance with the international regulation of aviation security.

It is an incontrovertible fact that the SAP cannot be implemented unilaterally by ICAO without the co-operation of its member States. Fundamentally, and from a legal standpoint, the position of ICAO in the international aviation community is not one that is compatible with being absolutely legislative. ICAO sets guidelines on civil aviation and facilitates the adoption of treaties and regulations, with the approval of its member States. It is then up to the member States themselves to implement them. Therefore, the SAP is essentially a two sided issue and may be adequately subsumed by the adage "one cannot clap with one hand." The obligations of ICAO member States are paramount in giving teeth to ICAO's Standards and Recommended Practices and other guidelines, as much as in satisfying or otherwise accepting treaties of air law that the States themselves have adopted under ICAO auspices.

b) Origin of the SAP

During the 1988-1990 triennium, as a measure to meet the challenges faced by civil aviation in the nineties, the ICAO Council developed a tentative inventory of the major challenges facing civil aviation and the resulting implications to ICAO. The 27th Session of the Assembly reviewed this inventory, noting the need for States and the Organization to keep pace with the rapidity of change and developments in civil aviation, and decided that the Council should develop a global strategy of implementation priorities for the economic, technical and legal fields for the next decade. The Council took up this matter again in 1990 and determined that in order to prepare a cohesive response to the critical issues concerned, it would develop a strategic action plan looking beyond the traditional triennial programming process. Also, in order to obtain a clear position of States and their views on major challenges facing aviation, the Council decided to seek the views of States and the industry. Accordingly, a State letter was issued on January 16, 1991 with information on each of the challenges identified and seeking views on the objectives, scope and framework of the strategic action plan.

According to information given by ICAO to the 29th Assembly, responses to the State Letter were received from 47 States, the Airports Association Council International (AACI), the International Air Transport Association (IATA), and the International Co-ordinating Council of Aerospace Industries Associations (ICCAIA). Support for the Council’s initiative for development of a strategic action plan was widespread. The identification of the forthcoming challenges was also widely accepted.

Substantive and extensive comments were made by a large number of respondents regarding these challenges and proposed action to combat them.

The Council consequently established a Working Group, comprising Representatives of 10 States from all ICAO regions, to give detailed consideration to the challenges identified and the responses to the State Letter and develop a strategic action plan “to provide a structure and monitoring mechanism for the Organization’s priority activities.” This Group worked intensively in both formal and informal meetings over the period August 1991 to June 1992, in close co-operation with a multidisciplinary Secretariat team formed especially to participate in the activity concerned.

The Working Group placed particular emphasis on consultation with the industry, as well as with States, so as to ensure that the strategic action plan would be relevant, practical and contemporary. Accordingly, the Group reviewed the views of States, AACI, IATA and ICCAIA as expressed in their replies to the State Letter. The Group also received presentations by the Directors General of AACI and IATA as well as the IFALPA Representative to ICAO on their perceptions of the major challenges facing international civil aviation and of ICAO’s future role.

As a preliminary step, the Working Group classified the major challenges to international civil aviation into three basic types in a format which would provide flexibility for coverage of a broad range of issues. The currently identified challenges for international civil aviation at large were classified into these three types as follows:18

<table>
<thead>
<tr>
<th>A. Technological/technical</th>
<th>B. Economic/financial</th>
<th>C. Human/social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications, navigation and surveillance/air traffic management (CNS/ATM)</td>
<td>Commercial developments and economic regulation</td>
<td>Unlawful interference</td>
</tr>
<tr>
<td>Airport and airspace congestion</td>
<td>Financial resources</td>
<td>Human factors in flight safety</td>
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<td></td>
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<td>Environmental protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human resources</td>
</tr>
</tbody>
</table>

However, while noting that the role of ICAO in these challenges was essentially one of an operational or regulatory nature, the Group made its observation clear that most of the challenges had some legal content. When considered together with other issues and challenges reflected in the above format, the legal issues concerned were of considerable importance for civil aviation in general and ICAO in particular, which led the Group to establish a fourth classification which related to legal aspects of the challenges.

The Working Group also proceeded to analyze the nature of each of the individual challenges concerned and their legal aspects, the related action already in hand by ICAO, the views of States and the industry, and the relevant activities of other bodies, including some which are not aviation-based but which are increasingly having implications for the work of ICAO (e.g. the European Community and the ITU). Finally, the Group considered the need for additional action, if any, by ICAO in relation to each of the challenges concerned. Further, the Group considered the more general need for increased emphasis on ratification or implementation of instruments of international air law, standards, recommended practices and related material.

This analysis established both a basis for action in relation to each of the currently identified challenges and provided a framework for developing an overall strategy for ICAO.

c) THE STRATEGIC ACTION PLAN

Based on the conclusions of its Working Group, the Council developed a structure for ICAO's SAP, which, although in its fetal stage, represents a blueprint for the Organization which needs to be developed over the 1996-1998 triennium.

Council noted there were a number of forces at work which underlined the need for leadership by a strong and effective ICAO. First, the Council observed that there is increasing involvement of non-aviation sectors (for example, satellites and communications) in civil aviation and an increasing consideration of aviation within the context of wider policy initiatives (for example, the trade negotiations under the auspices of the General Agreement on Tariffs and Trade or the environmental protection measures both within and outside the United Nations system). Second, there is an increased "globalization" of civil aviation itself, exemplified by foreign and multinational ownership, alliances of airlines, joint marketing arrangements, computer reservation systems, and multinational approaches to both technical and economic regulation of air transport services, along with increasing interaction between domestic and international air transport services. Third, there are also increased economic, political, environmental and other social pressures on civil aviation policy or operations, particularly on a national or regional basis, including rapid transitional changes in socio-economic systems in some regions which have global effects. At the same time, in many States, civil aviation still has to be considered as an essential public utility which contributes at a fundamental level to socio-economic development and, in some areas, provides service to otherwise inaccessible points.

It was recognized that the need to respond to these pressures and the
increased complexity and cost of aviation equipment (which is continually being enhanced) have also increased financial constraints on civil aviation. The SAP was therefore designed to address these constraints which are believed to have a significant bearing on a fundamental concern of the Council: the continuing divergence amongst individual States and regions in the level of conformity with existing Standards and Recommended Practices (SARPs), with potential global implications for the safety, regularity and efficiency of civil aviation.

The importance of the changing context for civil aviation has repeatedly been echoed in the presentations to the Council Working Group by representatives of the industry. These representatives stressed *inter alia* that, in their view, ICAO needed to revise its role, structure, and functioning to avoid the risk of being overtaken, either by technology or by the emerging roles of other global or regional bodies.

In light of the above considerations, the Council formulated the following premises as the basis for development of the SAP:

1. There is a need for ICAO to place greater emphasis on bridging disparities among States and regions by assisting States in addressing the implementation of facilities, services and procedures required for consistency in the application of SARPs;
2. There is a need for ICAO to promote consistency between SARPs and the provisions applying to domestic services where these provisions have implications for international services;
3. It is necessary for ICAO to develop new SARPs in a timely manner, but only where these are essential to a globally co-ordinated approach to the introduction of new equipment or techniques and/or where they have positively identified economic benefits;
4. ICAO should place greater emphasis on timely ratification of instruments of international air law;
5. ICAO should assign more meaningful priorities to work program tasks and to focus on issues of greatest priority;
6. In order to accomplish the above, ICAO should project a higher public profile and play a stronger and more catalytic role in co-ordinating and representing international civil aviation;
7. ICAO should develop improved communications with its Contracting States to establish closer relations with other organizations, including both public and private sector bodies in civil aviation and non-aviation bodies where relevant, and to ensure effective and timely consultation, proper co-ordination and avoidance of duplication of effort; and
8. There is a continuing need for ICAO to review the working procedures of the Council and all subordinate bodies as well as the structure and functioning of the Secretariat, to ensure greater efficiency, flexibility and speed of reaction, to release resources for priority tasks, and to reflect the increasingly multidisciplinary nature of many of these tasks.
The Council intended very early in the 1992-1994 triennium to translate the blueprint of broad strategy contained in the existing structure of the SAP into specific implementation programs. This was expected to be done by linking the Plan directly to the Program Budget, defining specific tasks, determining priorities and allocating responsibilities for these tasks, and setting target dates for their implementation.

The Council was conscious that the tasks concerned represented only new challenges or challenges with over-riding priority, and it does not underestimate the importance of the large volume of traditional recurring work not covered by the SAP. However, the Council believed that there was a need for a critical review of all traditional tasks to ensure that only those essential for the future were retained. Therefore, the Council intended to undertake such a review on the basis of broad objective criteria such as:

1. the current or future relevance of the task;
2. the direct relevance and interest of the task to a substantial number of States in different regions;
3. whether the task had a clearly defined output which would make an effective contribution to the safe, regular, efficient and economical development of international air transport services;
4. whether the output of the task provided an effective contribution by international air transport services to the socio-economic development of States;
5. whether the task partly or wholly duplicated work which was being performed satisfactorily elsewhere; and
6. whether the output of the task warranted its fully allocated costs in relation to the overall Program Budget.

The Council also intended to study and modify, as necessary, the structure and functioning of the Organization including, inter alia:

1. continuing review of the working procedures of the Council and its subordinate bodies, including the functioning of the Secretariat, with an emphasis on multidisciplinary program management;
2. consideration of adapting existing work of other bodies for incorporation into Annexes or advisory material;
3. continuing review of policy regarding technical co-operation activities; and
4. a substantive review of all Assembly Resolutions in force with a view to assessing their continuing relevance, to streamline and clarify the current and future roles and activities of the Organization.

Apart from carrying out the above work, the Council intended to continue developing the SAP by reviewing, updating and rolling forward
periodically to reflect developments regarding the major challenges as presently defined, and new priority challenges that may arise.

While all this activity would require some diversion of increasingly scarce resources from other tasks, the Council believed that the benefits to be achieved from identification of priorities and increased productivity and efficiency would more than justify the effort. The Council also believed that the work concerned was of fundamental importance if ICAO was to continue to respond effectively to, and not be overtaken by, the rapidly changing civil aviation context.

Therefore the SAP is intended to provide a framework for the priority activities of ICAO within the context of the major challenges facing international civil aviation into the next century. In the context of this objective, ICAO believes that, out of necessity, the SAP can highlight only immediate and direct efforts focused on key issues. The many other activities of the Organization, because of their recurring nature or currently lower priority, do not feature specifically in the Plan, although they are of considerable importance and often underpin the strategic objectives of ICAO as are reflected in the Chicago Convention and developed accordingly by the international aviation community at Assembly sessions of ICAO and other relevant fora.

The basic structure for the SAP was adopted by the Council in July 1992. The Council has now further developed the Plan to incorporate a more detailed program of action on each issue, to monitor these programs on a continuing basis, and to update and roll the Plan forward periodically to reflect new developments regarding the major challenges facing international civil aviation as presently defined as well as new priority challenges that may arise.

e) Status of ICAO Regulations Relating to the SAP

The foregoing discussion leads to the inexorable question: whether ICAO can reasonably expect the implementation of its SAP by its member States. The inherent difficulty of course, which effectively precludes one from answering this question with an unreserved “yes,” lies in the intrinsic fact that the implementation of ICAO Standards and Recommended Practices is by no means a legal obligation on the part of States, at least from the standpoint of international law. Notwithstanding the fact that international law has been the subject of criticism on the question of its mandatory powers and the effect of sanctions under international law, obligations of States towards ICAO Standards and Recommended Practices (SARPs) seemingly occupy a much lower profile than those which are attendant upon the adherence to principles of international law.
The 29th Session of the ICAO Assembly, held in Montreal in 1992, noted that there were widely expressed and fundamental concerns regarding, *inter alia*, the inadequate and often non-representative level of responses to State letters regarding the implementation of ICAO SARPs, the costs (to ICAO and States) of implementation, the potential for differing interpretation by individual States of ICAO SARPs. Underlying these concerns is the need to assure no dilution of safety standards for civil aviation anywhere in the world. In order to address these concerns, the Assembly adopted Resolution A29-3, which recognizes *inter alia* that:

1) the interdependence of international civil aviation makes aviation a prime candidate for benefits deriving from the concept of globalization of which global harmonization of national rules for the application of ICAO standards is an important element;
2) international aviation now comprises: mega-air carriers, both national and multinational, and various alliances of airlines for global operation; transnational ownership of airlines; and multinational manufacture of aeronautical products;
3) States have agreed in the Aircraft Agreement of the General Agreement on Tariffs and Trade (GATT) to ensure that civil aircraft certification requirements and specifications on operating and maintenance procedures are not barriers to trade;
4) global harmonization of national rules in international civil aviation is desirable for effective implementation of the GATT obligation;
5) individual States interpret and apply the ICAO safety standards differently resulting in dissimilar operations which can be costly;
6) a relatively small number of States generally reply to the ICAO Secretariat's requests for comments or agreement on ICAO proposed standards, resulting in decisions being based on a relatively small number of responses with consequences that are neither helpful to achieve rule harmonization nor in the best interest of the safe and orderly development of international civil aviation;
7) global rule harmonization could facilitate the implementation of the Protocol Article 83 bis of the Convention on International Civil Aviation that authorizes States to transfer to each other by agreement certain safety functions; and
8) certain States have initiated bilateral and multilateral programs in the interest of harmonizing national rules, to correct costly incompatibility problems, and to facilitate more effective competition in international civil aviation.

Accordingly, the Resolution urges States and groups of States which have not already done so, to take positive action to promote global harmonization of national rules for the application of ICAO standards and to use in their own national regulations, as far as practicable, the precise language of ICAO regulatory standards in their application of ICAO standards, and to seek harmonization of national rules with other States in respect of higher standards they have in force or intend to introduce. The Reso-
lution also urges all States to respond to the ICAO Council’s requests for comments and agreement or disagreement on proposed standards of ICAO to prevent decisions being taken on the basis of a small number of responses. Finally, the Resolution requests the ICAO Council to pursue the enhancement of ICAO Standards and to study the feasibility of establishing a multilateral monitoring mechanism.

Resolution A29-3 is inextricably linked to ICAO’s SAP, and ties in the compelling need for States to conform with ICAO Standards - clearly a central strategic issue for the achievement of success of the Plan. The question of compliance with, or notification of, differences from international Standards is one which has concerned the Organization for many decades. Since 1950, the Council has regularly addressed the implementation of the Annexes to the Convention in relation to the provisions of Article 38 of the Chicago Convention. Nevertheless, previous efforts to improve the situation have tended to focus on specific aspects of the various problems and the Council has felt that a more fundamental and far-reaching evaluation should be undertaken. Accordingly, the enhancement of ICAO SARPs has now become a critical issue and continues to be subject to sustained discussion in the ICAO Council.

The substantive conclusions from the Council’s consideration provide the comprehensive response of the Organization to Resolution A29-3, more specifically regarding the statutory situation of ICAO Standards, the challenges in implementing Standards, and a strategy for improvement of their implementation.

F) STATUTORY STATUS OF ICAO SARPs

ICAO mainly promulgates its SARPs through its 18 Annexes to the Chicago Convention. Article 54(l) of the Chicago Convention prescribes the adoption of international Standards and Recommended Practices and their designation in Annexes to the Convention, while notifying all contracting States of the action taken. The fundamental question which has to be addressed in limine, in the consideration of the effectiveness of ICAO’s SARPs, is whether SARPs are legislative in character. If the answer is in the affirmative, then, at least theoretically, one can insist upon adherence to SARPs by States.

The adoption of SARPS was considered a priority by the ICAO Council in its Second Session (September 2 - December 12, 1947)\textsuperscript{19} which attempted to obviate any delays to the adoption of SARPs on air navigation as required by the First Assembly of ICAO. SARPs inevitably take two forms: 1) a negative form that States shall not impose more than certain maximum requirements and 2) a positive form that States shall

take certain steps as prescribed by the ICAO Annexes.\textsuperscript{20}

In practical application, SARPs do not carry the full import that is theoretically expected of them. As illustrated by the figure below\textsuperscript{21}, the compliance of States with the requirement of Article 38 for the notification of differences from the Standards subsequently adopted is far from adequate and fails to reflect the true position of States in regard to SARPs.

**States Notifying Compliance or Differences to Amendments of Annexes 1984–1994**

The above graphic reflects the position of responses by States with regard to the provisions of each Annex by percentage at the end of 1994. This is based on States’ notifications to ICAO of their compliance or differences over the ten-year period 1984-1994. The response level shown varies from 58 percent (Annex 17) to 16 percent (Annex 8). According to ICAO:

this is using a generous measure, since it includes for example a State which has responded in the case of one Amendment to an Annex but not in the

case of several other Amendments to the same Annex. A more accurate measure would be one relating to each individual Amendment, but this is very difficult to obtain at present due to the format in which the responses are recorded. As an indication of current response levels, however, the most recent figures on notification of compliance or differences with the latest (pre-1994) Amendment to each of the eighteen Annexes show that an average of only 25 percent of contracting States have responded.22

Therefore, it is impossible at the present time to indicate with any degree of accuracy the state of the implementation of regulatory Annex material. This is because for a considerable time a large number of contracting States have not notified ICAO of their compliance with or differences to the Standards in the Annexes. ICAO observes that it would probably be incorrect to assume that all of the non-responding States have not incorporated the Standards of the relevant Annexes in their national regulations; it would be equally incorrect to assume that the non-responding States have fully implemented the relevant Standards.23

G) CHALLENGES IN IMPLEMENTING ICAO STANDARDS

One of the issues being addressed by ICAO is the need for a formulation by the Organization of a comprehensive response of ICAO to Resolution A29-3, taking into account the related tasks planned or already in hand by the subsidiary bodies. Therefore, one of the main goals of ICAO at present is to find ways to create a greater interest and participation in the formulation of SARPs by States and to strengthen the Organization’s capability of monitoring the actual status of differences from or compliance with Standards. The latter element is especially important, as differences filed by States do not always appear to be representative of reality.

ICAO believes there are a number of reasons that prevent States from indicating their compliance, or otherwise, with ICAO SARPs. These may include:

1. Insufficient communication between ICAO and recipient States; loss of documentation by recipients and delays in delivering the documentation to the responsible party beyond the target date for replies; organizational structures of civil aviation authorities which render difficulties in identification of, and routing to, the responsible party;
2. Insufficient resources within States to expeditiously consider and process ICAO documentation and to implement the relevant Standards into their national legislation;
3. Difficulty in comprehending and interpreting Annex material as well as subject matter which is beyond the level of expertise of the recipient administration; and

22. Id. at 4.
23. Id.
4. Possible lack of understanding about the role of States in the consultation phase of the development of ICAO Standards.\textsuperscript{24}

More fundamentally, it is always a possibility that States may have insufficient resources either to implement Standards or to advise ICAO of non-compliance with the relevant Standards. In this context, it should be noted that recent initiatives by States, in an effort to address the concerns raised by the 29th Session of the Assembly and assure the safety of their citizens, have raised fundamental questions about the effectiveness of the multilateral safety assurance afforded by the Chicago Convention.

ICAO feels that the need to remind contracting States on an ongoing basis of their obligation to notify the Organization of any differences to the Standards in the Annexes to the Convention remains a critical factor in its advances towards more State participation in its regulatory process. Furthermore, the level of implementation of those Standards into States’ national legislation and procedures has to be improved. These two elements complement each other; if too many States simply notify ICAO of their non-implementation of the safety Standards, States could no longer assume a mutual level of minimum safety Standards and would have to resort to a bilateral or regional approach in order to ensure an acceptable safety oversight between themselves.

Some catalysts for the global implementation of Standards and the harmonization of national rules have been identified as the bilateral and multilateral co-operation of States. Organizations such as the European Civil Aviation Conference, the African and Latin American Civil Aviation Commissions, the Conference of Directors General of Civil Aviation of the Asia and Pacific Regions, the Commonwealth of Independent States, and other groups, including trading blocs, may be considered as effective vehicles for the promulgation and adoption of agreements and understandings in this regard.

Another significant issue is an increasing need for co-operation in the regulatory field for States in a particular geographic setting and with certain common regulatory needs which are dictated by technical, operational and environmental needs and motives. Recent years have witnessed the growing significance of regional organizations that are addressing traditional ICAO activities such as technical harmonization, standardization, and regulatory matters. These activities are likely to intensify in the near future and may well affect the role of ICAO as the principal intergovernmental organization responsible for the regulation and co-ordination of international civil aviation.

ICAO’s strategy for the development and implementation of ICAO Standards continues to be noted that recent initiatives by States, in an effort to address the concerns raised by the 29th Session of the Assembly and assure the safety of their citizens, have raised fundamental questions about the effectiveness of the multilateral safety assurance afforded by the Chicago Convention.

\textsuperscript{24} Id. at 5.
SARPs purports to make use of available modern technological tools but at the same time aim at more basic issues, *i.e.* to:

1. ascertain and document the actual status of implementation of ICAO SARPs and the extent of differences to Standards, and improve communication channels among headquarters, regional offices, and States to facilitate this objective;
2. improve the States' awareness of the vital role they play in the multilateral safety assurance provided for in the Chicago Convention, which is founded upon the effective implementation of ICAO SARPs;
3. similarly, create or improve the States' awareness of their role in the development of ICAO SARPs, with a view of encouraging more States to be actively involved in the formulation process;
4. pursue systematic analysis of the reasons for any non-implementation of SARPs and differences to Standards;
5. develop realistic programs, including the ICAO Technical Co-operation programs (and their funding) to assist States in implementing SARPs, where necessary; and
6. establish adequate co-ordination and co-operation with States in a regional context in the field of rule harmonization and the implementation of standards.

ICAO claims that such a strategy can be implemented by applying the following measures:

1. enhancing the role of its regional offices in assisting States with the implementation of Standards, raising awareness of responsible officials at all levels to ensure that the objectives of paragraphs 1, 2, and 3 above are met;
   a) implementing measures specifically designed to deal with the development and implementation of SARPs, including the publication of relevant articles in the ICAO Journal and by using slide and video programs to be shown as part of missions and during ICAO familiarization courses;
   b) making Annexes more comprehensive and accessible and provide, where necessary, guidance material related to individual Annexes;
   c) expanding the Foreword of Annexes to include more basic information, including the interpretation of Article 38 of the Chicago Convention, and on what kind of differences should be published in the Aeronautical Information Publication (AIP); and
   d) continuing to make sure that bodies responsible for the development of SARPs formulate SARPs in simple, clear language and in an efficient manner.

Simultaneously, it has been proposed that efforts should be further strengthened to find out the States' reasons for not responding to State letters in general and for not communicating their status of implementation.
H) ICAO'S STATUTORY STATUS RELATING TO SARPs

The United Nations was created during World War II. Although originally the international community questioned whether this war-time union of States could satisfactorily and appropriately be converted into a peacetime organization for international co-operation, the creation within the Economic and Social Council (ECOSOC) of the United Nations of various specialized agencies, ICAO being one, which were brought into relationship with the United Nations resolved many questions.25 The ECOSOC may enter into agreements with these specialized agencies, coordinate activities of the agencies through consultation, and define terms on which the agency concerned would be brought into relationship with the United Nations.26

Conceptually, ICAO shares the same international status as the United Nations, while members of the ICAO Secretariat are international civil servants. The establishment of ICAO as the specialized agency of the United Nations which is responsible for regulation of international civil aviation brings to bear the need to inquire as to why such specialized agencies are created instead of conferring functions which are to be performed by them upon the United Nations itself. One of the reasons adduced is that the general organization of the United Nations, and its personnel, could not take on all of the specialized activities handled by the various specialized agencies. Another reason adduced is that a single organization with greatly increasing administrative personnel would have been too cumbersome a bureaucracy.

Be that as it may, the question as to what status ICAO holds in the international community, which in turn would shed some light as to the status of its regulations, would largely lie in the definition of the word "agency." On the term "Specialized Agency" one commentator has observed:

[0]They are Specialized as to subject-matter, of course, but the implications of the second term may not be so clear. These Agencies are in fact, as the general UN is not, examples of international administrative agencies ... whose chief function is the administrative one, although the conference or representative organs associated with them (or with which they are associated), and the legislative or policy determining activities of the latter, are not to be disregarded . . . .

The relationships to be developed between Specialized Agencies and the UN constitutes a major problem of international statesmanship. As in the case of regional organizations, whatever the value of the special institutions of the situation would be difficult and dangerous unless adequate measures for co-ordination of the various elements could be worked out. This is a

problem for searching analysis in principle and for careful application in practice. If the Specialized Agencies are created by the UN suitable co-ordination should be possible, but if it be a question of coordinating with the UN an Agency created independently the task is more difficult.27

The above comment supports the view that a certain coordination exists between specialized agencies and the United Nations on the basis of their relationship ipso facto. Hence, it may be inferred by this argument that the regulations promulgated by a specialized agency should have similar status and leverage as any created by the parent United Nations.

In the present context of international relations, however, the status of a specialized agency and that agency’s regulations cannot be dismissed in such a simplistic manner. The answer to the question would inevitably lie in an analysis of State sovereignty, the character of international law, and international government.

1) STATE SOVEREIGNTY

In 1956, Professor Bin Cheng addressed the principles governing post World War 2 sovereignty over airspace as enunciated in Article 1 of the Chicago Convention28 and concluded, “[t]he now firmly established rule of international law that each State possesses complete and exclusive sovereignty over the airspace above its territory means that international civil aviation today rests on the tacit acquiescence or express agreement of States flown over.”29 Shawcross and Beaumont define sovereignty in international law as the right to exercise the functions of a State to the exclusion of all other States in regard to a certain area of the world.30 In international aviation the concept of sovereignty is the fundamental postulate upon which other norms and virtually all air law is based.31 Post 1944 attitudes towards the concept of sovereignty in airspace, and the philosophy of air law, range between the unlimited public law right of a State to exercise sovereignty over its airspace and the idea of collective international participation by States in matters of commercial aviation. Professor Goedhuis identifies the idea of “free traffic” (as opposed to the exclusivity of the sovereignty principle) as a constructive element of aviation which furthers life and raises it to a higher level.32 This view is sup-

31. Id.
32. D. Goedhuis, Idea and Interests in International Aviation 32-33 (1947), quoted
ported by the claim that general principles of international law demand that sovereignty of States should be limited by the principle of freedom of peaceful traffic.\textsuperscript{33} Be that as it may, a view advocating the free use of airspace of a country by aircraft of foreign nationalities would give rise to a dichotomy: that there should be freedom of aviation with a minimum of restrictions or none at all; or that international air transport should be firmly regulated. Professor Lissitzyn analyzes the concept of sovereignty in its modern development as having three basic principles: 1) that each State has exclusive sovereignty over its airspace; 2) each State has complete discretion as to the admission of any aircraft into its airspace; and 3) that airspace over the high seas and other areas not subject to a State's jurisdiction is \textit{res nullius} and is free to the aircraft of all States.\textsuperscript{34}

In the present context, however, one can observe that air law has bloomed from being a series of exclusive rights—first in private law and then in public law—and has also set parameters within which a host of other progressive objectives may be attained. The concept of sovereignty now entails that each State take responsibility of being conscious of its obligations to the international legal community. The sovereignty principle has therefore evolved into a cohesive system of co-existence in the air by States which respect the exclusive sovereignty rights of each State over its airspace. Mutual obligations between States have brought as their corollary a deep respect for the principles of international law and the rights of individual States.

The basic concept of State sovereignty has evolved with the commercial exigencies of international civil aviation. To keep up with the world demand for air transport, airlines now share each others’ codes and combine their flights to offer the customer a composite package of air transport that would ensure a smooth air trip. The millions who travel reserve flights on sophisticated computer reservations systems and their information is sent in advance to their destination electronically. Passports are read at airports by machine, and baggage is bar-coded. The passenger's comfort is ensured by worldwide regulation on smoking in aircraft, and the effects of aviation on the environment is studied carefully. These trends show a marked tendency of States welcoming international efforts at regulation.

\textsuperscript{33} Id.

\textsuperscript{34} OLIVER JAMES LISSITZYN, INTERNATIONAL AIR TRANSPORT AND NATIONAL POLICY 365 (1983).

The Permanent International Court of Justice (the predecessor to the International Court of Justice) decided in the famous *Lotus* case of 1927:

International law governs relations between independent States. The rules of law binding upon States therefore emanate from their own free will as expressed in conventions or by usages generally accepted as expressing principles of law and established in order to regulate the relations between those co-existing independent communities or with a view to the achievement of common aims. Restrictions upon the independence of States cannot therefore be presumed.  

The aftermath of World War II saw the advent of the United Nations and the United Nations Charter, the latter of which proclaims that the United Nations is based on the sovereign equality of all members. The Charter also provides that less powerful nations recognize the pre-eminence of the Great Powers as guardians of international peace and security. With the exception of this predominant innovation of post World War II accord, the rest of the Charter seems to accord complacently with the basic framework of international law which existed under the Peace of Westphalia. The International Court of Justice (ICJ) in 1949 gave judicial recognition of the United Nations as a subject of international law in the *Reparation for Injuries Case*, where the ICJ pronounced the end of the old orthodoxy that States are the only subjects of international law. The ICJ advised that the United Nations, though not a State, had the capacity to bring certain kinds of claims directly against a State under the rubric of international law.

Ever since the United Nations General Assembly convened its first session in 1946 the many contributions of the United Nations to the development of international law have been both significant and sustained. The General Assembly has been prolific in adopting numerous resolutions, declarations and conventions through diplomatic conferences. Guided by Article 13 of the United Nations Charter which places an obligation on the General Assembly to initiate studies and make recommendations for encouraging the progressive development of international law

**35.** *Lotus* (France v. Turkey), 1927 P.C.I.J. (ser. A) No. 9, at 18.

**36.** U.N. *Charter* art. 24, para 1 (providing that members of the United Nations give primary responsibility to the Security Council for the maintenance of international peace and security and recognizing that the Security Council would act on behalf of all member States of the United Nations); U.N. *Charter* art. 23 (providing that the Security Council shall consist of fifteen members of the United Nations); U.N. *Charter* art. 25 (providing that members of the United Nations agree and accept to carry out the decisions of the Security Council in accordance with Charter provisions).

and its codification, the Assembly established the International Law Commission in 1947. The Commission’s members were entrusted with the formulation of principles of international law. One of the first tasks of the Commission was to write a Draft Code of Offenses Against Peace and Security of Mankind, which the Commission completed in 1954. The Draft Code provided that any act of aggression, including the employment of armed forces by one State against another State for any purpose other than national or collective self defense or in pursuance of a decision or recommendation of a competent organ of the United Nations, was an offense against the peace and security of mankind. The code also stipulated that any resort to an act of aggression by one State against another State was a similar offense.\textsuperscript{39}

The sense of international responsibility that the United Nations ascribed had reached a heady stage at this point, where the role of international law in international human conduct was perceived to be primary and above the authority of States. In its Report to the General Assembly, the International Law Commission recommended a draft provision which required “[e]very State has the duty to conduct its relations with other States in accordance with international law and with the principle that the sovereignty of each State is subject to the supremacy of international law.”\textsuperscript{40} This principle forms a cornerstone of international conduct by States, and provides the basis for strengthening international comity and regulating the conduct of States both internally (within their territories) and externally towards other States. This principle effectively precludes States from pursuing their own interests with disregard to the principles established by international law.

\textbf{k) International Government}

The roles performed by each of the players in international discourse and regulation have a compelling effect on the specialized agencies of the United Nations. While it is not disputed that the international community comprises a number of separate States which forms a community of nations, and that the existence of these independent States is essential to the existence of an international organization, the multiplication of States makes the task of international co-operation more complicated and more difficult. Often, States tend to pursue their national interests and legislation relentlessly, purely on the ground that State sovereignty requires States to hold their own in international fora. This attitude may fre-

\begin{itemize}
\item \textsuperscript{38} See U.N. Charter art. 13.1.a.
\item \textsuperscript{39} Draft Code of Offenses Against Peace and Security of Mankind, U.N. GAOR Int’l Law Comm. art. 2, at 64-65.
\end{itemize}
The premise that a common denominator between States is essential to coalesce the States into one conceptual group in implementing international regulations is admittedly the starting point. In the final analysis, the effectiveness of regulation would lie only in adherence by States on a collective basis. The challenge is therefore to find a common basis that would add credence to Potter's premise of homogeneity. This basis has been provided by Wassenbergh who observes:

> To find a solution to conflicts between States with regard to regulation of international civil aviation and notably between a big and small State, one should perhaps approach the problem by bearing in mind that the States are the *locum tenentes* of their nationals in the international sphere, not only representing their citizens as a national group but also, and more importantly, representing each individual as a subject of international society as well as of his State. In other words, a government must consider the interests of its citizens also as members of a society beyond that government's own bounds.

Wassenbergh's proposal imputes to States an ineluctable international responsibility towards their citizens, requiring States to align their local policies to be in consonance with international policy, thereby assuring citizens a certain participation in the international law making process. This argument is consistent with the sense of international responsibility that the United Nations ascribed to itself in recognizing that the role of international law in international human conduct was primary and above the authority of States. It also cleverly binds the role of States, as units of the international order, to the role of international law in the international community of States. According to this premise, the right of a car-

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rier to operate air services anywhere in the world and the duty of a State to enforce international regulations on air safety, security, facilitation, and airport planning *inter alia*, may be viewed as internationally recognized and enforceable duties.

One perplexing question that remains unanswered concerns the fact that States have seemingly regarded ICAO's Annexes to the Chicago Convention, which are all of a technical nature, as non-binding. The Standards contained in the Annexes all carry explicit requirements wherein States "shall" comply with the regulations. Moreover, The Chicago Conference of 1944 (the precursor to the Chicago Convention) explicitly recognized that ICAO would exercise power over States in requiring adherence to its regulations in the technical field. In the words of the delegation of the United States at the Conference:

> It is generally agreed that it is true, in the purely technical field, a considerable measure of power can be exercised by, and indeed must be granted to, a world body. In these matters, there are few international controversies which are not susceptible of ready solution through the counsel of experts. For example, it is essential that the signal arrangements and landing practice at the Chicago Airport for an intercontinental plane shall be similar to the landing practice at Croydon, or LeBourget, or Prague, or Cairo, or Chungking, that a plane arriving at any of these points, whatever its country of origin, will be able to recognize established and uniform signals and to proceed securely according to settled practice . . . . A number of other similar technical fields can thus be covered; and, happily, here we are in a field in which science and technical practice provide common ground for all.  

The graphic reflecting the responses of States to the Annexes (which appears elsewhere in this paper) clearly shows this not to be the case. Over the years, some States have not even responded with their differences to the Standards contained in the Annexes.

Annexes are adopted by the Council\(^44\) which is appointed by the ICAO Assembly, the governing body of ICAO. As such, the Annexes emanate from the highest authority in ICAO. Unfortunately, this status quo also gives rise to an anomaly where States make their own regulations with regard to international civil aviation and disregard the regulations at the same time (as some States do in disregarding the requirements of Articles 37 and 38 of the Chicago Convention).

In the *North Sea Continental Shelf Case*\(^45\) the International Court of Justice (ICJ) held that legal principles incorporated in Treaties, such as the principle in Article 37 of the Chicago Convention calling for each

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\(^{45}\) 1969 I.C.J. 4, at 41.
State to Collaborate in securing uniformity in ICAO regulations, become customary international law by virtue of Article 38 of the 1969 Vienna Convention on the Law of Treaties. Article 38 recognizes that a rule set forth in a treaty would become binding upon a third State as a customary rule of international law if the rule is generally recognized by the States. Article 37 of the Chicago Convention, which designates ICAO to adopt international Standards and Recommended Practices (for the common good of humanity), arguably becomes a principle of customary international law, or *jus cogens*. Obligations arising from *jus cogens* are considered applicable *erga omnes*, which means that States owe a duty of care to the world at large in adhering to Article 37 of the Convention. The ICJ in the *Barcelona Traction Case* held:

> [A]n essential distinction should be drawn between the obligations of a State towards the international community as a whole, and those arising *vis a vis* another State in the field of diplomatic protection. By their very nature, the former are the concerns of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*.\(^46\)

The International Law Commission has observed of the ICJ decision, "[i]n the Court’s view, there are in fact a number, albeit limited, of international obligations which, by reason of their importance to the international community as a whole, are - unlike others - obligations in respect of which all States have legal interest."\(^47\) The views of the ICJ and the International Law Commission, which have supported the approach taken by the ICJ, give rise to two possible conclusions relating to *jus cogens* and its resultant obligations *erga omnes*:

1. obligations *erga omnes* affect all States and thus cannot be made inapplicable to a State or group of States by an exclusive clause in a treaty or other document reflecting legal obligations without the consent of the international community as a whole; and
2. obligations *erga omnes* preempt other obligations which may be incompatible with them.

If it can be accepted that a principle of *jus cogens* creates obligations *erga omnes*, it becomes an undeniable fact that Article 37 of the Chicago Convention could be considered a peremptory norm of international law.

Therefore, it is appropriate to reconsider the legal position of States in terms of their obligation at international law when it comes to the States’ responsibilities towards the Standards of the Annexes. As mentioned, ICAO has proposed numerous practical steps towards achieving

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the enhancement of its Standards in order that a more effective approach towards encouraging States to comply with the requirements of the Chicago Convention be adopted. The ICAO SAP, which addresses current challenges posed by civil aviation, is heavily reliant upon the success of the implementation of these Standards. It is now up to the States themselves to consider how they could contribute to ICAO’s efforts in this regard. The importance of the role of States in relation to aviation security cannot be over-emphasized.

IV. LEGAL LEGITIMACY OF THE ICAO COUNCIL

The initial issue that has to be addressed when one considers the legal status of ICAO is whether the Chicago Convention and its Annexes (which give ICAO the regulatory power) contain provisions which admit of law making (legislative) powers of ICAO, and if so, to what extent such law could be promulgated under the Convention. The answer to this question lies in the extent to which the ICAO Assembly mandates the Council to exercise its quasi-legislative functions. The words “legislative power” have been legally defined as “power to prescribe rules of civil conduct,”48 while identifying law as a “rule of civil conduct.” The word “quasi” is essentially a term that resembles another and classifies it. It is suggestive of comparative analogy and is accepted as “the conception to which it serves as an index and its connection with the conception with which the comparison is instituted by strong superficial analogy or resemblance.”49 Therefore, the question stricto sensu, according to the above definition, is whether the ICAO Council now has power to prescribe rules of civil conduct (legislative power) or in the least a power that resembles by analogy the ability to prescribe rules of conduct (quasi-legislative power). Since legislative power is usually attributed to a State, it would be prudent to inquire whether the ICAO Council has law making powers in a quasi-legislative sense. Therefore, all references hereafter that may refer to legislative powers would be reflective of the Council’s law making powers in a quasi-legislative sense.

Article 37 of the Convention mandates each contracting State to collaborate in securing the highest practical degree of uniformity in regulations, standards, procedures, and organization in relation to international civil aviation in all matters in which such uniformity will facilitate and improve air navigation. Article 38 obligates all contracting States to inform ICAO immediately if they are unable to comply with any such international standard or procedure and notify differences between their own

48. Schake v. Dolly, 118 P. 80, 82 (1911).
49. People v. Bradley, 60 Ill. 390, 402 (1871). See also, BOUVIER'S LAW DICTIONARY AND CONCISE ENCYCLOPEDIA (3d ed., Vol. 11 (1914)).
practices and those prescribed by ICAO. In the case of amendments to international Standards, any State which does not make the appropriate amendment to its own regulations or practices shall give notice to the Council of ICAO within 60 days of the adoption of the said amendment to the international Standard or indicate the action which that State proposes to take.

Article 54(l) of the Chicago Convention prescribes the adoption of international SARPs and their designation in Annexes to the Convention, while notifying all contracting States of the action taken. The adoption of SARPs was considered a priority by the ICAO Council in its Second Session (September 2 - December 12, 1947) which attempted to obviate any delays to the adoption of SARPs on air navigation as required by the First Assembly of ICAO. SARPs inevitably take two forms: 1) a negative form that States shall not impose more than certain maximum requirements; and 2) a positive form that States shall take certain steps as prescribed by the ICAO Annexes.

The element of compulsion that has been infused by the drafters of the Convention is compatible with the “power to prescribe rules of civil conduct” on a stricto sensu legal definition of the words “legislative power” as discussed above. There is no room for doubt that the 18 Annexes to the Convention or parts thereof lay down rules of conduct both directly and analogically. In fact, there is a conception based on a foundation of practicality that ICAO’s international Standards that are identified by the words “contracting States shall” have a mandatory flavor (reflected by the word “shall”). At the First Session of the ICAO Assembly, the adoption of Assembly Resolution A1-31 confirmed the mandatory nature of a Standard with the definition contained therein:

“Standard” means any specification for physical characteristics, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention; in the event of impossibility of compliance, notification to the Council is compulsory under Article 38 of the Convention.

Recommended Practices identified by the words “contracting States may” have only an advisory and recommended connotations (reflected by the word “may”). The same Assembly Resolution adopted the following definition:

“Recommended Practice” means any specification for physical characteris-
tions, configuration, material, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention.

Although the Assembly Resolution adopted this definition, it is interesting that at least one ICAO document\(^{53}\) requires States under Article 38 of the Convention to notify ICAO of all significant differences from both Standards and Recommended Practices, thus making all SARPs regulatory in nature.

The above definitions were later confirmed as valid by Appendix E to Assembly Resolution A15-6 at the ICAO Assembly's 15th Session held in Montreal in June/July 1965. This Resolution called for a high degree of stability so that Contracting States could achieve the necessary stability in their national regulations relating to international air navigation. Another factor which the Assembly took into account when considering the role of SARPs was that in fixing the dates for their application, the Assembly laid down the requirement that sufficient time should be given for States to complete arrangements that are necessary for the implementation of SARPs and change their national regulations accordingly.

Other measures were taken by the ICAO Assembly at its 15th Session to ensure the implementation of SARPs. These measures addressed the financial and procedural problems that most States faced in the implementation of these provisions. Consequently, the Assembly established principles that were calculated to facilitate the implementation by States of SARPS. The States were requested to adapt their procedures accordingly to ensure the implementation of SARPS, thereby ensuring secure, safe, and regular air services.\(^{54}\) Consideration was also given to the possibility that some States would find it difficult to keep their national regulations and operating instructions up to date with the Annexes. The Assembly therefore requested Council to seek measures to facilitate the task of States in instituting ICAO practices and procedures at their operating installations. For this purpose, the Assembly also authorized the Council to deviate from present policies and practices relative to the content, applicability, and amendment of the Annexes if the Council found such deviation unavoidable in order to accomplish the objective.

It is clear that in adopting the Annexes and including in them SARPs, the ICAO Assembly has ensured that the Council follows established customary practice at international law to ensure that SARPs had the effect of legal principles. The ICAO Assembly did so by making in-

\(^{53}\) Aeronautical Information Services Manual, ICAO Doc. 8126-0 AN/872/3.
\(^{54}\) ICAO Doc. 8528 A15-P/6.
roads into the laws of States and introducing a uniform regulatory structure within a particular community of States.

Another strong factor that reflects the overall ability and power of the Council to prescribe civil rules of conduct (and therefore legislate) on a strict interpretation of the word is that in Article 22 of the Convention each contracting State agrees to adopt all practical measures through the issuance of special regulations or otherwise to facilitate and expedite air navigation. It is clear that this provision can be regarded as an incontrovertible rule of conduct that responds to the requirement in Article 54(1) of the Convention. Further, the mandatory nature of Article 90 of the Convention, that an Annex or amendment thereto shall become effective within three months after it is submitted by the ICAO Council to contracting States, is yet another endorsement of the power of the Council to prescribe rules of State conduct in matters of international civil aviation. A fortiori, it is arguable that the Council is seen not only to possess the attribute of "jurisdiction" (the power to make rules of conduct) but also "jurisdiction" (the power to enforce its own rules of conduct). "Jurisdiction" can be seen where the Convention obtains the undertaking of contracting States not to allow airlines to operate through their air space if the Council decides that the airline concerned has not conformed to a final decision rendered by the Council on a matter that concerns the operation of an international airline. This is particularly applicable when such airline is found not to conform to the provisions of Annex 2 to the Convention that derives its validity from Article 12 of the Convention relating to rules of the air. In fact, it is relevant that Annex 2 (the responsibility for the promulgation of which devolves upon the Council by virtue of Article 54(1)) sets mandatory rules of the air, making the existence of the legislative powers of the Council an unequivocal and irrefutable fact.

Academic and professional opinion also favors the view that in a practical sense, the ICAO Council does have legislative powers. Professor Michael Milde says:

The Chicago Convention, as any other legal instrument, provides only a general legal framework which is given true life only in the practical implementation of its provisions. Thus, for example, Article 37 of the Convention relating to the adoption of international standards and recommended procedures would be a very hollow and meaningless provision without active involvement of all contracting States, Panels, Regional and Divisional

56. Convention on International Civil Aviation, Dec. 7, 1994, art. 12, 15 U.N.T.S. 295 (stipulating that over the high seas, the rules in force shall be those established under the Convention, and each contracting State undertakes to insure the prosecution of all persons violating the applicable regulations).
Meetings, deliberations in the Air Navigation Commission and final adoption of the standards by the Council. Similarly, provisions of Article 12 relating to the rules of the air applicable over the high seas, Articles 17 to 20 on the nationality of aircraft, Article 22 on facilitation, Article 26 on the investigation of accidents, etc., would be meaningless without appropriate implementation in the respective Annexes. On the same level is the provision of the last sentence of Article 77 relating to the determination by the Council in what manner the provisions of the Convention relating to nationality of aircraft shall apply to aircraft operated by international operating agencies.57

Professor Milde concludes that ICAO has regulatory and quasi-legislative functions in the technical field and plays a consultative and advisory role in the economic sphere.58 A similar view had earlier been expressed by Buergenthal who states:

the manner in which the International Civil Aviation Organization has exercised its regulatory functions in matters relating to the safety of international air navigation and the facilitation of international air transport provides a fascinating example of international law making . . . the Organization has consequently not had to contend with any of the post war ideological differences that have impeded international law making on politically sensitive issues.59

Paul Stephen Dempsey endorses in a somewhat conservative manner, the view that ICAO has the ability to make regulations when he states:

In addition to the comprehensive, but largely dormant adjudicatory and enforcement jurisdiction held by ICAO under Articles 84-88 of the Chicago Convention, the agency also has a solid foundation for enhanced participation in economic regulatory aspects of international aviation in Article 44, as well as the Convention's Preamble.60

Another significant attribute of the legislative capabilities of the ICAO Council is the Council's ability to adopt technical standards as Annexes to the Convention without going through a lengthy process of ratification.61 Eugene Sochor refers to the Council as a powerful and visible body in international aviation.62 It is interesting, however, that although by definition the ICAO Council has been considered by some as unable

58. Id. at 122.
62. Id.
to deal with strictly legal matters since other important matters come within its purview,63 this does not derogate the compelling facts that reflect the distinct law making abilities of ICAO. Should this not be true, the functions that the Convention assigns to ICAO in Article 44, that ICAO’s aims and objectives are “to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport,” would be rendered destitute.

The above discussion makes it clear that the Chicago Convention, through the Assembly and Council of ICAO (legitimately and according to customary international law), has created a regulatory framework through its Annexes to legally implement its policy. The measures taken by the Assembly in promulgating the SARPs of ICAO in order that States may not find practical and philosophical difficulties in implementing such, together with the fact that the 18 Annexes ensure the establishment of a uniform regulatory structure in international civil aviation (thus bringing ICAO member States under one regulatory umbrella), is typical of the principles of customary international law. In the face of such compelling evidence, the fact that Article 54(1) of the Chicago Convention provides that the Annexes are named as such for convenience becomes irrelevant.

V. A Revision of the Concept of Sovereignty

In keeping with emerging trends in civil aviation, a radical look at State sovereignty would have to be taken if other legal measures towards curbing terrorism are to be pursued. As Jennings stated in 1945, during the first decade of aviation:

there were three principle schools of thought: the first held that this airspace, like the airspace over the open sea, was entirely free; the second held that it was subject to the territorial sovereignty of the subjacent state, the third held that there was a lower zone subject to absolute sovereignty and an upper zone of free airspace.64

The second view has held ground over the last 50 years, bringing with it the strong conviction of States that they are masters of their own destiny even in international policy making and issues involving international crimes. Ironically, jurists and courts have not endorsed this deep seated reliance by States on their sovereignty.

VI. AN INTERNATIONAL CRIMINAL COURT

An insurmountable problem in international criminal justice is the question “before what court and according to what law should an individual who has committed an international crime be tried?” There are two possibilities:

a) an individual criminal may remain at large and unpunished; and
b) an international criminal may be tried by the court of any State which can bring him physically within its jurisdiction.

The former reflects the present ludicrous state of international criminal law. The latter brings to bear the reversal of established international law, as was seen in the dangerous precedent created in the extradition from Argentina to Israel of war criminal Eichmann and his trial in Israel for international crimes.65 This would create international “vigilantes.”

The inherent defect in the application of municipal law to international crimes lies in the fact that a host of municipal courts, adjudicating on different or separate instances of criminality, may find difficulties in maintaining uniformity in application and interpretation. Uniformity of formulation could only be achieved if States followed an authoritative text when incorporating international criminal law into their municipal systems. Although this may be possible, it would certainly be a tedious and devious process. A more expedient method would be for States to except such a text in the form of an international code or convention, to be administered by one international body on the principle of international citizenship of people, irrespective of their nationality. To achieve this goal, the concept of State sovereignty as it exists today has to be revisited along the lines of the foregoing discussion.

Another factor that has to be taken into account in the creation of an international court of criminal justice is that, as a condition precedent, States should form a consensus on definitions relating to critical terminology. For instance, an international crime would have to be clearly defined and universally agreed upon. The word “aggression” would also have to be clearly spelled out.

During the Second World War the idea of an international criminal court gained increasing significance. It is not often realized how much effort was devoted to the practicalities of the creation and organization of such a court. The work of a number of official and unofficial bodies66 paved the way for the deliberations of the International Conference on

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65. See L.C. Green, The Eichman Case, 23 Mod. L. Rev. 507-09 (1968).
66. Such as the London International Assembly created in 1941 by Viscount Cecil of Chelwood under the auspices of the League of Nations Union; the International Commission for Penal Reconstruction and Development organised at Cambridge in 1941; and the United Nations War Crimes Commission set up in 1943.
Military Trials which resulted in the establishment of the International Military Tribunal at Nuremberg.\(^67\)

Although the International Military Tribunal, \textit{functus officio}, ceased to exist, the question of the creation of an international criminal court was actively pursued by the United Nations. It was raised in connection with the formulation of the Nuremberg principles in 1948\(^68\) and with the genocide Convention.\(^69\) The General Assembly eventually invited the International Law Commission to investigate the desirability and possibility of the creation of an international criminal court.\(^70\) Although this task was successfully completed, the matter went no further. In 1954, the General Assembly resolved that considering the relationship between the question of the definition of aggression, the draft code of offenses against the peace and security of mankind, and the creation of an international criminal court, further discussion of an international criminal court should be deferred until the other two matters had been settled. The General Assembly reaffirmed this view in 1957. This ambivalence on the part of the United Nations reflects that as long as the solution of the problem of defining aggression remains a condition precedent to the creation of an international criminal court, no further progress will be made.

The formation of an international court may be based on the simplistic truism that as there are international crimes, so should there be an international court of justice to adjudicate on those crimes. States should, in this context, adopt a more universal attitude that recognizes the following premise: “international law pierces national sovereignty and presupposes that statesmen of the several States have a responsibility for international peace and order as well as their responsibilities to their own States.”\(^71\)

The fact that the successful formation of such a court is possible may be attenuated from the existence of the International Court of Justice and the successful conclusion of the Nurembourg trials at the Nurembourg Tribunal. It cannot be denied that at Nurembourg, agreement was reached by lawyers from nations whose legal systems, philosophies, and traditions differed widely. They circumvented technical difficulties at the trials with “a minimum of goodwill and common sense.”\(^72\)

The philosophy of the court should be totally flavored with interna-


\(^{69}\) Two draft statutes for courts were produced, \textit{see id}. at 30-46, 120-47.

\(^{70}\) \textit{Id.} at 5-6, 44-46.


\(^{72}\) G. Schwarzenberger, \textit{International Law and Totalitarian Lawlessness} 76 (1943).
tional interests, as opposed to national interests. Therefore, prosecution should not be relegated to a national entity or authority. Prosecution should be left to an international authority such as the United Nations.

Judges of the court should be selected from jurists worldwide, as in the procedure followed in the election of Judges to the International Court of Justice. A rigid screening system would have to be built into the rules of the court to obviate adjudication of issues which are of a tenden­tiously political nature. An international convention or code should gov­ern such principles as custody of offenses pending trial, whereby Contracting States would guarantee to arrest criminals and deliver them for trial.

VII. AN INTERNATIONAL CONVENTION/CODE

One of the responsibilities that would devolve upon the international community towards developing an international convention or code would be to revisit the Bonn Declaration, with a view to expanding its scope to cover acts other than hijackings or unlawful seizure or control of aircraft. The Bonn Declaration is the only instrument to date which has infused a reasonable element of compulsion that would effectively deal with the threat of terrorism and unlawful interference with civil aviation in an international perspective.

An international convention should also include elements such as those incorporated in the Tokyo Summit Statement in International Terrorism of May 1986, whereby States’ parties agreed:

a) to refuse to export arms to States which sponsor or support terrorism;
b) to enforce stringent limits on activities and size of diplomatic and consular missions and other official bodies overseas of States which engage in or condone criminal activities; and
c) to introduce stringent and improved extradition procedures within the process of law for bringing to trial those who have perpetrated acts of terrorism.

The convention or code should, in addition, enforce the following:

a) introduction and implementation of strict visa and immigration require­ments and procedure in respect of materials of States which support, sponsor or condone terrorism;
b) monitoring all persons, including those of the diplomatic corps, who have been expelled or excluded from States on suspicion of involvement in international terrorism and refusing to let them enter those States;
c) establishing multilateral, plurilateral and bilateral liaison and co-operation of police authorities, security and military authorities of States;
d) in the light of the foregoing discussion on ICAO’s role in aviation secur­ity, strengthening ICAO’s regulatory role in the promulgation and dis­seminating SARPs and requiring States’ compliance thereof;
h) providing adequate sanctions against States who fail to comply with SARPs of ICAO related to aviation security; and
i) recognizing the judicial nature of the ICAO Council within the parameters of the Chicago Convention.

VIII. CONCLUSION

The offense of unlawful interference with civil aviation should be addressed on the basis that individuals have international duties which transcend the national obligations of obedience imposed by an individual State. By the same token, it must also mean that individual States owe their citizens and the world at large a responsibility for maintaining world security. The philosophy of these two premises has to be vigorously employed in bringing to fruition the above measures. It is only then that a substantial legal contribution could be made to the controlling of this offense.
When the American public pictures the airline industry in the United States, they invariably think of the “traditional” carriers transporting passengers on business trips and families on vacation. Until very recently, there was little public awareness of the growing segment of the industry that serves as the engine of the country's economic growth: the all-cargo carriers. Today, however, companies such as Federal Express and UPS have become household names, and a wide spectrum of other companies specialize in moving cargo to every address in the United States and virtually any place in the world. The airlines providing this service are generally less well-known than their passenger counterparts and every time an all-cargo carrier is involved in any accident (or “incident”), questions are raised with respect to the safety record of the industry. Any objective review of the history of the all-cargo industry, however, reveals that any such safety fears are unfounded.

The all-cargo airline industry as we know it today can be traced to

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** The Cargo Airline Association (formerly the Air Freight Association) is the nationwide industry organization representing the interests of the all-cargo air carrier industry. With offices in Washington, D.C., the Association is responsible for working with Congress, Administrative Agencies and State Governments on all issues of concern to the industry.
the autumn of 1977, where the United States Congress deregulated the air cargo segment of the air transportation marketplace, a full year before passenger transportation. Before this dramatic change in regulatory philosophy, the United States Civil Aeronautics Board strictly regulated rates, routes and entry. This agency was established by Congress in 1938 and was phased out of existence in 1985. After the amendments to the Federal Aviation Act of 1958, companies were free to fly any and all domestic routes and charge whatever rates they deemed appropriate. In addition, entry into the all-cargo business became substantially easier, prompting a number of companies to institute their first large aircraft cargo operations. Traditional air freight forwarders such as Airborne Express entered the airline business for the first time and small aircraft operators such as Federal Express were allowed to phase into large aircraft service.

The results of cargo deregulation were dramatic almost immediately. Indeed, it is not an overstatement to note that deregulation spawned an entirely new industry — the overnight express carriers — and that the success of this industry is probably an example of deregulation at its best. In twenty short years, the all-cargo industry has grown to the point where annual industry revenues exceed $30 billion, over 500,000 full-time equivalent workers are employed worldwide and over 800 large jet aircraft operate daily. And, in spite of this rapid growth, the safety record of the industry is excellent.

At the outset, one of the major arguments against deregulation of any part of the airline industry was that safety would be degraded by underfinanced new entrants. The argument made was that new airlines would cut corners on maintenance, thereby decreasing overall system safety. With respect to the all-cargo industry, this fear was unfounded. Twenty years of operations have demonstrated that the all-cargo industry is dedicated to safe operations. To some extent, safety was perhaps easier for cargo operations than for its passenger counterparts. This fact is a result of the way in which the cargo industry developed to meet the needs of its customers.

2. "Air freight forwarders" or "indirect air carriers" are companies which collect freight from individual shippers, consolidate the cargo collected into large shipments and tender these shipments to the direct air carriers (airlines) for the physical transportation. 14 C.F.R. 296 (1997).
4. Recent accidents involving a Federal Express MD-11 aircraft at Newark International Airport and a Fine Air Services DC-8 at Miami International are still under investigation by the National Transportation Safety Board. However, initial indications are that neither of these incidents can be traced to any systemic problem in all-cargo industry safety.
Unlike passenger flights, which operate overwhelmingly during daytime hours, cargo flights are predominately at night. This operational fact is necessitated by the demands for overnight delivery. In order to meet this need, cargo hubs have been established throughout the Ohio Valley, flights from all over the country meet at these hubs in the hours around midnight, freight is off-loaded, sorted and reloaded for delivery the next morning. Actual aircraft operations from outlying areas into the cargo hubs originate from approximately 7:30 p.m. on the West Coast and from 10:00 p.m. to midnight in the eastern part of the country. In turn, morning delivery flights at destination airports generally land between 5:30 a.m. and 7:00 a.m., before most passenger flights are in the air. How do these operational necessities affect safety? First, members of the all-cargo industry fly at non-peak hours when air traffic is at its lowest. Therefore, the chance of any inflight incident is at its lowest. Second, all-cargo aircraft generally operate approximately four hours a day; passenger aircraft operate 10 to twelve hours each day. This schedule leaves more time to pay attention to each individual aircraft.

In spite of the undeniable safety record of the all-cargo industry, questions continue to be raised. For example, because of the fact that members of the all-cargo industry have traditionally utilized their equipment only approximately four hours each day, the aircraft of choice have been those with relatively low capital costs, i.e. used aircraft purchased from passenger carriers and converted to cargo configurations. In turn, this fact has led to two safety-related questions: first, are the relatively older aircraft safe to fly as they approach 20 and 30 years of age? And second, were the conversions from passenger to cargo configurations, as approved by the Federal Aviation Administration in the early-to-mid 1980s, adequate to provide sufficient safety margins at the higher loads carried on freighter aircraft? Initially, it should be noted that companies operating all-cargo aircraft are fully monitored by both the Federal Aviation Administration and the Department of Transportation. DOT oversight insures that certificate holders are financially fit and the FAA performs safety oversight functions. These rules under which the all-cargo industry operates are therefore substantially the same as the corresponding rules for the more well-known passenger carriers.

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5. For example, Federal Express established its national hub in Memphis, Tennessee; United Parcel Service operates out of Louisville, Kentucky; Airborne Express is located at Wilmington, Ohio; Burlington Air Express is at Toledo, Ohio; Emery Worldwide is located in Dayton, Ohio; and Southern Air Transport has recently moved to Columbus, Ohio from Miami, Florida.

6. Over the years, as the industry has increased its average daily utilization, some larger companies have opted for new equipment initially delivered as freighter aircraft. Nevertheless, the backbone of the all-cargo fleet is still equipment, which began its life in the passenger business.
More specifically, with respect to the so-called "aging aircraft" issue, while it is clear that older equipment needs close monitoring and increased maintenance costs, it is equally clear that aircraft can operate, and are being operated, safely well beyond their originally-calculated economic lives. The all-cargo industry is committed to maintaining such aircraft to the highest safety standards, and no accidents or incidents have been uncovered which are traceable to the age of the aircraft. Moreover, since the FAA issued Supplemental Type Certificates (STCs) for the conversion of passenger aircraft to cargo configurations in the 1980s, these aircraft have operated safely with absolutely no structural failures or any evidence of potential structural problems. At the same time, the FAA is currently in the midst of a major investigation to determine whether or not structural changes should be made to either the floor supports or the cargo door mechanisms. Although approximately fourteen years of operation have revealed no problems, the FAA has alleged that recent advanced computer modeling has apparently revealed that more can be done to increase the structural integrity of the cargo conversions. The FAA has released a Notice of Proposed Rulemaking on this issue and final action is expected within the next several months. The industry is working with the agency on both an engineering and policy level to insure that necessary changes are made and that unnecessary proposals are not adopted.

All-cargo industry members are also heavily involved in the safety-related area of airline security. As the political climate around the world has rendered the United States and its institutions more vulnerable to terrorist activity, the airline industry has been forced to increase its vigilance — both in the passenger and the cargo arenas. Accordingly, the Aviation Security Advisory Committee (ASAC), a broad-based group of industry experts, continually monitors security issues and provides advice to FAA security personnel. And a subcommittee of cargo experts (the Cargo Working Group) is specifically charged with reviewing procedures relating to the transportation of cargo on passenger-carrying aircraft. The result of this activity has been, and will continue to be, an increased level of awareness of security issues by airline personnel and a continuing significant enhancement of security requirements. Although detailed explanations of enhancements contravenes the fear of the information fall-

7. The focus of the Cargo Working Group has been on passenger-carrying aircraft since these aircraft appear to be more vulnerable to terrorist activity than all-cargo aircraft.

8. It should be noted that the Federal Aviation Regulations specifically require that airports, 14 C.F.R. Pt. 107 (1997), passenger airlines, 14 C.F.R. 108 (1997), and indirect air carriers, 14 C.F.R. 109 (1997), all have in place FAA-approved security programs. In addition, individual members of the all-cargo community have voluntarily opted to file security programs under the provisions of 14 C.F.R. §108.5(b) (1997).
ing into the wrong hands, FAA and industry oversight in this area will be focused on the relationship between the air carriers and their shipper customers.

A related area is the subject of the carriage of hazardous materials. This issue was brought into sharp focus by the tragic crash of ValuJet Flight 592 in May 1996. Although no final report on this accident has yet been published, all indications are that improperly transported oxygen canisters caused the onboard fire. In turn, this fact has resulted in a reassessment of hazardous materials procedures. Initially, it should be noted that the carriage of hazardous materials by air is an everyday occurrence — and one that is necessary for shippers throughout the United States. Indeed, for the medical community alone, the U.S. air transportation system is a lifeline in supplying needed medicines, blood supplies and equipment. The issue, therefore, is not whether hazardous materials should be carried on aircraft, but rather what safeguards should be put in place to protect public safety.

Faced with this issue, the Department of Transportation's, Research and Special Programs Administration (RSPA), has enacted a comprehensive set of rules governing the carriage of dangerous cargo. The regulations contain specific packaging, labeling, marking and shipping requirements, depending on the material being shipped and the mode utilized. All segments of the air transportation marketplace, including carriers, shippers, and freight forwarders are governed by the Hazardous Materials Regulations.

Finally, another area of "debate" within the aviation community is the subject of collision avoidance systems. In today's regulatory environment, the Traffic Alert and Collision Avoidance System (TCAS) is mandatory for large passenger carrying aircraft. All-cargo aircraft, although carrying transponders and "visible" to the collision avoidance systems of passenger aircraft, are not themselves required to have this equipment. The primary reasons that the Congressional mandate did not include members of the all-cargo industry to install TCAS were that the legislation focused on the aircraft carrying the mostly passengers. The threat to cargo aircraft was minimal since the industry operates mostly during nighttime hours when there is relatively little traffic with which to collide. While these considerations are still generally applicable today, the all-cargo industry has recognized that increasing nighttime operations by other members of the industry and increasing daytime operations by

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9. As a result of the ValuJet crash, the carriage of oxygen canisters on passenger aircraft is now banned. 61 Fed. Reg 26418 (May 24, 1996); 61 Fed Reg 68952 (December 30, 1996). They may still be transported on all-cargo aircraft, but this policy is currently under review by the FAA. See 62 Fed Reg 30767 (June 5, 1997); 62 Fed Reg 34667 (June 27, 1997).

members of the cargo industry necessitated a review of the entire collision avoidance issue. Begun over two years ago, this review indicated that new generation technology already in existence could be used to create a more effective collision avoidance system at significantly lower costs to potential users.

Why not simply install existing TCAS technology on cargo planes? Because TCAS has significant limitations which can be overcome by new generation technology. These limitations can be summarized as follows:

- TCAS is a reactive rather than a proactive system. Pilots only learn of the potential problem when they are warned of an impending collision. The new system will enable pilots to avoid ever being placed in such a position.
- TCAS has a limited range which decreases in the high density airspace where it is needed most.
- TCAS is not effective on the ground or below 1000 feet where the majority of collisions have occurred.
- TCAS has a higher than desirable false alarm rate, causing pilots to mistrust the alarms. Indeed, the Air Line Pilots Association has reported that its pilots simply ignore TCAS warnings approximately 50% of the time.\(^{11}\)
- TCAS is too expensive for deployment by the overwhelming majority of general aviation (small) aircraft.

The collision avoidance system being developed by the all-cargo industry is based on Global Positioning System (OPS) and the Automatic Dependent Surveillance-Broadcast (ADS-B) system. It will provide pilots with both more data upon which to base decisions and more accurate data than is now being provided. In addition, the new system will work on the ground as well as in the air and will be a cost-effective measure for most general aviation aircraft. The basic technology necessary for development and implementation of the all-cargo alternative collision avoidance system is not merely in the mind of some mad scientist. Rather, it is technology that is available today and simply needs to be applied to the system envisioned. The drafting of standards for ADS-B are well underway both domestically and internationally\(^{12}\), and successful flight demonstrations have been completed both in Boston and at the 1996 Atlanta (ICAO) Olympic Games. In addition, successful ADS-B simulations have been completed by both NASA Langley and NASA Ames. In Europe, the technology to be employed is already being flight tested in Sweden.\(^{13}\) And most recently, the FAA announced its Flight 2000

\(^{11}\) AIRLINE PILOT MAG., Sept 1996, at 5.
\(^{12}\) In the United States, the RTCA is responsible for establishing standards upon which production must be based, while internationally such standards are established by the International Civil Aviation Organization.
\(^{13}\) A description of the Swedish prototype can be found in FLIGHT INT'L MAG., Jan.28, 1997.
demonstration project, a program that will incorporate ADS-B technology in an operational demonstration with aircraft operating in Hawaii and Alaska during 1999. This is the exact same technology that forms the basis of the all-cargo industry’s new collision avoidance system.

The first phase of the industry’s project is the installation of the new FAA-sponsored Traffic Information Service (TIS). TIS is a new system of data transmission based upon a relatively slight software modification of existing FAA ground-based radar sites. This modification will provide an uplink of proximate traffic by a Mode S transponder and will include a visual warning of any threatening traffic. This system will enable all-cargo aircraft to see anyone equipped with a transponder and to evaluate any traffic for potential threats. Installation of this system will begin in the first quarter of 1998 in conjunction with the nationwide FAA deployment of the system.14

In addition, the installation of ADS-B at approximately the same time as TIS will provide additional operational and safety benefits. Aircraft equipped with ADS-B will be able to share information more detailed and accurate than TIS alone (for example, call sign, speed, altitude, aircraft type, etc.) which in turn permits more informed pilot safety judgments and the operational ability to utilize airspace more efficiently. Once this ADS-B/TIS equipment is installed within the next year, cargo aircraft will, for the first time, be able to “see” each other.

The second phase of the industry project will be the development of software to permit conflict detection and resolution. This technological leap will eliminate dependence on ground-based radar centers (the TIS system) and will permit aircraft-to-aircraft data communication. In turn, this system will enable the pilot to be in control of the conflict detection and resolution process, with controllers monitoring activity and acting as a final “referee”, if necessary.15 Present estimates are that such software certification can be accomplished by the first quarter of 1999 and quickly installed on ADS-B-equipped aircraft. Although this phase of the project does not include Resolution Advisories, as a practical matter it provides a level of safety surpassing existing TCAS II systems. Rather than merely reacting to a warning system that a mid-air collision may be imminent, (a wholly reactive system), Phase II of the all-cargo industry collision avoidance project is a proactive system permitting the pilot to obtain, and react

14. On April 2, 1997, the RTCA Technical Management Committee approved Minimum Operational Performance Standards for the TIS Data Link Communications. In addition, at the same meeting, the FAA announced that the TIS project is fully funded, approved for inclusion in the National Airspace System and undergoing final operational testing.

15. In order to retain the highest level of safety possible, the TIS system should be retained to provide information for non-ADS-B equipped aircraft.
to, a wide variety of extremely accurate aircraft information, thereby virtually eliminating any near collisions.

The final phase of the all-cargo industry project will be the addition of Resolution Advisories to the Conflict Detection and Resolution system described above. The accuracy in this system will far surpass any present or envisioned TCAS technology, thereby taking the aviation community to a level of safety, which exceeds even the originally-planned TCAS IV. It is estimated that the software development and certification for this element of the system will be possible in approximately 2001.

These initiatives, coupled with the already excellent safety record of the all-cargo carriers, insure that the all-cargo industry will continue to provide a safe system designed to meet the needs of shippers around the world. The challenge as we approach the turn of the century will be to integrate emerging technology into a bureaucratic system which has often resisted change. In turn, this challenge will require the industry to work closely with federal regulators in the development of new systems and certification procedures for these systems. This needed “reinvention” of the FAA bureaucracy will require that the functions performed by the agency be analyzed and redefined, where necessary. In addition, Congress must insure that the FAA receives the funding necessary to accomplish these objectives. The precise way in which this funding is apportioned among the representatives of the user community will be one of the major debates of 1997 (and perhaps 1998). While the all-cargo carriers have always pledged to pay their fair share of the costs of FAA activities, Congress must insure that one segment of the air transportation marketplace is not required unfairly to subsidize another and that the funds collected are in fact used to pay for aviation infrastructure and not to reduce the federal debt.

In summary, the all-cargo industry, from its inception, has demonstrated a high level of safety while, at the same time, experiencing explosive growth. The industry is committed to maintaining this record and on its own is taking the actions necessary to insure that safety and security remain the highest operational priority.
FAA & ATC

Compromising Safety with the Wrong Solution to the Wrong Problem

R. Michael Baiada*

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INTRODUCTION

Although RMB Associates, like all of aviation, applauds the overall increase in safety in our aviation system, this does not tell the complete story. Sadly, while the safety of the aviation system rises in general, the safety of the Air Traffic Control (ATC) system continues to spiral downward, yet little is done. The increasing risk apparent in our ATC system.

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demands a more rapid solution than the Federal Aviation Administration (FAA) has proposed, or is even considering, for the foreseeable future.

Analysis by RMB Associates and The Boyd Group, confirmed by recent GAO documents, has solidified the conclusion that the FAA is no longer technically capable of maintaining the ATC system, let alone upgrading it. Further, even if the FAA had the technical expertise, it does not have the funds to move the ATC system into the 21st century in the way that it proposes. The FAA continues to throw expensive technology at the symptoms of our ATC problems, while ignoring the root causes. The FAA incorrectly assumes that since the current ATC system is complex, the solution must also be complex. This approach is flat wrong.

Now, as if safety, ancient equipment, FAA mismanagement and the waste of billions of taxpayers’ dollars were not enough, we get another jolt of ATC reality. The clock is ticking and time is wasting against the backdrop of another ATC system crisis—the Year 2000 computer problem. In an October 2, 1997 letter, IBM stated that, “IBM believes it is imperative that the FAA replace ‘the ATC’ equipment prior to the Year 2000.” In a January 20, 1998 letter to the FAA Administrator Jane Garvey, Congressman Frank Wolf states that, “because the FAA is late at this point, the agency has no further time to waste” and that, “the FAA has become a source of embarrassment on the Year 2000 problem.”

DOWNWARD SPIRAL

The failure rate for the ATC system is well publicized. As a pilot and taxpayer, I find these failures very troublesome. As an industry, we cannot afford the reduction in separation safety through the continued deterioration of our primary separation system—the ground based ATC system. While most sectors of aviation have increased safety over the last twenty years, the ATC system risk is rising as the ATC infrastructure continues its downward spiral. Equipment continues to break down and becomes farther and farther out of date. In 1994, Vice President Gore made a big production about the replacement of the vacuum tubes in our ATC system. Sadly, those vacuum tubes are still in use.

As the number of aircraft flying in our airspace continues to grow, the FAA’s response has been to simply pile the extra workload onto the controller. But what exactly is the controller’s task? Obviously, the primary task is the safe separation of airplanes from each other and from the ground, but the mental nature of this job will surprise most.

Air traffic controllers do their job by constantly monitoring at a 19” diameter, two dimensional screen (built in the 1960s) to determine the aircraft’s position. Next, the controllers use paper flight strips, which outline the aircraft’s flight plan (intent), from which they must mentally pro-
ject the aircraft’s path into the future. Then, they simultaneously repeat these mental gymnastics for the other aircraft (upwards of fifteen to twenty-five aircraft) in the hundreds of cubic miles of airspace for which they are responsible. Finally, they must compare all these mental flight paths to determine if any aircraft will conflict sometime in the future. They must do this continually, with little or no computer tools, in an airspace that is constantly changing. The job is made more difficult because the controllers have little if any data on the aircraft entering their area until just prior to the boundary. The controllers’ main line of defense is their brain. Any little distraction, and disaster may occur. Now imagine if in the middle of all this a controller’s screen goes blank. It happens more often than the FAA cares to admit.

Unfortunately, the system has already broken down more than once with deadly consequences. The crash of the USAir aircraft in Los Angeles a few years ago was a clear breakdown of the ATC system. The controller was distracted and the pilot did not see the commuter aircraft parked on the runway. Disaster followed. The recent accident in Guam is yet another example of the breakdown of the ATC system and an FAA that wastes billions of dollars, while answering to no one. Although the primary blame for these accidents will fall elsewhere, the failure of the FAA’s hardware, software and process in the overloaded ATC system are strong factors that led to the Los Angeles and Guam crashes. While it is easy to blame these accidents on human error, we believe the fault lies with an FAA that failed to provide the controllers with the necessary tools to handle the increased workload. With the right tools the ATC controllers could have prevented these accidents, but we will never know. And contrary to popular belief, the “proper tools” are available today off-the-shelf. Unfortunately, that solution is “too simple” for the FAA.

In the Guam accident, there was a computer glitch that did not identify that the Korean Airline aircraft was below the minimum safe altitude. Even though the ATC system did not cause this crash, the system should have helped prevent it. Although not specifically aware of the Guam software problem, problems like this were obvious to anyone who cared to look. A recent Government Accounting Office report took a hard look at the FAA’s ability to develop and maintain software. This report paints a bleak picture of the future. Yet airlines, and aviation as a whole, rely totally on the ATC system for the safe separation of aircraft and rely on the FAA to maintain and upgrade that system. The following tells the story that the trust of the aviation community has been misplaced. From our perspective, the only glue maintaining airspace safety today is the professional, yeomen’s efforts now being put forth by both controllers.

and pilots. Unfortunately for the passengers of the USAir and Korean flights, this glue broke down. Some quotations from the GAO report include:

- FAA also lacks an effective management structure for developing, maintaining, and enforcing a technical ATC systems architecture. No organization in FAA is responsible for the technical ATC architecture. Instead, FAA has permitted a "hodge podge" of independent efforts scattered across its ATC modernization organization to emerge with no central guidance and coordination. As a result, there is no ATC-wide technical architecture, and it is unlikely that FAA will produce one in the near future.

- The lack of an ATC system wide technical architecture has caused, and will continue to cause, incompatibilities among the ATC systems, such as differences in communications protocols and application languages, that require additional development, integration, and maintenance resources to overcome.

- Software applications associated with 54 operational ATC systems have been written in 53 programming languages (these 53 include 19 assembly languages). Since most of the ATC languages are obsolete, there is no readily available cadre of newly trained programmers and current and future maintenance becomes even more difficult and costly. For example, the Automated Radar Terminal Systems (ARTS) are written in Ultra, an obsolete assembly language. Furthermore, no restrictions are currently being placed on application language choices for new systems development. 2

The FAA has never applied the same rigorous rules to ATC system software that it applies to the aircraft flying in the system. For aircraft software, the FAA's Flight Standards division operates as an independent third party and monitors and evaluates all software that is installed into every commercial aircraft. Flight Standards has no vested interest in the approval process. Safety is its only concern. There is no such cross check for the ATC system software. Although the FAA will say that the ATC software is fully evaluated, this check is done by people that have a vested interest in the approval of the software. Where is the safety net?

**USER OUTRAGE MISSING?**

As mentioned above, the failings of the FAA and the ATC system are well documented. But if this is true, why aren't the users, Congress, and all taxpayers up in arms? Why hasn't the press been all over the FAA? The airlines would seem to have the most to lose if this problem is not corrected, yet little political capital is expended on fixing the ATC system. The financial losses the airlines attribute to the antiquated ATC system are in the billions of dollars, while the safety issue represents a

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2. *Id.*
The 1995 ValueJet crash highlighted the FAA Flight Standards division (e.g., ticket tax), they ignore how the FAA spends money. The FAA wastes billions of dollars on ill-fated attempts to modernize and upgrade the deteriorating ATC System, while nothing has been accomplished.

The bottom line is that the FAA, and specifically ATC manage­ment, answers to no one, and never has—not Congress, not the DOT, not the GAO, and certainly not their customers. In fact, suppliers, pilots, and airlines are afraid of the FAA and refuse to "rock the boat." The FAA's ATC equipment problem can be easily fixed, but I am not sure the management and cultural issues can. I have heard from more than one person that the FAA is the most arrogant organization in Washington. This is not the atmosphere and culture upon which we should build our aviation safety net.

**FAA's Response**

The FAA's answer to these problems is hardware replacement. While potentially helping the reliability side of the problem, this proposed solution does nothing to address the controller workload issue. The FAA's two current programs, DSR (replacement workstations for the enroute controllers) and STARS (workstations for the controllers separating the aircraft around the airports) provide few enhancements over the systems they replaced. Incredibly, these systems cost the FAA one million dollars per workstation. Future upgrades proposed by the FAA, based on complex software yet to be developed, will drive this number to around five million dollars per workstation. Compare this to current top of the line engineering workstations costing a maximum of $250,000 per workstation. However, it is not the twenty to one cost differential we should worry about, but the ten to fifteen years the in which the FAA proposes to implement this plan. We simply cannot afford the development risk or time necessary to wait and see if the FAA will fail again.

As an example of an FAA program destined to fail, the FAA recently proposed wasting $450 million for the Flight 2000 demonstration.
Under the Fight 2000 plan, the FAA will fund and equip 2,000 aircraft in Hawaii and Alaska to prove that the FAA's complex, and expensive avionics based solution to the ATC system problems will work. Given the FAA's track record, Flight 2000 will take a minimum of two years to define the project, three years to develop contracts and install equipment in the 2,000 aircraft, one year of testing, and another to evaluate the results. Under the best case scenario, this program will prove that every transport category aircraft will require one million worth of avionics to capture the benefits of Free Flight. And by the time the Flight 2000 program is complete, new technology will make it obsolete. Why the airlines would even want to prove that they require all that equipment is beyond us. Under the worst case scenario and the obvious outcome, the FAA will waste years and the ATC system will be less safe than today. A minimum of seven years to test the FAA's vision of the future before anything else can happen, and we still have another 300,000 odd aircraft to equip in the United States alone. Is the FAA planning to pay for those installations also? Given the FAA's past failures, this approach is doomed from the outset.

The increasing risk apparent in our ATC system dictates that a more rapid solution should be implemented than the Flight 2000 test program will provide. The FAA's never ending test programs have wasted billions of dollars over the last twenty years, with little or no change to our ATC system. The FAA's test cycles are so long that the technology is outdated before the test is completed, let alone implemented. The aviation industry can no longer afford the time, money, or negative impact on safety through the continuation of this approach. Aviation desperately needs to move forward, something the FAA is unable to do. Safety dictates there must be a simpler, faster solution to the increasing risk apparent in our ATC system. Luckily, there is.

Y2K

Although not clearly visible to all, the United States aviation industry is facing a new ATC crisis. Airplanes are not falling out of the sky and airline profits have never been better, but the crisis nevertheless exists. The crisis is our nation's ATC system. But wait, you say you have heard it all before—ancient equipment, frustrating delays, gross inefficiencies, disgruntled controllers, etc. What is so different now? The answer is Y2K, or more correctly identified, the year 2000 computer problem. Y2K is a computer software problem where the computer incorrectly reads the year 2000 date and could conceivably shut down. Worse yet would be an insidious failure where the system becomes unreliable but indicates normal.
While most recognize that the key to a rapid solution to the Y2K problem is buried in the replacement of the HOST computer, they completely misunderstand that this is a political problem, not a technical one. As described in an RMB Associates and Aviation Systems Research Corporation study, there are technical solutions available today that can do the job within three to five years at no cost to the airspace user.3 The RMB solution lays out a plan to rapidly replace the aging HOST computer equipment.4 But because of the FAA’s inept management of the Y2K issue, even the original RMB timetable, aggressive as it is, is no longer acceptable. As identified by IBM, the HOST must be replaced by the year 2000.

With, in reality, less than one year available, we have modified the Blueprint to Free Flight to install a backup ATC system, a contingency just on the wild, outside chance the FAA fails yet again (sarcasm intended). Time no longer permits the best computer human interface to be researched and implemented. Time does not allow new displays to be installed for each and every sector. What we propose, and the aviation community should demand, is a safety net. The installation of a fifteen workstation ATC system at each enroute center that bypasses the HOST system. Let the FAA implement its solution, but Congress must immediately mandate that the FAA provide a contingency so that when its primary solution falls short, it can still operate the ATC system. The modified Blueprint solution guarantees the safety and operation of the ATC system in the face of another FAA failure. Given the FAA’s history, this is the only prudent action that can be taken.

Simple is Best

In 1994, RMB Associates and The Boyd Group introduced a way to fundamentally improve the ATC system. At a Congressional hearing held as a direct result of our study, Free Flight—Reinventing ATC: The Economic Impact, we introduced the modern day version of Free Flight to Congress, FAA and RTCA. Shortly thereafter we provided the FAA with a complete solution to the problems inherent with the current ATC system. These problems include degradation of safety, equipment failures, controller staffing, capacity constraints and annual costs in the tens of billions of dollars to the FAA’s customers. Thus far, the FAA’s primary focus has been hardware replacement, with no thought about the separation process which was built in 1950’s and which technology is still


4. *Id.*
in use. A quotation from a recent business book outlines the FAA’s error. “The fundamental error that most companies commit when they look at technology is to view it through the lens of their existing processes.”

But what is Free Flight? Having forced Free Flight to center stage, our concept of Free Flight is simple—let the pilot or airline choose the path and let the ATC system provide separation. Unfortunately, Free Flight brings up images of aircraft randomly traveling in all different directions. While many INCORRECTLY view Free Flight as random actions by the pilots, the real goal of Free Flight is simply random paths and operational flexibility. Today’s manual ATC system forces aircraft to fly around empty airspace, or forces them into very narrow predefined corridors to assure the controller can mentally visualize all the aircraft and their flight paths. The ATC system that forces its safety inadequacies and design inefficiencies onto the airlines and, subsequently, the flying public, is predicated on 35 year old equipment and manual procedures, not airspace limitations.

Additionally, airport capacity today is mistakenly viewed as a runway real estate problem. Runways are not now, nor have they ever been, the system capacity problem. The problem, again, lies with the controller’s requirement to manually space the random arriving aircraft on the final approach segment. Simply calculating the maximum arrival flow based on current separation standards will show a ten percent to thirty percent capacity gain if we could consistently apply today’s wake vortex separation rules. This is nothing more than a simple logistics problem. Conversely, the FAA is spending hundreds of millions of dollars to reduce separation, while virtually ignoring the easy capacity gains.

Until recently, safe separation of aircraft had only one layer of safety to prevent conflicts, the mental capabilities of the air traffic controller with zero automation available to aid the controller. With the introduction of TCAS, an airborne collision avoidance system, a second layer of safety was added to the system through the implementation of an independent separation monitor. Unfortunately, TCAS can only indirectly help the controller since it provides a safety net only after a mistake is made. What is needed is automation to directly aid the controller in providing their primary service, safe separation of aircraft. The implementation plan outlined by RMB/The Boyd Group in the recent study, Blueprint To Free Flight, highlights how this can be done. Expensive avionics in the aircraft, including GPS and data link, does not, and will not get the job done. The ground based ATC automation tools proposed,

that provide a complete solution to our ATC system problems by correctly addressing the controller workload issue include:

- Computerized conflict probe, which increases safety and frees up the en-route airspace allowing random path routings. The FAA has already proven that this can be done with properly processed radar data, negating the immediate requirement for data link.
- Time based sequencing, controlled by the users and made equitable by the FAA. This smooths the flow of aircraft to the constrained hubs and increases arrival capacity, while eliminating much of the very expensive low altitude maneuvering. This is a simple logistics problem that the just-in-time manufacturing process solved years ago.
- Final Approach Spacing Tool. This NASA developed computer tool has already proved at Dallas/Ft. Worth International Airport that runways are not the constraint, and has the capability to increase capacity at most airports beyond demand much of the time.  

Technology is not the problem and never has been. The nation's ATC system does not push the envelope of software and system technologies. To the contrary, with each day we seem to slip farther and farther behind the state of the art technology. When aviation compares itself to other industries it becomes very obvious. For example, the banking industry keeps its money "flying free" at security levels above the requirements of the ATC system. Further, AT&T networks handle amounts of traffic that dwarf the numbers of messages typically moving around in our system. If there is any doubt as to database capacity and reconstruction capability, try mislaying an IRS 1099 form for a few dollars on your income tax sometime. The point is, all of the technology that we need already exists.

Additionally, our solution is not about privatization, a solution du jour bandied about over the last few years. Our solution is about removing the FAA from the technical side of the ATC system. By outsourcing the technical side of the ATC system (while still leaving the FAA in control of safety), we bypass the most contentious political issue surrounding privatization. If the government will consider using this concept, a simple Screening Information Request (SIR) announcement will determine whether or not the industry is ready to step up to the plate. Private industry has the technology and the capital to efficiently develop such a system based on the above three tools. It is a hard thing to believe. It is an easy thing to prove. This approach would cost the FAA nothing and has the potential to tap the resources of private industry.

CONCLUSION

The ATC system is nothing more than a network of 2,500 engineering workstations which processes only three data streams (aircraft position, aircraft intent and weather), comprising a maximum of 7,000 to 8,000 active data points (aircraft). Private industry has rapidly installed systems which are much more complex. One need only look at the computer system in the stock markets, or the worldwide ATM network to understand that the technology exists. Why do we believe that the ATC system is any more difficult, or that FAA needs to spend over five million dollars per workstation?

The FAA continues to choose complex over simple, expensive over economic, grandiose over minimal. Aviation can no longer afford this path. GPS and data link are not requirements for, but rather enhancements to, Free Flight. Safety alone dictates that we must act faster to solve our ATC problems. DSR, STARS or Flight 2000 will not accomplish this. With the continuing degradation of the current ATC equipment causing a rapid rise in the system risk factor, we must move rapidly to replace all the ground based ATC equipment. Additionally, we must off-load the controller while providing a Free Routing system to the FAA’s customers. This can be done within three years at a cost to the taxpayers of less than one billion, or at a cost of slightly more than the FAA’s Flight 2000 program. This can only be accomplished if the FAA narrows its focus to separation while leaving avionics choices to the users. Although difficult to comprehend, it is simple to prove. Unfortunately, the FAA will not allow this to happen. This should be unacceptable to all of aviation. It is unacceptable to us.
Comments by Vice-President, International Affairs, Air Traffic Control Association

James R. Banks, Sr.*

My views are based on my personal observations and assessments and do not necessarily reflect any position of the Air Traffic Control Association. My views are rather uncomplicated. I try to focus on some basic realisms as pertaining to time, space, human vulnerability, and the habitual demands of our society.

As an introduction to the airline safety topic, I believe that one of the biggest problems facing aviation, the Federal Aviation Administration (FAA), and the airline industry is capacity of the National Airspace System (real or imagined) and capacity of the airports. This problem is generated by the ever increasing demand for more capacity and the near frantic efforts to meet this demand - whether through the application of more computers (automation), a larger work force, or by dramatic emergence of new technology.

There are some very finite parameters of the national airspace system environment which effectively inhibit certain expansion plans for navigable airspace. One example is the reluctant recognition of the 24

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hour day. Society (and thus the airlines, compelled to convenience) insists on an approximate 18 hour day for conducting flight activities; leaving virtually unlimited capacity between mid-night and six o’clock in the morning. I envision no changes here. Obviously, time must be set aside for maintenance, preventative or otherwise, of aircraft and computer systems.

The radio frequency (RF) spectrum, essential to all categories of aviation, has been repeatedly subdivided to gain more channels. However, the limits are being reached. Line-of-sight (LOS) frequency propagation factors also limit communication flexibility. Less understandable is the lack of protection offered to ward off the auctioning of frequencies to other entities. Any frequency reserved for planning purposes appears to be vulnerable to the auction block. Obtaining another channel for the global positioning system (GPS) constellation has become a problematic issue.

Limits of the navigable airspace is yet another dimension that cannot be stretched. Separation standards may possibly be reduced, but this move could conceivably introduce a potential safety issue.

Meanwhile, the operational characteristics of modern aircraft demand more efficiency - or less inhibiting factors such as represented by the structured system of airways.

The artificial hurdles for airspace realignment include approximately 487,000 square miles of special use airspace (SUA) over the contiguous United States (primarily for military training purposes). Similar to the airways, the SUAs represent barriers to the desired direct terminal-to-terminal routes advocated by the commercial airlines. Any adjustments to the SUAs, especially in airspace below flight level 180, are subjected to environmental judgments. In essence, this means no adjustment except elimination.

A significant artificial constraint is aircraft runway occupancy time and a related policy which allows only one aircraft on the active runway at any one time. This situation is further exacerbated by the presence or potential presence of WAKE vortices, thus stretching out the intervals between successive departing or landing aircraft. There has been a lot of discussion and experimentation in this area, but with no solutions.

The foregoing is offered only as a prologue to the real safety issue, STRESS. Although the FAA is frequently referred to as a regulatory agency, the air traffic control (ATC) system does not determine nor strictly regulate the amount of aircraft that the system can safely handle on a continuous basis, notwithstanding the limitations described above. Almost unequivocally, the ATC system reacts to demand. In order to preserve safety, the ATC system does delay aircraft. This practice is usually referred to as ‘flow management’ and generates a lot of complaints.
Delays are commonly expressed in dollar amounts. The annual multimillion dollar losses attributed to ATC delay places pressure on the FAA to meet indiscriminate airline scheduling demands. There seems to be a reluctance to confront the issue of indiscriminate scheduling. Airline schedules which reflect the “garbage in” syndrome based on traveler’s convenience also reflect a total disregard for manageable ATC system capacities. And the airline scheduler’s can usually win the argument using national economy issues. Logically, it becomes a situation where the FAA and the ATC system must defy the computer “garbage-in, garbage-out” syndrome and convert the data into a sense of discipline that keeps the flow of traffic in safe order.

For example, when observers note the number of flights scheduled on a week day morning at 8 a.m. from Dallas-Ft. Worth International Airport, they surely must recognize the probability that perhaps one or two flights will actually depart on the posted time because of airport and ATC system limitations. The ATC system must sort out marquee times and substitute realistic system compatible times. Delays are thus inevitable. Observers must also recognize that someone, or many people, will be under a considerable amount of STRESS in sorting the mess out. STRESS is generated in just keeping up, much less staying ahead of the power curve. Today, STRESS is generated in just about every functional sector of aviation. This is attributable to attempting to live up to the billing of on-time operations and trying to do more with less while suffering the demands of undisciplined customers. STRESS is the operative word. The inevitable result in the chain of events is that something, somewhere will fail, possibly with catastrophic consequences. The ‘something and somewhere’ are unpredictable. That’s the frightening part.

There is a common denominator; everyone is in a hurry to make ambitious schedules work. This, in-turn, reflects of competition and the need to produce revenues.

The unfortunate dichotomy is that the whole scenario of ‘safety first’ is morally mandated and officially gives no slack to other dimensions of aviation. It seems all to often that the economy is the biggest driver. The bottom-line is not necessarily safety at all costs, but “within accepted margins of safety.” This is not a new term.

The FAA endeavors to handle more and more traffic, sometimes with fewer controllers. The FAA attempts to define system capacity based on historical data without a basis on which to project human capacity. There are limits for human controller capacity, but their norm is established where the more proficient controller must be throttled back to the pace of the less proficient controller to create a system mean. There are certain unquantified differences in controller proficiencies. Essentially, it could be concluded that human capacity is met or surpassed
when a controller experiences an on-the-job mental or physical breakdown. The topic of human capacity has been subjected to a great deal of theory and speculation, but the topic still eludes quantification. There is a direct correlation of human capacity and STRESS, but not a verifiable numerical value.

In summary, the continuing atmosphere of a near panic pace wherein every part of the equation pertaining to commercial airline operations is operating on the edge, ultimately and repeatedly will result in something breaking somewhere, largely because of the reluctance, inability, or lack of fortitude to call enough, enough! The situation is not beyond control. It will be up to the FAA to ultimately “bite the bullet” and create an “intelligence-in, intelligence-out,” situation and to filter out system incompatible demands. The FAA will undoubtedly take some heat from the airline industry if it attempts to discipline the system, or the processes, that would eventually temper the pace to a manageable environment. Currently, it seems a simple case of a government regulator not really regulating.
Commentary on the Motivational Psychology of Terrorism against Transportation Systems: Implications for Airline Safety and Transportation Law

Richard W. Bloom, Ph.D., ABPP

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As I write this paper, terrorism continues to be a low frequency, but high impact threat to airline safety. From the 1960s to the present the international media have highlighted stories of politically motivated hijackings of aircraft, the destruction of aircraft in flight and on the ground, the destruction or airport assets, the murder and wounding of airport patrons, prevention of aviation terrorism through competent antiterrorist and counterterrorists assets, and real and national threats to perpetrate aviation terrorism. In fact, after an aviation catastrophe, e.g., TWA 800 or KAL 801, there is an instinctive reaction among aviation professionals, mass media representatives, the consumers of mass media products, and the actual survivors, participants and observers to initially posit or discount the probability of terrorism as the cause. And many experts believe that the aviation terrorism threat may significantly increase with advances in technology (e.g., ever less detectable explosives) and conceptualization (e.g., information warfare).

One significant issue related to the terrorist threat to airline safety comprises the many psychological aspects of terrorism. This paper focuses on the motivational psychology of terrorism and how it impedes both effective antiterrorism and counterterrorism legislation and legal adjudication of terrorism cases through criminal justice systems. The perspective taken will be systems-oriented and will include the many transportation modes and systems related to air travel as well as aircraft, airports, and airline personnel, cultures, and procedures. In this way threats, vulnerabilities, and opportunities from, among others 1) taxi cabs, automobiles, cycles, vans, buses, and trucks conveying passengers and their associates to and from the airport; 2) supply trucks; 3) supply and repair vehicles on the tarmac and flight lines; 4) subway and train connections to the airport; 5) vehicles parked at airport parking lots and garages; 6) rental car operations at or near the airport; 7) ship and naval assets transiting or in port adjacent to airports on the shores of oceans, lakes, and rivers; 8) ship and naval assets targeting aircraft flying over or near water; and 9) bustling transportation-supported commerce near the airlines.

LEGISLATION

The purpose of antiterrorist and counterterrorist legislation is to facilitate efforts to prevent, minimize, and, if necessary, resolve terrorist acts. This facilitation is supposed to occur without endangering other significant elements of a political entity's responsibilities and legitimacy. However, legislation addressing terrorism is typically founded on five assumptions of terrorism motivation that are faulty from the terrorist per-
The noncombatants pay taxes to the government which may be the ter-

spective. As a result, legislation often becomes faulty as well. We will

look at each of these assumptions in turn.

Victims as Innocents. Many definitions of terrorism refer to victims

as innocents, combatants who were not ready to fight or noncombatants

who were just going about their daily lives oblivious to a specific political

conflict. Yet to many terrorists all victims are guilty. And by a variety of

logical calculi, let alone illogical and irrational ones, the victims are guilty.

The ill-prepared combatants were ready once and otherwise will be again.

The noncombatants pay taxes to the government which may be the ter-

rorists target. The noncombatants can be children who may grow up to

pay taxes or be antiterrorist and counterterrorist personnel or women

who have the potential to be impregnated, carry these children to term,

and nurture them. Noncombatant men, women and children may give

comfort, solace, and material support to antiterrorist and counterterrorist

forces through forming logistical, social, and stress management systems

improving the performance of terrorists' adversaries.

The same governments and nonstate actors that can engage in total

wars over the price of oil, violation of arbitrary political boundaries, jin-

goistic epithets, staged, apocryphal, and notional legal violations and the

need to turn attention from internal political popularity problems, attrib-

ute ultimate evil to terrorists who may be using the only effective means

available to achieve human rights or civil rights. (This attribution often

leads to insipid, culturally relative rebuttals such as “one man’s terrorist is

another man’s freedom fighter.” In fact, terrorism, a true equal opportu-

nity employer, is a tool that can be applied to many objectives, freedom

or lack of freedom among others.) Moreover, the same governments and

nonstate actors that criticize terrorists for attacking the innocent may well

engage in terrorism themselves, yet persist in miscommunicating about

innocence among their leaders and followers. Not apperceiving that, un-

fortunately, we are all guilty, that we all have it coming, leads to sancti-

monious railing and pompous and ignorant posturing that often becomes

the substance of legislation.

Never Negotiating, Never Giving In. Terrorism is purely a psycholog-

ical endeavor. Injury, death, destruction or these types of threats are in-
tended to induce behaviors leading to political objectives through

intermediary psychological processes such as fear, anxiety, terror, cow-

ardice, lack of resiliency, or a cult-like belief in nonviolent virtue. By

stating that they will never negotiate and will never give in, legislators are

actually adhering to operant learning theory tenets (e.g., the terrorist be-

havior will be extinguished because it will not be or no longer will be

followed by positive or negative reinforcement).

However, both the historical record and the current temptations of
telecommunication technology in an era of globalization strongly suggest
that this type of legislation defies executive compliance. First, information technologies ensure that terrorist acts will become known, itself often a political objective or a reinforcement through illustrating the delimited power and failure of the terrorists' adversaries to prevent the act and interjecting the terrorists' desirable narrative into public discourse.

Second, regardless of legislation there will be many people who, through their cognitive systems, emotional susceptibilities, personality structures, motivational sources, and group and organizational dynamics, will demand that terrorist acts be reinforced through awarding the terrorists' ultimate political objective to ward off future terrorist behavior. Some of these psychological factors feature magical thinking and superstitions, others acontexual stupidity.

Third, governments and nonstate actors have negotiated and given in to terrorists regardless of public professments to the contrary. Whether the Carter, Reagan, and Kohl Administrations with the Iranian government, the Netanyahu Administration with the Palestinian National Authority and the converse, the Yeltsin Administration with the Chechneans, the Ortega Administration with the United States Government, Greenpeace with the French Government, the Vietnamese with the Khmer Rouge, the United Kingdom with Sinn Fein, and the United Nations with countless governments and nonstate actors, the never negotiating/never giving in policy is forever broken. The antiterrorist mantra, "You can run but you can't hide," is better invoked as "Read my lips. We just can't help it."

**Holding Terrorists Accountable.** If terrorism cannot be prevented, legislators assert that at least terrorists will meet their just desserts. This seems a rather odd dictum from adept practitioners of plausible deniability. International terrorism, recent musings about postmodern terrorism to the contrary, is often characterized by widely disparate actors in widely disparate parts of the world engaged in creating and maintaining political front groups, soliciting for weapons, money, and safe houses, developing communication systems, implementing operational training, and the like. The more sophisticated state and nonstate actors employing terrorism cover covert and clandestine intentions with public verbal and nonverbal communications conveying the opposite intent. Examples include rushing victims to hospitals, voting for laws against terrorism in international fora, professing no first use of terrorism, and privately creating multiple terrorist assets, some of which one publicly terms as threats to one's political agenda and quest for peace.

Legislators often compound the problem by mandating or advocating for the expulsion of known terrorists from their respective countries without formally attributing guilt - that in any case does not minimize future threats to these same countries. These cross-communications, for
totalitarian governments and representative democracies alike, render it difficult to attribute blame, let alone develop, authorize, and implement some noxious consequence towards terrorists, even if the technical means to do so exist. Through legislative dysfunctions, the terrorist may hoist the ultimate targets, the survivors (not the victims), on their own petard. No one, terrorist or legislature, may end up accountable.

Profiling—Usual Suspects Finding Usual Suspects. Many government commissions and legislators have recommended developing lists of characteristics depicting those most likely to engage in terrorism. The thinking is that the closer terrorists get to transportation targets, the closer they will get to being greeted by antiterrorist and counterterrorist personnel. Besides commonly cited problems of profiling including low terrorism base rates, high false positive rates through low specificity, high false negative rates through low sensitivity, and civil rights violations through racial, ethnic, sex, and age discrimination, there are yet additional concerns.

First, even if one could develop reliable and valid profiles, the social transformation of knowledge suggests that their reliability and validity may change through time. An ongoing intelligence collection and analysis capability would be needed to continually rework the profiles used by antiterrorist and counterterrorist personnel.

Second, in the continuation of the ancient game of spy-counterspy, profile data inevitably leaks so that terrorists can use the profiles as part of their own deceptive strategies. Also, terrorists aware of even the general effort of profiling attempt the random mixing of characteristics with their personnel as far as logistical and psychological constraints allow.

Third, in a variant of another ancient game—looking for one's key where the light is better, not where one dropped it—most profilers analyze external features, such as physical characteristics, behaviors, or demographics. However, intrapsychic processes may be more robust correlates of terrorist behavior, but are more difficult to identify. Yet, some psychologists even believe that these correlates either do not exist or are irrelevant in analyzing human behavior. Their professional culture leads to dysfunctional consultation to legislators about the psychology of terrorism.

Physical Assets. With new information and weapons technologies, especially in terrorism against transportation systems, it becomes easier to capture or kill terrorists. Unfortunately, it also becomes easier to capture and kill victims and destroy material assets. And because of new information technologies, the locus conducive to achieving a terrorist's objective is ever increasing, rendering the antiterrorist's and counterterrorist's challenge ever more challenging. The employment of counterterrorist assets often contributes to intractable conflict as it creates martyrs.
among ideological terrorists and unwitting supporters of terrorism among those of us who are prisoners of a Golden Mean dictating that the correct political stance is always in the middle, regardless of the nature of a specific terrorist event. Finally, fighting terrorism with terrorism, even if effective for a specific incident, may implode the legitimacy of a government or nonstate actor, subvert its cherished values, and reinforce the point that terrorism works even as a means to achieve the political objective of effectively fighting terrorism.

**LEGAL ADJUDICATION**

The purpose of legal adjudication varies throughout the world. In countries approximating representative democracies, the ideal is justice for all. And one requirement of such justice is formal ascent that a defendant is competent to stand trial. Yet, many alleged terrorists, viz., ideological fanatics may be ill-served by common notions of competency.

For example, as explicated in the MacArthur Treatment Competency Study, there may be at least four different competency capacities: the abilities to (1) appreciate a choice, (2) understand relevant information, (3) manipulate information rationally, and (4) appreciate the nature of the situation and its likely consequences. However, at least one type of ideological fanatic, the religious, may appreciate absolutely no choice, for the alleged terrorist may believe that all acts are willed by God. The fanatic also may not seem to understand information relevant to legal authorities in even in most theocratic regimes, because the only relevant information is uniquely sacred, not secular. Other information is to be ignored or discounted.

In addition, the fanatic may seem not to manipulate information rationally (e.g., reasonably, sensibly). Instead, the fanatic’s view of the consequences of facts, and of the facts themselves, may be viewed as irrational by legal authorities, illogical by a so-called “jury of peers,” and as delusional by psychological authorities. It is noteworthy that the very term “fanatical” is often cast as an antonym for “rational.” Finally, the fanatic may appreciate a legal trial, and its many ancillary, concurrent, and epiphenomenal activities, as well as the politics surrounding it as another test of religious legitimacy and commitment, rather than a legal conflict and a quest for criminal justice. The consequences may seem to be eternal, not temporal.

Are all fanatics - religious, nationalist, ethnic, and racial - similarly or otherwise uniquely incompetent in the judicial setting? If so, will trials

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within approximate representative democracies ineluctably violate the civil and even human rights of these types of terrorists? Sufficient and ongoing psycholegal research on competency for the fanatic has not yet been developed to inform legal adjudication. This is most unfortunate as the legal competence of alleged terrorists, especially variants of the fanatic, may well become ever more salient as interagency and international cooperation to identify, detain, and extradite alleged terrorists likely will result in more adjudicated cases. (This includes not only closer contact among intelligence and law enforcement agencies, but also greater momentum to establish an international criminal court due to alleged crimes against humanity and genocide in Bosnia, the former Zaire, Burundi, and Rwanda.) Many of these cases will in all likelihood involve defendants from different cultures and ethnic backgrounds than those of the majority of the populations from approximate representative democracies represented by prosecuting authorities. As it is, even certain racial subgroups of U.S. citizens (e.g., African American males) are more likely to be diagnosed and, more unfortunately, misdiagnosed as schizophrenic, a condition that is itself correlated with formal determinations of legal incompetence.

CONCLUSION

The motivational psychology of terrorism against transportation systems impedes effective antiterrorism and counterterrorism legislation and legal adjudication of terrorism cases through criminal justice systems. Of additional concern is a third factor, the irreconcilable differences among the world's many international and national legislations, adjudication procedures, other formal legal requirements, informal predilections and traditions, and even illegal, immoral, and unethical approaches concerning terrorism. These phenomena pose significant security and legal challenges to optimum airline safety.
Is It Safe Up There?

Frederick M. Isaac, P.E.*

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**INTRODUCTION**

The United States aviation industry is a valuable national asset. Nearly 625 million people were carried on our nation's airlines last year, for recreation and business. The Boeing Company builds 70 percent of the free world's transport airplanes and U.S. aviation exports are the largest single contributor to our balance of trade.

This paper deals with the issue of airline safety. While travel by com-
commercial airplane is by far the safest mode of personal travel, averaging about 200 fatalities per year, an airplane accident is always a matter of great public interest and concern, frequently resulting in enormous media coverage, Congressional interest and calls for action.

I will briefly describe the national aviation system and explore the basics of safety itself. The safety of today’s system will be discussed and finally, the prospects for a safe system in the future, in the face of accelerating demand for aviation services.

TODAY’S NATIONAL AVIATION SYSTEM

Today’s national aviation system is a complex creature that has evolved over seven decades to the system we know today. It is composed of three major elements:

◊ **People**: those who operate and use the system—pilots, mechanics, regulators, instructors, technicians, air traffic controllers and passengers.

◊ **Equipment**: the aircraft that operate within the system—airplanes, hot air balloons, gliders, ultralights, agricultural aircraft.

◊ **Infrastructure**: the facilities and equipment used by the people—airports, air traffic control facilities, navigation aids, radar, communications, lighting aids, and the airspace itself.

The integrity of the commercial aviation system depends on the primary players—the airlines, regulatory agencies, and the manufacturers—meeting their well-defined responsibilities.

All components in the system—people, equipment and infrastructure—must meet specific, national standards and detailed certification criteria. Close quality control parallels exist throughout the system for each of the three elements. For example, an instrument landing system must be certified for use by a certified technician, just as a repaired airplane must be “signed off” by a licensed (certified) mechanic. All critical equipment and infrastructure has double, triple or quadruple redundancy designed and built into the systems and subsystems. Parallels again exist. Just as crucial ground navigation systems have power conditioning systems and auxiliary power sources, the modern airplane has redundancies in avionics, control systems, propulsion and even the pilots themselves.

The two types of flying activity are instrument flight rules and visual flight rules. Air traffic control provides services for all instrument flying and some visual operations. While the tools available to the controller (radar displays, communications and other aids) have advanced greatly, air traffic control for the most part, is done manually, just as it has always been.
Before addressing today’s safety levels, I will start with a general discussion of safety itself. Safety, like beauty, is in the mind of the beholder. One person’s comfort level may be totally unacceptable to another. Safety is not the absence of risk, it is the threshold of acceptable risk. Flight is inherently a risky venture, carried out in a hostile environment at great speeds. It requires professionalism, competence and knowledge for it to be done “safely.” The only way to assure risk-free flight is to never allow the airplane to leave the gate.

The ultimate responsibility for assuring that the system is safe in the United States lies with the regulatory agency, the Federal Aviation Administration (FAA). Most of the day-to-day inspections, reviews and sign-offs are performed by the manufacturers, airlines and airports; the system depends on “self-inspections” and it is simply not possible for the FAA to make every inspection on every airplane in every location around the world. This “self-inspection,” or “designee” concept is startling to many of the general public, but it has worked effectively for many decades. The airlines and the manufacturers have a great concern for the safety of their airplanes and operations; it is in their business interests to place a high priority on safety. To make this point, one only needs to look at the repercussions for Valujet Airlines following the tragic May 11, 1996, accident in the Everglades. The financial toll on the company was devastating. The spin-off effect of the accident on other “startup airlines” has also cost them dearly. This is a direct effect of the publicity surrounding the Valujet accident and the public’s perception that the new airlines are not as safe as the established carriers.

If safety is the threshold of acceptable risk, then how much risk is acceptable? While 100 people may have 100 different answers to that question, our democratic system itself provides the answers. In my opinion, the Congress of the United States has the greatest influence on the level of safety, or acceptable risk under which we operate. Congress, of course, writes the laws that govern the operation and development of the national aviation system. Congress also controls the budget of the Department of Transportation and, in turn, the Federal Aviation Administration. The budget contains certain mandates in emphasis areas such as staffing, facility closures (or prohibitions against such), capital programs, travel funding and training. Through the committee system, they also exercise a great deal of oversight over the Federal Aviation Administration.

The State of Airline Safety in 1998

After a high number of fatalities in 1996, 1997 was a very good year for the U.S. airline industry. In 1997, eight fatalities from four accidents
were recorded, versus 356 fatalities from four accidents in 1996. Although 1997 worldwide totals were not available at the time this paper was written, nearly 1,200 passengers and crew died in 1996, an increase of 185 percent over the 1995 total of 420.

For the period from 1959 to 1995, over 70 percent of the most serious accidents—hull losses—were attributed to the flight crew, with airplane, maintenance, weather, airport/air traffic control system and other factors accounting for the balance.¹ This statistic should not suggest a simple solution for a problem much more complex than it may appear. An accident may be attributable to flight crew error, but the airplane, the airport environment and other factors presented to the flight crew may place the flight crew in a very difficult position. For instance, a landing approach accident might be avoided with improved airport approach lighting systems, better aircraft position information or wind shear detection systems.

Lest we put too much emphasis on the airplane and crew in the safety debate, we must also remember the other components of the national aviation system. The infrastructure plays a vital part in the safety equation. The tools given the pilot and air traffic controller—airports, air traffic control facilities, navigation aids, radar, communications, lighting aids, and the airspace itself—all affect the system's ability to move the traffic efficiently and safely. Unfortunately, the technological state of the nation's ground equipment is not the equal of that found in the modern cockpit.

Recognizing that providing quality surveillance, communications and navigation coverage over the 3.6 million square miles of the United States is a daunting and costly task, system modernization has been slow in coming. As an example, the enroute radar system that is the backbone of air traffic control, was built from the late 1950's to the mid-1960's, although improvements have been made to the existing system over the years. Radio coverage in some areas is lacking, weather sensors and reporting systems have been slow in coming on line, and delays in new system deliveries have been more the norm than the exception.

One point needs to be made before proceeding any further. Whenever critical components of the system fail, such as an instrument landing system in poor weather conditions, the system adjusts to the new configuration. In operating terms, this simply amounts to slowing the system down to the level at which it can be operated safely; to the user, this generally appears as delay.

Major upgrading of the air traffic control system began in the mid-

1980's. At that time, the FAA was the world's largest user of vacuum tubes. Since then, billions of dollars have been spent on major upgrades to the system, from solid state radios, to new en route traffic control computers and new terminal area radar systems. The traffic has grown dramatically in that same time period. Since the mid-1980's and until recent times, funding for system modernization has been adequate, enough to fund improvements at a reasonable pace. Over the past four to five years, however, FAA Program Managers have been scrambling to find the funds to keep already-committed programs going and to start only the highest priority programs. As an example, one major program had to delay commissioning new facilities because it lacked the funds to complete the communications hook-up needed to finish the project.

Airport improvements for such items as new runways, fire trucks, land acquisition, runway edge lighting, aircraft parking aprons, clear zones and airport terminal buildings have been heavily dependent on the federal Airport Improvement Program (AIP), particularly for medium and small airline-served airports. Capital projects for these airports are very costly relative to the airport's ability to create revenue. The medium and small airports are served by turbine powered airplanes, operating to the same standards as the large airlines. They require more land, wider safety areas and longer runways than needed by most general aviation aircraft. The airport operator must also provide airport security and crash/fire/rescue coverage. Unlike the large airports, the smaller facilities have no appreciable parking income, passenger facility charges, concession, lease, or landing fee revenues, explaining their dependence on the AIP. In recent years, the amount of AIP funding has dropped by about 30 percent, while costs and needs continue to escalate. Projects such as additional taxiways, runways and paved overrun areas that are delayed or canceled have safety implications because of congestion and the burden placed on existing facilities.

A significant portion of the funding for system modernization (and operation) and airport improvement grants comes from user taxes. However, regardless of the amount of user tax receipts in the Trust Fund, the FAA is dependent upon the Congress to appropriate funds on a year-to-year basis. The agency's budget request, part of the Department of Transportation package, is included in the President's January budget submittal for the following fiscal year. Before the agency’s request is included in the Presidential submittal, it has already gone through review by the Department and the Office of Management and Budget.

After Presidential submittal, the agency’s request is submitted to Congressional committee scrutiny through study, hearings, questions and responses, and finally to the full Senate and House for approval on a department-by-department basis. The FAA budget is considered in the
context of the entire budget and national priorities, placing the agency in the position of competing with social, space and defense programs. The recent balanced budget debate included the FAA along with all other agencies. Only after the budget process is complete, taking nearly two years from initial work to approval, can the agency start procurement or construction of facilities.

The obvious question at this point is, will the FAA be successful under the present process, in competing for airport improvement, system modernization and operating funds while facing the challenge of a near-doubling of airline passengers in the next 20 years? The FAA has estimated that the cost of providing present services 20 years from now will double, along with passenger growth.²

I will leave it to the reader to draw his or her own conclusions on the safety of today's system, but there is a body of evidence to show that today's system is much safer by several measures than the system of the past. In looking at the evidence, we need to remember that the system operated at a high activity level in 1997 as evidenced by the following statistics from the National Transportation Safety Board, for U.S. scheduled and non-scheduled airlines:

| Flight Hours | 15.3 million |
| Miles Flown  | 6,441 million |
| Departures   | 9.8 million |

Near Midair Collision Reports are investigated and maintained by the FAA and are a rough measure of how well the system is working—traffic density; controller, equipment and pilot performance and adequacy of procedures. By their nature, they are subjective, but important. In the chart below, “critical” means a situation in which collision avoidance was due to chance—less than 100 feet of aircraft separation. “Potential” means an incident which would have resulted in a collision if no action had been taken by either pilot—a proximity of less than 500 feet.

The data points above are absolute numbers, not rates or percentages. They are even more impressive in the message they carry, when one considers the growth in traffic over the ten-year period. From 1987 through 1996, potential near midair collisions decreased from 253 to 32, a decrease of 87 percent, and critical near midair collisions decreased from 69 to 3, a 96 percent decrease.

Nearly 625 million passengers were carried safely to their destinations last year, with a fatality rate of 1:128,000,000 passenger enplane-ments. If the 1960 U.S. accident rate were overlaid on 1997 activity, there would have been 270 accidents last year or more than one every working day (Hinson, August, 1997); the 1997 total number of accidents for scheduled and non-scheduled carriers, including non-fatal accidents was 49. In the entire history of U.S. aviation, the total fatalities are just over 13,000, or approximately the average four month death rate on our nation’s highways.

**Future Challenges**

Aviation has had a profound effect on our way of life. Early in its history, flying was only for the businessperson, the wealthy and privileged. Today people of modest means visit relatives and take vacations via the airplane. Developing countries are seeing dramatic growth in their aviation industry, particularly in Asia. And as long as goods and people have to be moved for economic and business reasons, aviation will serve a vital role.
The FAA develops the Terminal Area Forecasts every year. Their latest projections show the following for U.S. scheduled airlines. An enplanement is the initial boarding of a passenger embarking on a trip, not connecting passengers.

Forecasted U.S. Air Carrier Enplanements

From 1998 to 2010, enplanements on our U.S. carriers are expected to grow by nearly 60 percent. As shown below, airline operations (a landing or takeoff) will increase by more than 30 percent over the same time period and general aviation operations by 11 percent.

Forecasted Annual Operations

This growth translates into more demand on the system—more controller workload, more pressure on airports, runways, terminal
buildings, parking lots and the airspace itself. The Boeing Company has projected a worldwide transport fleet of 23,000 airplanes from 11,000 today, by the year 2015. They have also reported that if the 1996 worldwide accident rate were held constant at the level of about one per million departures, there could be a serious accident somewhere in the world every one or two weeks in the year 2015!

Given that today's accident rate is unacceptable to some at least, what have we to look forward to, given the constant increase in activity in the same, finite blocks of airspace and real estate?

First, we can take heart in the progress to date. According to The Boeing Company, the accident rate for the newer generation of airplanes, such as the B757, B767 and the A310 is considerably better than earlier designs. With no hull losses to date, it is reasonable to expect that the current new crop of airplanes such as the B777, A330 and A340, will be safer yet, as a result of more sophisticated design and applied technology.

New technology will be available to the flight crews and controllers as well:

Better weather detection systems will provide information to airline dispatchers and pilots, allowing more efficient and safe flight around weather systems, both enroute and near the airport.

- Global Positioning Systems (GPS) are being used now, but will become the primary source for navigation and surveillance information, replacing ground based, line-of-sight-limited VOR navigation facilities and radar facilities. GPS will also be the primary means of guidance for precision landings and departures at our nation's airports.

- Improved air traffic control tools are already being installed in FAA facilities, to give the controller more reliable and efficient means to see and communicate with the airplanes under his/her control.

- Data link will allow clearances, weather and traffic information to be provided in the cockpit in a fast, error-free, digital form. One of the big advantages of data link will be the elimination of "read back" errors between the pilot and controller.

- Improved collision avoidance systems on board the airplanes will reduce the number of collision scenarios.

- Flight decks will continue to improve with added redundancy and integrated avionics, giving the pilot more options and flexibility.

- Training of flight crews will become more sophisticated. Flight data recorder information from "safe to destination" flights will be used by the airlines to improve training. The information, to the extent it is generic, will be shared among the airlines, regulatory agencies and manufacturers for improvements in many areas from operations to design.

- Human factors will be a major consideration from the onset of airplane design, to assure that the airplane can be operated and maintained easily within human limits.
I submit that most aviation experts would say there is, or will be, ample technology to drive today's accident rate down to very low numbers, even with added activity. To exploit available technology and new equipment, however, there must be the financial wherewithal and the will to make it happen. The manufacturers and airlines must have the resources to equip the airplane as desired. The FAA, as the provider of the air traffic control system, faces a rocky road ahead, given the budget process, Departmental and Congressional control described earlier in this paper.

The FAA cannot continue operating and modernizing the air traffic control system as it has in the past, if this country is to meet its air transportation needs in the future. The service provider must be responsive to the customer's needs, and fast on its feet, to take full advantage of new technology, support the economic vitality of our nation, and win the global competition. It has been said that the FAA is the only agency in government that controls the production of the companies with which it does business.

NAV CANADA is the new privatized air traffic control corporation recently established by our northern neighbors. They have already shown the ability to raise significant capital, and what better investment than in a monopoly with an viable, long term future? Other countries with smaller air traffic control systems have shown that a non-government controlled system can operate more efficiently and more responsively than their governmental predecessors. Given the proximity of Canada to this nation, cultural similarities, overlapping airspace and identical system architecture, we may see the Canadian system eventually emulated in this country.

Medium and small airports face an uncertain future with the high cost of capital development and limited means to raise money. The federal trust and general fund support that has filled the gap between cost and revenues is drying up. As important components of the national aviation system, a new source of dependable revenue for capital projects must be found or federal support must be reinstated.

**SUMMARY**

Our national aviation system has evolved over the past seven decades to serve a vital role in the economy and our way of life. The system is complex, built on national standards with rigid quality control in all areas from the cockpit to the maintenance hangar to the air traffic control facility.

Safety is the threshold of acceptable risk. The Congress, by its authority and actions, has the greatest influence on determining our opera-
tional safety levels. Most serious accidents are attributed to flight crew error, but many factors affect the crew's ability to make the right decisions and take the right actions. Near Midair Collision Reports and a decline in accident rates for the period up to and including 1997 suggest safety has improved greatly in recent years.

FAA forecasts show continuing growth in enplaned passengers and operations in the years to come. We must continue to take advantage of available technology and human factor considerations to reduce the accident rate even further. There is a serious question that modernization of air traffic control systems can keep up with the demands of the flying public, due to the federal budget process.

Medium and small airline-served airports are having difficulty making capital improvements as a result of funding cuts in the Airport Improvement Program. New financing means must be found or a restoration of federal funding is needed to meet the demands of the future.

REFERENCES

Aviation Security in the United States: Current and Future Trends

Anthony Fainberg*

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Introduction

The past year has witnessed the most significant changes in direction and emphasis yet to affect aviation security in the United States. Although the principal triggering event for this new emphasis and importance was the catastrophic loss of TWA Flight 800 off Long Island, New York, on July 17, 1996, many other events had laid the groundwork that

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made this trigger so powerful. And the irony is, as you know, that the FBI now believes that TWA 800 was not a terrorist act.

The change to which I refer is really a “paradigm shift,” wherein it is now acceptable in the United States for politicians and even representatives of industry to agree that the baseline security level in the United States should be upgraded, and upgraded considerably. Prior to TWA 800, no such consensus existed. In fact, many argued that there was no need for increased measures, and some thought that the then-current measures were more than what was required.

The upgrade in aviation security will take the form of a deployment of greatly improved equipment and the institution of greatly improved security procedures throughout the system. This massive improvement began in 1997 and its implementation will, we anticipate, continue for a number of years until a new plateau of security is achieved.

How is it that a possibly irrelevant event has produced so much change in the way aviation security is regarded in the United States? For comparison: following the bombing of Pan Am Flight 103 over Lockerbie, Scotland, in December 1988, although major changes were accomplished in the way the Federal Aviation Administration handled security and organized itself—placing local security managers at major airports, raising the status of security in the agency hierarchy, and conducting background checks of certain airport and air carrier employees—few major changes in the set of baseline security measures within the United States were evident to the traveler. Further, there was no consensus on applying further significant measures, such as the installation of trace equipment for checking some carry-on baggage, as was done in a number of other countries. In general, it was felt by many skeptics that the threat of a major terrorist action against aviation security in the United States was virtually nonexistent. Indeed, there remain today major players in the field who hold this view, although such a strong expression on the subject is not frequently made in public.

As I noted, several other events had come together at about the same time to enable this tidal change to occur. First, several major terrorist events within the United States, beginning in 1993, made it clear to the American public that the existence of two large oceans no longer guaranteed the absence of major international terrorist acts on our territory. These attacks are well known, and include the World Trade Center bombing and the murders at the headquarters of the Central Intelligence Agency, near Washington, D.C. Since these events, there have been continuing indications of terrorist activity, including a plot to bomb several major targets in the New York area. Even though aviation has not yet been specifically attacked at home, the history of terrorist attacks on civil aviation (including U.S. targets) overseas makes it clear that such a possi-
bility exists and must be guarded against. Further, the revelation in early 1995 of the plot by Ramzi Ahmed Youssef to destroy a large number of U.S. civil aircraft in Asia demonstrates that U.S. aircraft may still be targets of international terrorists. Concerns were heightened by the realization that Youssef had previously been in the United States.

The existence of a serious terrorist threat within the United States impelled the Federal Aviation Administration to convene an outside advisory panel composed of representatives from other Government agencies, air carriers and airport authorities, and various citizens and professional groups, with the purpose of recommending improvements in baseline aviation security measures. In fact, by coincidence, this Baseline Working Group was formed only hours before the crash of TWA 800. The Working Group's recommendations were passed on to the White House Commission on Aviation Safety and Security, formed shortly after the crash, and had a major impact on its first and final reports. Many of the White House Commission's recommendations (over 30 dealing with security issues) have been given the force of law and financing by ensuing congressional action. In this article, I will describe what is being done now as a result of some of the more salient and specific recommendations.

A second piece of the groundwork for the major change in aviation security was the recent emergence of successful new security technology, both in explosives detection and in other areas such as human factors and aircraft container hardening. The existence of an approved explosives detection system, the CTX5000, manufactured by InVision and certified by the FAA in 1994, made it conceivable that effective technical measures could be taken to block the introduction of explosives aboard aircraft. Indeed, at least two other corporations, L 3 Communications and Vivid Technologies, are seriously engaged in developing certifiable explosives detection systems. Further, the rapid development and improvement of trace explosives detectors raised the possibility of redundant technical measures to check baggage for explosives, based on a totally different technical approach. As a side note, trace explosives detectors may also soon be available for checking passengers for explosives on their person in a rapid and not very intrusive fashion.

Combined with the apparently successful bombing of a U.S. aircraft, practically within sight of New York City, the situation in July 1996 made the social and political pressure to institute significant improvements in baseline security measures irresistible. Within 3 months, congressional legislation appropriated Federal funds for a large-scale purchase of expensive security equipment. This was a first in the United States, with one minor exception about 25 years ago. Air carriers, not the Federal Government, have traditionally had the responsibility for such purchases.
Legislation authorized other security enhancements, such as background checks on security screeners, vulnerability assessments at airports, and the increased use of dogs for detecting explosives. How long this pressure will be maintained is, of course, uncertain. However, a major deployment of advanced equipment is now underway, and this in itself constitutes a major advance in security measures, in terms of deterrence and of real security capability. Nevertheless, as of today, the pressure for improvement remains and is supported by the administration (following the recommendations of the White House Commission), Congress, and the private sector. In fact, representatives of the industry are participating with the FAA on a Government team that is responsible for the acquisition and deployment of the new security equipment.

In the following sections, I will describe some major aspects of the current effort to improve aviation security for U.S. travelers and to construct a friendly and equitable cooperative regime between the United States and its international partners in developing and deploying aviation security measures on flights from and into the United States.

DEPLOYMENT

The first stage of the deployment of new, advanced security equipment follows the allocation by Congress of some $144 million to this end in fiscal year 1997. It will include the purchase of 54 additional CTX explosives detection systems (beyond the 3 that were already being tested in an airport demonstration project), some 20 other units of advanced bulk detection equipment, and nearly 500 trace detection devices. This instrumentation will be placed in major U.S. airports and is well underway, having begun at Chicago O'Hare and JFK International Airport in New York. Further details regarding locations of equipment and the timetable for deployments will not be discussed in public, for obvious reasons. The intention is to complete this round of deployment by mid-1998, at which time the FAA hopes to have sufficient funding from Congress to proceed to a second phase of equipment installation.

Current and past research programs are now bearing fruit as well. In addition to the currently unique explosives detection system, and as I mentioned earlier, L3 Communications and Vivid Technologies could provide competing commercial systems for certification within a few months. These hold the promise of being faster than the current system, possibly with lower false alarm rates. Also, InVision itself has significantly improved the speed of its system and is working on a faster version for introduction within a year or so.

The category of advanced bulk detection equipment (other than the certified explosives detection systems) includes dual energy x-ray devices.
that cannot meet FAA certification standards but are nevertheless far more capable than conventional x-ray equipment. These will be used for screening luggage too large for explosives detection system devices and also to study the effects of faster equipment on passenger and baggage flow. Further, some nuclear quadruple resonance units will be purchased.

There are several different types of trace detection devices that will be purchased and deployed, based on chemiluminescence and on ion mobility spectrometry technologies. I would again emphasize that an interesting aspect of this deployment, within the American perspective, is that the Government is paying for the equipment itself (albeit from the Aviation Trust Fund) instead of requiring the air carriers to do so. With the exception of the purchase of some much less costly metal detection equipment some 25 years ago in response to a spate of aircraft hijackings, the U.S. Government has strongly resisted any effort to pay for security measures from Federal funds until now. The responsibility for aviation security in the United States has remained with the carriers and in fact still does. Security costs, like all other costs, are normally expected to be borne by the carrier and passed on to the flying customer.

There are some 600 million emplanements per year in the United States, of which only 10 percent are on international flights. Given that volume, it will be years before it will be practical for all checked baggage to be subjected to screening by explosives detection systems, due to the limited number of units available and their relatively slow speed. The best current certified explosives detection system is able to screen only 320 bags per hour, assuming no alarms. When alarm resolution is taken into account, the global baggage screening rate will be further reduced, to about 200 bags per hour. Further, there is the issue of bag intervention, a time-consuming process in which a passenger is brought to his or her bag to open it when an alarm cannot be resolved by external inspection. The rate of such bag openings may be higher elsewhere than in the United States, judging from past experience. This provides a further difficulty to the task of screening every bag.

Foreseeable improvements to the speed of explosives detection system equipment may eventually double the net bag flow rate. But even if one decides to screen only high-profile flights, such as international overwater and major transcontinental ones, there still will not be sufficient explosives detection devices to screen everyone's baggage, systemwide, for a number of years. Current thinking is, therefore, to extend the capability of explosives detection screening by selecting only a small fraction of passengers for expanded security measures.
For several years, the FAA, in cooperation with Northwest Airlines, has been developing a computer-assisted passenger screening (CAPS) system, which permits the airline's computer reservation system to use information in the passenger name record to exclude the great majority of passengers from further security measures. The FAA arrived at the criteria and algorithms used to perform this function through consultations with a large number of security and terrorism experts, who gave their assessments of the likely patterns of behavior of individuals intending to attack civil aviation, as reflected in their passenger name records. I would emphasize that these criteria do not involve at all the ethnic, gender, or religious characteristics of passengers. In the United States, we would not use such information in passenger screening. Such actions by the Government or the air carriers would be unlawfully discriminatory.

The Department of Justice was given the task of independently vetting the criteria and procedures that the FAA directs air carriers to use in screening passengers. The Department's review, conducted by its Civil Rights Division with assistance from the FBI and the Department's Criminal Division, covered both the manual security screening process (in use before the introduction of the automated system) and the CAPS system. The review found that neither procedure unlawfully discriminates against passengers based on their race, ethnicity, national origin, or religion. The Department of Justice did recommend certain follow-up actions that could be taken to ensure that the civil rights of the flying public are maintained in an air transportation environment secure from terrorist threats. The Department of Transportation and the FAA have acted on all the recommendations.

In September 1996, a follow-on grant was awarded to Northwest to refine the CAPS program to achieve operational capability and to assist in adapting CAPS to other airlines' reservation systems. Northwest met with other air carriers in the fall, conducted preliminary system tests during the winter, and progressed to operational tests on selected flights in its system in April 1997. Northwest has completed the process of phasing in CAPS throughout its domestic system, with over 150 stations online today.

Seven major air carriers, covering all major airline reservation systems, began work in earnest on developing their CAPS systems in 1997. Several major carriers have begun field-testing CAPS in 1998. The FAA is helping to fund these efforts through cooperative agreements that will disburse to the carriers funding appropriated by Congress for CAPS.
It is anticipated that all major carriers will have phased in CAPS voluntarily before a new Federal regulation mandates its use as the method of determining which passengers’ bags must be subjected to additional security measures such as bag matching or screening with explosives-detection devices.

MEASURES TO HARDEN AIRCRAFT AND BAGGAGE CONTAINERS

Another approach to aviation security is to try to strengthen aircraft frames and to plan redundancies in vital systems; for example, controls, electrical systems, and hydraulics, to mitigate the effects of bomb blasts in flight. A further alternative is to use hardened baggage containers that can control the effects of bomb blasts in checked baggage.

The former path is difficult to accomplish by retrofitting. It is easier and more practical to incorporate such design measures in aircraft from the beginning. The FAA has engaged in extensive studies with military experts and airframe manufacturers to learn how aircraft fail due to explosions in flight and to discover measures to increase chances of aircraft survival. Explosives tests have been carried out to check calculations, both in the United States and in the United Kingdom. The best known of these efforts was the explosives testing on a Boeing 747 in Bruntingthorpe, in England in May, 1997. Several simultaneous experiments were run with four independent bombs. The experiments tested the effects of various protective measures to different parts of the interior cargo hold of the aircraft and also tested a model of a hardened baggage container.

The aircraft hardening experiments in this case were run by experts from the United Kingdom, not the United States, and I therefore will not comment extensively on them other than to say that they appear to indicate some promise for the future, in which the application of material of relatively small weight may contribute significantly to the resistance of aircraft to bombs at certain locations in their cargo holds.

Regarding hardened baggage containers, the FAA has focused until now on ULD-3 versions, suitable for wide body aircraft. However, we are currently also engaged in designing containers that are substantially smaller and could fit on narrow-body aircraft. In 1994, a hardened ULD-3 container developed by JAYCOR was tested successfully, using bombs that were comparable in size to those used in past terrorist events. This container was not a great deal heavier than many currently used aluminum ULD-3’s. Further development was needed, however, to incorporate doors into the container that would make its use by air carriers operationally feasible. The FAA then contracted with several other vendors to provide models for testing. This testing produced mixed results.
until Bruntingthorpe, when another JAYCOR container with a useable door successfully contained one of the bombs detonated in this test. The FAA has contracted with JAYCOR and with Galaxy Corporation to produce further containers for explosives testing. We expect delivery of the containers this month. Upon successful conclusion of the tests, the FAA anticipates ordering some 20 to 40 units for operational testing of these containers. This effort is being carried out in close cooperation with several U.S. air carriers.

The future success of hardened containers could radically change the detection capability requirements for explosives detection equipment for checked baggage screening. Of course, for any given container, a large enough bomb can be constructed to overcome it. However, a larger bomb is more susceptible to detection, and increasing the mass of explosives that need to be detected would relax the requirements on the detection equipment. If it is possible, eventually, to protect against a bomb of substantially greater mass than is now needed to destroy an aircraft in flight, this approach could conceivably lead to smaller, cheaper, and faster bomb detection equipment.

**IDENTICAL MEASURES**

The final topic I wish to discuss is the coming requirement to apply the same security measures to U.S. carriers that are applied to other carriers for flights coming directly into the United States from certain overseas airports. This matter is controversial, especially to partners in whose territories heightened security measures are now applied to U.S. carriers.

Congress passed the Antiterrorism Act of 1996 nearly two years ago. An amendment to that act requires that the FAA assure that the same security measures (not merely similar ones, as heretofore had been the case) used by U.S. carriers on routes into or from the United States will be implemented by non-U.S. air carriers on those routes. The controversy is generated by the argument that many of those carriers are not considered to be targeted by terrorists (at least not targeted to the same degree, as determined by intelligence assessments) and therefore should not have to apply the same level of costly security measures demanded of those that are. Because of its international status as a major world power, the United States and, by extension, U.S. air carriers, are more likely targets of international terrorists. Of course, the United States could assure that security measures are identical simply by reducing its own to the levels used by other air carriers on the same routes. Given the perceived levels of threat and the political imperative in the United States not to decrease security measures, as I mentioned earlier, this is not a viable option. Nor would it be particularly wise.
The FAA is engaged in a rulemaking process and expects that a notice of proposed rulemaking (NPRM) on this topic will be published in the near future. All parties and, indeed, the public will then have a period of at least 60 days (the minimum established by executive order) to review the NPRM and submit comments to a docket. If there are compelling circumstances, the period for comment can be extended.

The comments will then be analyzed. Further review, economic evaluation, and possible redrafting will follow. A summary of the comments, the FAA's evaluation of them, and an economic evaluation will be included with the final rule, which then will be published in the Federal Register. The effective date of the regulation will be at least a month from publication, and the FAA will implement the final rule by amendment of the foreign air carrier security programs.

We intend to develop the specific security program amendments in a process that parallels the public rulemaking. That process will involve a revalidation of the measures required, with special attention paid to the more complex measures, such as profiling, which would present considerable practical difficulties if identical performance were literally mandated. We hope to carry out the revalidation in consultation with the aviation security authorities of the affected nations, and we will be guided by the statement in the conference report of the legislation that it is not the act's intent to reduce security levels that are characterized by the measures currently required of U.S. air carriers.

Summary Remarks

The new emphasis on aviation security in the United States is resulting in many changes in procedures and equipment in the domestic aviation security arena and will have major ramifications on international flights to and from the United States as well. Symposia such as this one are essential for communicating current plans and intentions, and stimulating a public discussion among experts, so that we may enjoy a smooth transition to a security regime that will be more effective and, we hope, will represent no increase in the burdens of air travel.
Rising Risk? Rising Safety?
The Millennium and Air Travel*

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* The views and opinions expressed are solely those of the authors. These views and
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Currently flying as Captain on the 767-600 for United Airlines, Captain Smith’s recent as­
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the MEC Training Committee.

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INTRODUCTION

"The level of safety in commercial airline operations you [the American flying public] have come to depend on no longer exists. It has diminished significantly."¹

The safety of air travel and its challenges has been with us since the first passenger flight. This paper first looks at safety as others have done in the past, but then with a different perspective. While safety is a worthy goal, the term is surprisingly of little operational value. A new set of related concepts will be introduced. With these concepts, we will attempt to get our hands around this elusive subject, focussing on the mission and its risks. All air transport missions have some measure of risk. How well we collectively deal with risk, from the individual pilot to the controlling government agency will, in large part, determine our fate as we approach, then enter, the next millennium.

Today, we are besieged with conflicting data, claims, interpretations and projections on the current and future safety of air travel. Free Flight; new and better automation for the nation’s Air Traffic Control system; a projection of one hull loss worldwide every 7 to 10 days in less than 5 years; enhanced and increased cockpit automation—to the point of pilots flying “hands off” from takeoff to landing; differential GPS; human factors: these are either the problems or the solutions, depending on the authors and organizations to which they may belong. These data and claims and projections come from airplane manufacturing and training companies such as Boeing, the Federal Aviation Administration (FAA),

from pundits within and without the aviation world, from just about every point of the compass and every possible source. The commonality? All have a definitive point of view; all are very sure that they are correct; all are somewhat exhortatory and, all are very hard to reconcile—any one with any another. Can there be a view that combines the "best," throws out the rest and, can be of use to Aviation, at large? For better or worse, and with the clear caveat this task may well be not really possible to complete within a lifetime, much less in a short paper, we will follow the Rocky Balboa dictum and “go for it!”

We will pull from a variety of sources, ranging from Scott Adams, to Ralph Nader, to Mary Schiavo and even to the aforementioned Rocky Balboa. Some of what appears in this paper has been said by others, often said far better than we can. However, much of what already has been said is also scattered across books, reports by Government agencies, reports by research firms, Op-ed pieces and the like. We will try to bring these seemingly disparate data together in one place and show what seem to be some patterns across the years. Still, we cannot, in 25 pages or so, go into all the many issues that others have taken 200 to 300 plus pages to lay out.

Yet, some of what is said in this paper has not, to our knowledge, been said before. In particular, an open exposition of what a senior airline captain sees from his cockpit as he “flies the line” every month plus the linkage of the concepts of rising risk, the mission impact area and the risk management necessary for mission completion.

RISING RISK

The initial formulation of rising risk was developed in the early 1990’s by Captain Kevin Smith. At this point, rising risk was seen and used as a planning and development tool for Line-Oriented Flight Training (LOFT) scenarios. A LOFT scenario is an aircrew training session done in a flight simulator. In a LOFT, the flightcrew “flies” a typical leg, from point A to point B. During the scenario, the rising risk concept is used to introduce a set of minor problems that are programmed to arise in completing the leg. These problems require good crew awareness, coordination and decisions in order not to place the flight into abnormal or emergency conditions. The rising risk refers to the fact that, if the problems went unnoticed and/or the decisions were not accurate, timely and appropriate, the risk to the successful completion of the flight—and,

to the plane—rose, and could rise to the point where the flight (simulator) might actually "crash".

Upon receiving the invitation to write for this issue of the Transportation Law Journal, we immediately realized that an analogy existed between the rising risk in a LOFT scenario and the rising risk that we, in general, see in airline travel. There were also major differences: (a) In a LOFT, there is no danger to the flightcrew—since it is done in a flight simulator—and there also are no passengers in danger. This is not true for airline travel since pilots fly their mission ("leg") in real planes, with real passengers and, (b) The rising risk in a LOFT is a planned training tool. In today's skies, the rising risk is certainly not planned. Even more to the point, the air travel rising risk seems either unnoticed, ignored or denied, both publicly and internally, at various organizations.

**WHAT ARE THE RISING RISKS?**

We begin this section with a short synopsis of knowledge that is available to the public and well known inside aviation: There is an aging fleet of commercial airliners out there. Since deregulation, there are about 250 regional carriers in the air in any given year. However, only 3 or 4 of these are those that came into being during the first year or so after deregulation. Some of the others are carriers that come and go. There are major and regional carriers in, just out of, or going into severe financial straits—to include Chapter 11. All of these constitute real risk factors.

The July and October 1997 issues of [FAA] Administrator's Fact Book paint a clear picture of the increase in (major carrier) commercial air traffic. Looking at 1996 versus 1995 (the data for '97 is incomplete at this writing), we see that there are 5,800 planes in service at domestic carriers, up 8% from the previous year. There are also 12,797 planes flown by commuter air carriers and air taxi services—a total of 16,597 planes in revenue service. The total number of aircraft miles flown has gone up almost 10% in the past 2 years and is at 569.6 billion revenue miles. More planes in the air, more often. The major carrier accident rate went up 4% from 1995 to 1996 and went up 10% from 1994 to 1996. The actual number of major carrier accidents is up 8%. Of special concern is a category called NMAC—Near Mid-air Collisions. There were 196 NMAC's in 1996 and the preliminary 1997 data shows 166 through August, 1997; this projects to 221 for all of 1997. Any of these NMAC's holds the potential for a loss of 2 airliners and all "souls on board."

The above synopsis shows this: More planes - more flights - more miles flown. Even at the same accident rate, this projects to more acci-

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dents and more NMACs, with their deadly potential. Please note that we refer to the potential for increased number of accidents. That is because the accident rate can stay the same, or even decrease but, since there will be more air traffic, the numbers of accidents and fatalities per year still can rise.

Of great importance to this line of thought is what we will term the accident rate plateau. Over the past 25 or so years, the civil aviation accident rate has, with minor peaks and valleys, been almost flat—a plateau. And, this accident rate is very low. Why then do we say this is of importance? Simply put, because of two things: (1) the percentage of accidents due to mechanical and structural malfunctions has plummeted dramatically, beginning in the 1970's. The reliability of engines, airframes and their components became and remains high; the portion of accidents directly attributable to them became, and remains, low. (2) But, even with this great decrease over the past 25 plus years in what were once major causal factors in accidents, the accident rate has stayed fairly constant over this time span.

This chilling fact emerges: Over the past 25 years, with mechanical reliability almost becoming a given, the aviation community turned a large bulk of its attention to reducing the other causal factors in accidents. In spite of a host of efforts and a lot of money spent (for example, in performance and training, both flightcrew and maintenance), there has been little result. The accident rate stays the same. It has not been driven down. If the accident rate stays the same, then increased air traffic will result in more accidents—it is a simple numbers crunch and projection.

For a time, let us shift gears and go to a more micro level. Airline captains “fly the line” monthly. They confront the rising risk problems as a part of their job. What follows is what a senior Captain, at the largest air carrier in the US, sees from his cockpit.

**A View From the Cockpit**

As I crisscross North America in my large, twin engine, high technology airplane, I am struck by the painfully slow progress we have made since the introduction of these “more capable” aircraft. This, coupled with some major misconceptions, has brought us to the door of the twenty-first century largely ill-prepared for its challenges.

First: The navigation technology embedded in my airplane is being under-utilized by the present air traffic control system. With very little effort, I can save literally thousands of pounds of fuel per month, but because of the inflexibility of the ATC system, I cannot.

Second: While much of technology is good, more is not better. As Captain Cecil Ewell of American Airlines, 1980, points out; pilots need to
“get over” automation dependency and get back into the proficiency of hands-on flying again. This should be a wake-up call for both training organizations and cockpit/cockpit display designers. Here, I observe an interesting paradox: Simultaneously with the large scale usage of high technology airplanes comes the realization that we may indeed need to fly at the edge of the aircraft’s performance envelope (windshear, upset recovery), thus demanding a high degree of basic, hands-on piloting skills. We will return to the degrading, or non-currency of certain piloting skills later.

Lastly, our ability to support the airline captain in the recognition and management of risk has advanced somewhat, but is still sub-optimal. Risk management is critical to the retention of the flying public customer base and the long-term viability of the industry. This we have discussed in some detail. When risk rises on the risk continuum, effective risk reduction strategies need to be employed to keep risk within manageable limits. Our system of certifying pilots and aircraft, airlines and training organizations is not predicated on the employment of risk management skills; neither is it supportive of organizations that desire to do this. Windshear recovery training is a case in point. For many years, my airline has been training pilots in windshear recovery techniques (risk reduction strategies), so that when encountered in actual line operations, successful recovery can be assured. Simultaneously with this, the FAA has begun to install windshear advisory systems at certain airports. Here we begin to see a system that can actually work together to reduce risk, although it took a number of accidents to get this far. But, it has not gone far enough. The airlines that conduct this training receive no credit for doing so and pilots receive no special certification. We can thus see the built-in bias against risk management because incentives are not there and the likelihood of further innovations is diminished. Clearly organizations that work at risk management are, ultimately, working in the public interest. That this should be encouraged is self-evident, but it also seems that we (aviation) have not yet arrived at this point.

All that we have presented above are grounds for the existence of a rising risk for an increased number of accidents and fatalities. The risk is driven by the constant increase in the volume of commercial air traffic (more planes aloft; aloft more often—and, in the same air space); by the decreases in the lateral and vertical separation standards between commercial airliners; by the loss of highly qualified commercial pilots due to an age restriction which is moot; by the loss to the air carriers of the formerly large pool of highly trained and experienced military pilots. Although new data say that, at least in the USAF, more pilots are leaving to go to air lines, the number of pilots produced by the military, i.e., the pool available to air carriers, is going down as the military, collectively, is
producing smaller numbers of pilots each year. Finally, there is the lack of both developing and implementing needed risk management strategies.

Some of the above aspects of the rising risk are difficult to come to grips. We will look at how this rising risk is fueled by other factors, which, hopefully, be dealt with. We will also outline both a new view of “safety” and a new set of related concepts on which we can attempt to build future air safety.

RISING RISK FACTORS, AS SEEN BY OTHERS

We certainly are not the first to publicly call out what seem to be risk factors to safe skies. The authors of the quotes that follow bring an impressive set of credentials: Mr. Nader is so well known that we need not introduce him nor give his bona fides. Ms. Schiavo is a lawyer who was, for 6 years, the Inspector General (IG) of the Department of Transportation (DOT) of which the FAA is a part; and is now a professor at a major State University, teaching about ethics in government. Mr. Nance is a lawyer, a former airline captain and former USAF (reserve) colonel. All have produced texts that document many problems and suggest solutions. To date, their recommendations generally have been ignored or attacked by an entrenched bureaucracy.

What follows also contains quotes from GAO (Government Accounting Office—a “watchdog” agency of other governmental agencies, from a Congressman on the House Appropriations Committee and from research companies. What we will cite spans findings over the past 11 years. All essentially say the same thing. One object lesson that can be drawn is this: The truth seems to be known, but nothing seems to have changed.

#1 THE INTERNAL CULTURE OF THE FAA

The first risk factor is an on-going FAA internal culture that “does not recognize or serve any other client but itself.” A culture which makes it impossible for the FAA to, “learn and actually change” because the FAA is described as being, “in a time warp which reproduces itself every year the same as the previous year”; “The FAA goes on in a loop, never able to learn from it past mistakes”.5 This is even more strongly put by a House Appropriations Committee Issue Paper and “report language” to the Transportation Appropriations Bill; 1997, that says the FAA has, “an agency culture which is resistant to change, defensive and turf-conscious . . .”; an organizational culture which is “. . . secretive rather than open; self-interested rather than public spirited and highly resistant to change

...”; “when poor decisions are made, attempts are often made to cover up the problems or ignore them.”

A General Accounting Office Report of 1996 said that the FAA has an internal culture characterized by dysfunctional management where managers “emphasized self-interest over agency mission . . .”; “established unrealistic cost and estimate schedules in order to sell programs . . .” and “did not cooperate with other FAA employees.” Scott Adams has said, as a corollary to his Dilbert Principle, “We [bureaucracies] systematically identify and promote the people who have the least skills.”

In more blunt terms, the former IG of DOT, Mary Schiavo said that “Within the closed culture of the FAA, fear and intimidation dominated a top-down management style that expected workers to play along to get along. Change was not wanted, challenges were not welcome and workers who exhibited either trait were quickly broken down.” She characterizes the FAA as an agency of crisis management, who sees “no reason to change its bureaucratic culture” and whose “goal was to control what news gets out and how the public reacted.” As Dilbert’s alter ego would note, “A good way . . . to cling to power in an organization is by creating a monopoly on information.” Then, withhold it!

Ralph Nader, in his text on aviation safety, included a chapter entitled “They [FAA] Have Those Mismanagement Blues.” Mr. Nader makes too many telling points to even provide a listing here but, two of his basic points are that the FAA management is weak and inadequate and the FAA culture is a self-perpetuating bureaucratic morass of inaction and self-protection. The second risk factor is that the actual margin of safety comes, not from the FAA, but from air carriers and the aviation industry.

#2 THE SAFETY MARGIN

The margin of safety, which seems to be endangered by a rising risk, exists mainly on the air carrier side. This is because of “minimums”; because of profit and loss; because of the FAA’s funding problems and internal structure/function.

The CFR 14 FAR’s, (the part of the Code of Federal Regulations that contain the Federal Aviation Regulations; the FAR’s under which all U.S. pilots, planes, air carriers repair stations, etc. are certified, licensed and operate), set minimum standards for flight operations, for flight crew, for maintenance. It is, and has been for years, a well-known fact that the

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Many, if not all, of the middle and higher level executives in an air carrier major carriers (almost) always exceed the FAR minimums—because they are only minimums. Carriers have a commitment to safety based on enlightened self-interest (profit and loss) and a reluctance on the part of flightcrew and mechanics to put their passengers and themselves at risk. Many, if not all, of the middle and higher level executives in an air carrier were pilots, so this safety culture usually permeates carriers. But, not always, and not every carrier.

Profit and loss cuts two ways in airline safety. The first way is the enlightened self-interest mode: air carriers know that a wide-body hull loss costs them about one billion dollars in litigation, lost revenue and the lost crew and airplane. Not all of this, by far, is recoverable from insurance, most especially, the lost revenue due to publicity about the crash. So, carriers stress safety for this reason. The cut in the other direction, where safety mat not be foremost and can be compromised, again occurs from profit and loss. As we know, some major carriers have gone under after de-regulation; Pan Am and Eastern come to mind. Other carriers have been in and out of Chapter 11. There are, every year, start-up airlines whose viability depends on passenger revenue—often generated by cut-rate fares.

When any air carrier is in financial trouble, or wants to maximize that bottom line, there are only a few ways open to cut costs: Reduce the "quality" and training of both flightcrew and mechanics, reduce the "quality" of the maintenance and outsource all you can. These cost-cutting modes are open all carriers, both major and "low-fare/cut-rate." Consider the former Eastern Airline maintenance ("pencil-whipping") incidents of the mid-80's and ValuJet as some examples of what has been done to save a dollar. When carriers need to save money, they may try to operate at or below minimums. Result? The safety margin evaporates and is replaced by a rising risk.

If a carrier operates at the (bare) minimums, they are "legal" so, nothing can be done by the FAA. If there is the suspicion that a carrier is under minimums, the FAA is, sadly, under funded, understaffed and now, quite possibly not as qualified and experienced as necessary to deal with the number of carriers and problems out there. There are over 250 regional carriers and approximately 10 major carriers. There are tens of thousands of aircraft and flightcrew and mechanics. The FAA is neither funded nor staffed at a level to deal, hands-on, with these numbers.

Are all or any of these new problems? Listen to John Nance, former airline captain. More than 11 years ago, he wrote that "Over the years, what the agency [FAA] regarded as beyond its control, it tended to ignore. What was politically troublesome or costly to the airline industry, it
tended to set aside or study to infinity.”9

We have just seen a remarkably integrated and similar set of observations come from a remarkably diverse set of organizations and persons. The situation is exacerbated by the unstable FAA budget—in particular, the erratic, less than requested and falling FAA R&D budget and by the instability created by “personnel reform.” The FAA’s current, major effort in “personnel reform” may increase the rate of loss in technical competency as it goes forward and, social engineering policies continue to replace competence, qualifications and expertise as guidelines for hiring, promoting or letting go of personnel. In the past, it was true that, if the FAA was able to, and did, achieve advances in the level of aviation safety. Now, it seems that the FAA may be losing—or, have already lost—a significant aspect of this ability.10

RISING SAFETY

Over the past 10 to 15 years, there have been enormous technological advances focused on increasing aviation safety. These advances include GPWS (Ground Proximity Warning Systems), E (enhanced) GPWS and now, advanced GPWS, TCAS II (Traffic Alert and Collision Avoidance System, Version II), GPS and D-GPS (Global Positioning System, Differential-Global Positioning System), Doppler Radar Systems to identify avoid dangerous wind shears on landing/takeoff; cockpit automation and displays of many types which positively impact navigation, flight control, flight planning and more.

Hence, there are many new technologies out there that effectively increase safety, thereby lower the rising risks associated with modern aviation. The practicality of the use of these technologies depends on whether or not these safety features can be approved and implemented in a reasonable time frame and whether or not the safety concern outweigh the economic burdens imposed by them.

A rising concern among pilots and human performance experts that the increased level cockpit automation may create a generation of pilots whose basic flying skills (“stick and rudder”) will deteriorate from lack of practice. A fact that reinforces this concern is that, from “1991-1995, the leading cause of air carrier accidents as loss of control of the aircraft and controlled flight into terrain (CFIT). These types of accidents account for 85% of large hull losses worldwide, but 70% could have been averted had

10. Before going further, we would be remiss if we did not state that, within the FAA, there are still a large number of both skilled and dedicated people. The FAA needs to both maintain and (re-) build on this core. We will return to this later.
the pilots known how to respond to the situation.”11 If manual skills ever become needed because of automation failure/degradation, or unusual plane attitudes and conditions that automation cannot handle, the pilot may not be up to it the challenge. Manual piloting skills may have degraded due to the (over-) use of automated flight systems in lieu of hand flying and/or because of the lack of training and practice on certain maneuvers and skills.

This problem has been exhaustively studied (the bureaucratic “ paralysis by analysis” mode). No changes such as mandating that pilots have these skills via new training, has yet occurred. Such changes were anticipated to be challenged by carriers as having an “adverse economic impact”. No changes were made until 1997, when some carriers decided that the need for pilots to have certain specialized hands-on flying skills was paramount. To date, at least 2 of the “Big Seven” air carriers have developed such a program. Thus recently there has been “an industry call for more leadership plus fresh initiatives by the FAA and NTSB.” The responses? The FAA said that “each airline should take the initiative to ‘institutionalize’ its own specialized training.” The NTSB said that about one-third of its investigators have attended such training program. These hardly seem to be a response that embodies increased leadership and new initiatives. We now shift gears. Rather than continue to detail roadblocks, we will now look at what can be done to enhance safety on the operational level.

A New View of Safety

As a vehicle of public transportation, the civilian air transportation industry needs to not only to function safely, but enjoy the confidence and admiration of the traveling public. The commonly used term “safe” is surprisingly of little operational value. As opposed to those who subscribe to the “more is better” theory that more safety is, in fact, not better. Taking this theory to the extreme, an organization would never fly or fly very little content to keep planes on the ground and thereby be completely “safe.” Clearly, this is ridiculous. In late 1997, the military shutdown a significant portion of their flying in response to a spate of accidents and close calls, such as an F-117 falling apart at an air show and two F-16’s colliding off of the Jersey coast. However, while civil aviation wants to be safe, they must also fly, passengers and generate revenue. So with this in mind, we need to look for a more operationally useful term than “safe”.

MISSION COMPLETION AND RISK MANAGEMENT

To avoid ambiguity inherent in the term “safety,” we propose the term “mission completion and risk management”. This term is more operationally useful. Here, the goal is to complete the mission of flying the public, because of its economic benefits, but do so in a way that does not place people or equipment at undue risk. Consequently, risk management becomes a key operational activity that works hand in glove with mission execution skills.

Central to safety is the concept of the pilot as risk manager.12 By risk, we mean specific risk or danger to the aircraft, passengers and crew, and the corporation. High risk is defined as the likelihood or high probability of injury, damage or death. Moderate risk, if left unchecked, could continue to rise and/or likely result in significant flight trajectory deviations. Low risk, finally, is a normal situation where routine, normal procedures are sufficient.

The operational application of these ideas can be seen by using the risk continuum depicted below. (Fig. 1)

### Mission Impact Areas

- **Delay of the Operation**
  - Hold Over
  - Holding
  - Windshear
  - Wake Turbulence
- **Adverse Weather**
  - Slippery
  - Clutter
  - Contamination
  - Icing Aloft
  - Convective Activity
  - Freezing Precipitation
  - (Volcanic Ash)
- **Adverse Wind**
  - Windshear
  - Crosswind/Tailwind/Braking Action
  - Turbulence
  - High Winds Aloft
- **Performance Limited Operations**
  - Clutter
  - Takeoff Data
  - Cruise Data
  - Landing
  - MEL

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• Approach Operations
  - Non-Precision
  - Precision
  - Low Visibility
  - VFR
  - Approach in Adverse Conditions
  - Raw Data
  - Non-Precision Hand Flown

• Landing Maneuver
  - From Non-Precision
  - No G/S
  - Crosswind
  - Abnormal Flaps
  - Engine Out (50%)

• Departure Operations
  - RW Change

• Single Engine Operations
  - Take Off Alternate Selection
  - "t" Procedure
  - V-1 Cut
  - V-2 Cut
  - Divert from Cruise (ETOPS)
  - SE Hand Flown Precision
  - SE Auto Pilot Flown Precision
  - SE Non-Precision Approach
  - SE Landing Maneuver
  - SE Missed Approach
  - Engine Fail on Missed
  - Engine Fail' on Final
  - SE Visual

• Divert/Reject/Abandon
  - RTO
  - Rejected Landing
  - Missed Approach (Auto Manual)
  - Emergency Descent
  - Divert Take Off Alternate
  - Divert to Destination Alternate

• Emergency/High Risk
  - Controllability (Upset)
  - Windshear
  - Fire (Engine, Cargo, Cabin)
  - Bomb Threat
  - Sick PAX
  - Decompression
  - Evacuation
  - Ditching
  - Partial Gear
  - Dual Engine Flameout
  - Traffic Conflict--TCAS
  - Runway Incursion
  - Terrain
As the risk rises on the risk continuum, the captain, working with dispatch and other crew members, either (1) continues with the mission as originally planned for low risk situations; (2) modifies the mission plans as needed in moderate risk situations; or (3) abandons the mission altogether for high risk situations.

THE MISSION

We previously discussed the pilot as risk manager and what is needed when the risk rises on the risk continuum. But this left unanswered what actually causes a rising risk profile. The answer can be found in defining and understanding the key mission impact areas. A mission impact area, if encountered, will likely cause the risk to rise and will demand certain actions be taken. These mission impact areas are presented in Table 1.

TABLE 1: MISSION IMPACT AREAS

<table>
<thead>
<tr>
<th>Risk Continuum</th>
<th>abandon mission</th>
<th>modify mission plan</th>
<th>continue as planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>low</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>moderate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Notice, first, that the mission is relatively complex. This has in itself caused many to avoid this level of specificity. But, our position here is that one cannot and must not succumb to this if we truly want a viable air transportation system for the next millennium.

Critical to mission success is the ability of flightcrews to operate in adverse conditions while, simultaneously, executing the mission plan and managing risk. The need to have this ability to operate under adverse
conditions and thus provide reliable transportation is self-evident. What is not so obvious, however is the need to “manage” a rising risk profile. The risk will rise under virtually all adverse conditions. This risk management activity demands that the crew execute in a timely fashion specific risk mitigation procedures to prevent “risk migration to the right”.

WHAT NOW?

Our primary sources all have published books, each of which contains recommendations for changes which the authors believed would truly ensure the safety of the flying public. We thank such people as Nance for blazing a trail Sad to say, none of their recommendations have been truly implemented. While we hope that our recommendations, and those of the others cited, will be implemented, we are less than sanguine.

SQUARE ONE: THE MICRO AND THE MACRO

Our premise is that unless one understands the micro, one cannot deal effectively at the macro. More specifically, if one does not understand the air transport mission, then how can one generate policies and programs that support, benefit and render viable the air carrier certificate holder thereby providing effective and efficient public air transportation.

This micro to macro understanding must be the bedrock and starting point—at air carriers, at the FAA, in Congress. The carriers, FAA, legislators must come together with a cadre of air transport and mission analysis experts (some from within these self-same organizations). This cadre should run the gamut from pilots who fly the line to the persons who study the pilots to those who study the cultures of the cockpit, the carriers and the FAA.

This cannot be done by a ballyhooed conference where 900 persons descend on Washington, D.C. for a few days. Rather, small groups, each from a geographical region covering 3 to 6 States, would meet for in a week-long Workshop, then send one or 2 persons to the next (larger area and level) Workshop—where 2 to 5 of the geographical regions would be combined and represented. Finally, one meeting of 20 to 25 persons from the combined regional meetings would come together. This can be done in 6 months to 8 months.

This is how, and where, valid mission statements and valid goals and measurable objectives can be developed. This is how and where the plans and agreements necessary to give commercial aviation rising safety can become a reality.
Along with fully developing the mission risk-mission risk management-mission success concepts—and, the ways to make them into operational reality, some thought must be given to the bureaucratic and bureaucratic culture issues.

1. Make the aviation safety function of the FAA part of a tripartite group with the DOD Safety Centers and NASA. This new group would report to, and be truly accountable to (To whom? This is a good question! We have no real answer here. We do not believe that any accountability, in today's world, exists in a political, or politicized, body).

2. Re-vamp the FAA by:
   
a) Commissioning an immediate assessment of the FAA's internal and external environment—current and (projected) future. This is sometimes referred to as a "gap analysis" and is done when goals, personnel and functioning require clarification and change. Of course, this assessment must not be done by the FAA itself. And, whomever does it must be free from former FAA personnel and current FAA connections.
   
b) Moving FAA HQ as far from the Washington, D.C. miasma as possible. In this way, inroads can be made in relieving the FAA from the political pressures of Congress and special interest groups; most of which are in DC. This external de-politicization of the FAA also would involve removing it from DOT.
   
c) Cutting the size of FAA HQ by 50 to 75%—and, thus decentralizing the FAA. There are 10 FAA regional offices in the USA and Alaska. Each of these replicates the HQ structure; enough said.13

3. Fund this "new" FAA at a level where it actually can do its job. Truly adequate funding should be easier with the FAA out of DOT and not annually fighting several other DOT agencies for a part of the DOT "pot of money".

4. Ensure the FAA has the capability to do its work in-house by:
   
a) Rebuilding the technical knowledge and skill base of the FAA. We already said that there exists a diminishing but competent and dedicated core of personnel within the FAA who can be the bedrock for this. To rebuild, keep the truly technically competent personnel left in the FAA and bring in new, qualified ones—posthaste.
   
b) Adequately funding R&D to a level that both enables the FAA to be a proactive leader in aviation and provides quality data on which to base guidance, policy and regulations. However, the FAA's R&D funding usually has been insufficient, meager and, in general, has been steadily reduced over the past 10 years.
   
c) Mandating that the FAA actually does its own R&D (and other safety-related aspects of its mission) in-house rather than farm it out to the same

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13. Remember that FAA management is very good at identifying those who they want to become their replacements; those who can be counted on to keep it "business as usual." In this way, The FAA culture is re-created ceaselessly and resists all efforts at real change.
contractors and companies that have become an unofficially “official” part of the FAA. All too many of these companies and contractors are replete with former FAA personnel leading to potential problems as to “insider” status and connections within the FAA.

5) Do not forget Square One

WHAT IS NOT NEEDED

What aviation safety does not need is yet another Blue Ribbon panel composed of the “connected,” the politically correct, those who can be counted on to espouse the party line. We have had a plethora of such panels over the years. Anyone care to hazard a guess at the real effect they have?

Neither does aviation need new slogans such as Zero Accidents. To hold up zero accidents as a goal (a laudable one, to be sure) or to say that we will reduce the accident rate by 80% in ten years—when we have spent over 20 years working on the same safety issues, without success, which we propose to now work again—these confuse rhetoric with reality. And, rather than trumpeting the goals as if they were already achieved, them, the FAA, the aviation industry and Congress should be providing an infra-structure, money, cooperative agreements and projects in an effort to attain the goals. Rather one seems to see a belief that problems can be solved by rhetoric alone.

CONCLUSION

We are at a volatile point in terms of safe skies in the millennium. There are forces and factors which seem to have placed the flying public on a flight path of rising risk. There are technological and training developments that hold the possibility of a course correction from rising risk to a route of rising safety. However, this will not happen unless, and until, the negative forces and factors are recognized and counteracted. Even this, difficult as it is, will not be enough.

What is also needed is a set of positive actions; actions whereby the aviation industry, the regulatory agencies, DOD and academia truly work together to develop and implement risk management tools. Such development must include the procedures, initial/recurrent training and recurrent “practice” that encompass operation decision-making, risk recognition techniques and risk management.

POSTSCRIPT

At the risk of seeming defensive or gun-shy, David Gelenter, Ph.D and Yale professor who was maimed by the Unabomber, has said that, “we’ve become a culture of propaganda, and a culture of lying, and a
culture of official statements which even the officials don't believe. An official culture in which statements are made... which everyone knows are lies. And, nobody's allowed to discuss them as lies. Since we have questioned and critiqued the party line, the designated “hit men” and “attack dogs” in our organizations will produce a set of criticisms that should be familiar to all who work in, or study, bureaucracies. These public attacks will be on our professional credentials and acumen. There may well be personal attacks and punitive actions. Any attacks stem from the bureaucratic dictum that, when the content of a message is a “danger” to the organization, the first order of business is to discredit—and, punish as an example to others—the bearer. This is called “Killing the messenger.” In this way, the dangerous (i.e., truthful or embarrassing) content of the message can be disregarded and all will understand the real cost of eschewing the party line. Any punitive actions are based on sending a clear message to the workforce: This is the price you pay!

From Aristotle through DeMorgan and now Quine, experts have pointed out the fallacy of arguing ad hominem. Nowadays such an assault, designed to obscure, hide or simply deny the truth, has become the standard ploy when confronted. Attacks ad hominem have achieved the status of now being accepted as a valid proof. Well, Aristotle et al never had to deal with spin-meisters, so we can assume they could not foresee the bastardization of the rules of elementary logic, thought and truth seeking.

How Safe Are Our Skies: The Future of Airline Safety

Michael McNally*

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INTRODUCTION

Travel with me for a moment on a short journey. First stop: an oceanic air traffic control position at New York Center. Essential tools consist of paper flight strips, grease pencils, tissue, Plexiglas plotting boards and no radar control – a situation described by a member of the U.S. House of Representatives as “barbaric.” Second stop: Houston Intercontinental Airport on June 2, 1996. Severe microbursts, torrential rain, high winds and wind shear hit the airport with no warning due to faulty equipment designed to accurately predict weather patterns. Third

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stop: Indiana’s Monroe County Airport. When Midwest Air Traffic Control Service took it over February 1, 1997, it reduced the two controllers to one lone employee. Fourth and final stop: the year 2010 and the time free flight is slated to become a reality.

What is free flight? At its broadest, today’s discussions of the concept describe airplanes of any shape and size backing away from the terminal gate or taking off from the smallest grassy runway and then flying to anyplace at anytime without restrictions from the ground. It is impossible to address the issue of the future of airline safety without talking about free flight. But to jump from today’s ancient air traffic system described above fraught with staffing shortages and technology problems, is like transporting Fred and Wilma Flintstone, along with Dino the Dinosaur, to coexist in futuristic times with George Jetson and his family – a place where super advanced technology is a normal part of daily life.

Some groups see free flight as the divine answer to today’s air traffic dilemmas. Others, like NATCA, take a more reserved approach. To ensure a smooth transition to free flight, several things must first occur: equipment must be modernized, additional controllers must be hired, the Federal Aviation Administration’s quest to contract out air traffic control facilities must stop, and human factors must always be taken into consideration. Primarily, in all stages of free flight, safety must remain paramount.

**Defining and Understanding Free Flight**

In October 1995, the RTCA, a not-for-profit corporation formed a 225-member task force of which NATCA was a member, and produced the most comprehensive free flight study to date. The report included 46 recommendations. After analyzing the document, the FAA must have been impressed. By 2010, the agency said it wants a seamless air traffic management system, with, at least by implication, goals of free flight included in it and most RTCA recommendations completed.

RTCA officially defined free flight as, “A safe and efficient flight operating capability under instrument flight rules in which operators have the freedom to select their path and speed in real time. Air traffic restrictions are only imposed to ensure separation, to preclude exceeding airport capacity, to prevent unauthorized flight through special use airspace, and (otherwise) to ensure safety of flight. Restrictions are limited to extent and duration to correct the identified problem. Any activity which removes restrictions represents a move toward free flight.”

RTCA Task Force 3 adopted 10 guiding principles to guide us on our journey toward free flight. Among them: ensure the transition does not compromise safety; emphasize the need for collaborative planning; ad-
dress human factors during all stages of development; assess benefits prior to implementation whenever possible; and consider end-to-end impact and benefits when planning improvements. If these models are followed throughout the free flight progression, we will be on the road to the future. If not, the destination is disaster.

**Future Traffic Increases and Staffing Shortfalls**

Free flight seeks to resolve how to handle the nation’s expected air traffic increase of at least 40 percent in the next eight years. FAA projections foresee a 64 percent surge in the number of U.S. passengers by 2005, and the amount of flights will rise 38 percent at the nation’s largest airports. More than one billion passengers will be flying by 2013.

Using today’s rate, the projection is, by the year 2010, accidents worldwide could increase to one jet transport hull loss every week. This figure is a projection from the five-year period from 1989 to 1993, taking into consideration an expansion in the number of aircraft in the skies.

The air traffic system is approximately 3,000 air traffic controllers short of what is required to handle the current volume of traffic. And it’s getting worse. Air transit quantity in the United States has increased 36 percent in the past 15 years, yet we have approximately 2,000 fewer controllers today than 15 years ago.

NATCA daily informs Congress of the immediate urgency to hire additional controllers due to drastic understaffing. Recently, our efforts paid off when senators and representatives authorized the hiring of 500 additional controllers. While this represents a great start at building a sufficient pipeline, it is not nearly enough. We need, at the very least, 2,000 employees right now and should currently be training 1,000 to 2,000 per year. Some of these are required to account for the 80 percent of controllers who will be eligible for retirement after the turn of the century.

If and when free flight becomes a reality, even more personnel will be needed. At least several hundred controllers must be available annually for testing and validation of equipment models to train on free flight oriented technology as it is phased in, such as Display System Replacement or the Standard Terminal Replacement System. These assignments will require they be pulled off air traffic positions, leaving an already understaffed work force to pick up the slack.

**Equipment and Technical Transitions**

A second question free flight seeks to resolve is how to bring an aging air traffic control system—much of it 50 or more years old—into the 21st century. Free flight, the concept, provides the means for transi-
tion to a mature air traffic management system. Benefits-driven and time-phased, its advantages over the existing band-aid approach to air traffic control will accrue from greater flexibility. But, before the level of versatility envisioned in free flight can be accomplished, controllers must have highly sophisticated automation tools to assist in the identification of aircraft conflicts.

While it’s unclear how each piece of equipment will fit into the big picture, one thing is certain – integrated technology is desperately needed. This system of the future cannot coexist with ancient relics of the past.

The good news is several new pieces of technology are currently in development. The Center TRACON Automation System is a series of tools and concepts intended to improve air traffic control efficiency at busy terminal radar approach control facilities, as well as their counterparts in en route traffic control centers.

The Future Air Navigation System is a moving target and considered a platform for other free flight technology. Present navigation options in aircraft are capable of doing much more than the current navigation system requires of them. The FANS concept includes tools for precision spacing between and among aircraft as well as probes that help pilots and controllers predict conflict points.

The Global Positioning System provides instant position information to a special GPS receiver. The technology provides more precise positioning than present ground based radar, and it can work in a variety of ways for pilots and controllers, from take off to landing.

Particularly worrisome are two key systems scheduled for deployment in the near future: Display System Replacement (DSR) and the Standard Terminal Replacement System (STARS). DSR will provide new displays and computers for controllers working in en route centers while STARS will do the same in terminals. The bad news is both are designed to monitor air traffic, not separate and organize large quantities of aircraft into a good organized flow. This is problematic because any step in the next journey to free flight is dependent upon more productivity and increased capacity throughout the system. DSR and STARS, in their present condition will not enhance productivity and/or capacity, but reduce both. The same hold true for many future concepts.

But, we may not have to worry about STARS debilitating effect – the equipment may not make it out of the starting gate if it continues on its current path. Due to neglect of human factors issues in STARS development and skyrocketing costs, Rep. Frank Wolf, R-Va., has called for an Inspector General investigation of STARS. Representative Wolf states, “I find it incredible to believe that the FAA may not have learned one of the fundamental lessons of the Advanced Automation System debacle –
that air traffic controllers must be involved in automation design and human factors issues,"

And even if technology is compatible, the delay in equipment unveiling is years from now. For example, the current mainframe host computer is not due for replacement until 2005 – a certain obstacle to any movement toward advanced free flight.

Assuming there was no such concept as free flight, new equipment would still be an immediate necessity. Controllers cannot continue to work with unreliable 1960s technology. The margin of air safety must not continue to be diminished by equipment failures and unreliability. A perfect example is the aforementioned Automated Surface Observing System malfunction in 1996. The equipment reported good weather all around. So you can imagine controllers surprise when 80 mph winds struck. Luckily, quick thinking and good coordination by all involved diverted dozens of inbound aircraft and consequently averted a disaster.

Stop for a minute and imagine you are sitting on your front porch enjoying a beautiful night filled with “good weather all around.” Then out of nowhere, the winds pick up and quickly increase to 125 mph, the rain begins, beating so hard it makes your skin sting. As you race in the house to tape your windows so they don’t smash from the wind pressure, you think, “How could a hurricane strike with no advance warning.” If this situation were to ever occur, it would be similar to what controllers cope with due to the unreliability of ASOS. Fortunately for the public, the National Weather Service has advanced weather mechanisms. Unfortunately, controllers do not have similar equipment in the control room.

Now imagine you are a controller at Washington National Airport. You’re working traffic on Aug. 5, 1997, when suddenly the airport’s main radar system fails for one hour. This comes one day after lightning struck the main radar, knocking it out for two hours. Unfortunately, the airport’s radar system was not part of the facility’s recent $1 billion renovation.

The FAA’s antiquated computers and power supplies have broken down dozens of time in the past few years at the nation’s busiest air traffic control facilities. During these breakdowns, controllers often carry slips of paper around darkened control rooms or invent other ways to communicate with each other and pilots. Obviously, one way is to keep planes in the air or on the ground until computers come back online, translating into lost time on runways, in holding patterns in the sky or airport lounges. Passengers frequently assume most of 20,000 or so flight delays per year are attributable to bad weather, broken down aircraft or electronic flaws. In actuality, delays are largely due to the sum and total of a badly managed air traffic system.
Air traffic controllers seem to have an innate ability of detecting faulty technology and equipment. We recognized the $3.5 billion Advanced Automation System as a flop. We also saw flaws early on with ASOS. In these circumstances and several others, equipment was developed without input from controllers. If we were an active player in technology development, these problems could have been avoided. Let's not see a repeat of the Advanced Automation System occur with free flight. All involved parties must remember controllers are a vital part of the air traffic system and must be consulted in every stage of the free flight progression.

**CONTRACTING OUT OF AIR TRAFFIC CONTROL SERVICES MUST BE STOPPED**

Although free flight in its very innate stages may have already begun, the concept truly will not be fulfilled for years to come. But, another trend of the future is already occurring. And in contrast to free flight, the contracting out of air traffic control towers, must be stopped.

The National Air Traffic Controllers Association is opposed to contracting out, a product of recent efforts to reinvent government. Opponents believe service is decreased and cost savings (if they do exist) are at the expense of public safety. We do not believe in a bottom line orientation over safety and quality. Although its proponents claim contracting out is inexpensive, this contrasts several General Accounting Office studies showing contracting out of federal services is often more expensive. One report stated, “Reliable information does not exist with which to assess the soundness of savings estimates.” In another report, GAO found substantial savings could have been achieved, if the work had been kept in house.

Contract controllers also don’t have to follow all the air traffic control union work rules and agreements, meaning the tower can operate with fewer people. Here is where cost saving will be realized. But take into consideration, these fewer people are working longer hours, possibly with fewer or no breaks and for lower pay. Look at what happened at Indiana’s Monroe County Airport when Midwest, a private contractor, took it over. The company reduced the two controllers to one. But, it didn’t stop there. The controller was also placed in charge of overseeing tower operation and maintenance, work previously done by the FAA manager. Need another example? When the airport in Appleton, Wisconsin, was contracted out in 1995, the previous eight controllers were reduced to three.

Let's use the power of imagination once again. Picture yourself as a controller at Appleton during the Oshkosh Air Show. Although opera-
tions more than double to over 3,000 during the event, the same number of air traffic controllers staff the control tower. This means you may be working as much as 25 to 50 planes at a time – alone. If you have to use the restroom – hold it. If you’re hungry – deal with it. If you’re tired – wake up. There’s no one here to relieve you.

You may be thinking, “Although traffic may be heavy, I can handle it, I’ve received years of training.” Think again. The FAA conducts a rigorous training program which could last up to three years at some facilities. But, when compared to the minimal instruction administered at contract facilities, the difference is frightening. Midwest only requires controllers to satisfy up to 70 hours of training. That’s the maximum number of hours. The minimum is 18. This training deficiency most definitely reduces the margin of safety.

Some believe contracting out is a hint of full scale privatization of the FAA. NATCA will vehemently oppose these efforts. We will not allow Congress or the FAA to further chip away at safety margins. The FAA is a perfect example of how dollars and cents rule decision making. Public safety should never be secondary to a primary goal of generating profits, the driving force of private enterprise.

Other proposals exist aimed at some sort of FAA reorganization. The question stands: Should the air traffic system and the FAA remain within the Department of Transportation, become an independent agency, a government corporation or private company. Before a solution is found, the “family” of interested parties must fully debate in an open forum facilitated by an unbiased moderator. NATCA’s concern is that such an exchange has not existed and, to date, does not.

Based on previous proposals, NATCA prefers the federal corporation, believing it best merges the entrepreneurial and innovation of business with the government’s clear responsibility of placing safety above profits, competition or compelling interests of users. A federal corporation offers an ability to fund the system without going through the congressional appropriations process by taking it off budget. It allows the corporation to leverage debt. Not many successful companies operate out of their own pockets; why should any organization charged with raising billions of dollars a year to ensure the most advanced, sophisticated air traffic control in the world? Long term planning including research, development, implementation, modifications, as well as funding are essential, as is a strong, objective arm of public watchdogs armed with authority to enforce safety regulations. A federal corporation most appropriately addresses these three prongs.
HUMAN FACTORS AND SAFETY CONSIDERATIONS MUST REMAIN PARAMOUNT

NATCA will push hard for restructuring because it would directly benefit the flying public, air carriers, controllers and other employees by bringing about a more modern, efficient and ultimately safer system. But, in any debate about reconstruction of a federal agency, people must be remembered. The same holds true for the journey toward free flight: The people working the system daily must not be cast aside.

In free flight, air traffic controllers must remain the decision-makers even as free flight fanciers take the concept to its most outlandish limits. Today, controllers are given a piece of equipment and told, ‘Make this work.’ This mindset must be changed and human factors need to be placed at the top of the priority list. This is important now and will be increasingly vital as we proceed on the free flight journey.

Officially, NATCA supports the free flight concept and joins with other aviation leaders in exploring ways to meet its goals: more efficient operations that save taxpayers, passengers, airlines or other users time and money. However, NATCA places safety first, well ahead of lucrative gains sought by airlines. Free flight is just one component in a multifaceted, complicated set of issues, all leading to one goal: ensuring the highest levels of safety. We can create the most advanced technological solutions, but, if we ignore the people who hold the system together – controllers, engineers and technicians – we will fail.
Airline Safety:
Can We Break the Old CRM Paradigm?

Gordon W. Mudge*

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You are a passenger on a scheduled airline flight, and the weather is bad. Who would you like to be flying the airplane, the captain or the copilot?

This article will review the single greatest impediment to the airline industry's achievement of former Secretary of Transportation Frederico Pena's zero accident goal, followed by a short history of popular Crew Resource Management (CRM) and a commonly accepted look at what the next generation of popular CRM has to offer. This will be followed

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by an overview of a management system as an alternative to popular CRM, and a review of the above question.

I. Today's Challenge: The Human Factor

What is the greatest threat to air travelers today? Is it weather, the equipment, the airspace system, the pilots, the controllers, the airline management? While the emphasis often focuses on the pilots, they are not the lone threat. They are, however, the last link in the chain and are usually in a position to identify and correct errors that result in accidents and incidents. The numbers vary somewhat, yet mis-management by the flight crew is a causal factor in anywhere from 57% to 90% of all major airline accidents. This is, without a doubt, the single greatest threat to flight safety.

To keep this discussion manageable, the solutions proposed in this article are directed primarily towards the flight crew, yet remember they apply to most human endeavors and virtually all team operations. These endeavors include but are not limited to, airframe and equipment manufacturers, airline management, cabin crews, maintenance crews, dispatchers, even the National Transportation Safety Board (NTSB) and the Federal Aviation Administration (FAA).

In very basic, simple terms, the problem is one of decision making. Essentially three reasons explain why people make poor decisions: they have incomplete information, they use inaccurate information, or they process the information poorly. These are not mutually exclusive categories, nor are they limited to inexperienced pilots. Accidents occur all along the "competency curve." In fact a surprisingly high number of respected, proficient pilots, some of whom are check airmen and instructors, are involved in accidents. A highly respected pilot once said his biggest fear was that when he made a mistake, no one would tell him about it. On the other hand, if he had the reputation of being a marginal pilot, his crews would continually be on the alert for the inevitable error and would not hesitate to correct the situation.

If crews consistently used a process that would assist in better decision making, while simultaneously providing a constant level of monitor and backup, then there would be fewer errors.

In April, 1994, the Flight Safety Foundation published a report titled "Review of Flightcrew-induced, Major Accidents of U.S. Air Carriers, 1978–1990". This report contained ten findings. Four particularly significant findings are the following:
Many names for this exist and the terms change periodically. As airlines discover that last year’s attempts failed to achieve the anticipated results. So they change the training course a little and give it a new name so both management and flight crews will view it as something quite different without prejudice.

Missing is a management system or process that provides a standardized structure for the decision making process. This process should be self-monitoring and provide backup or redundancy that will immediately identify and correct any management failures.

II. A Brief History

In 1979, following a number of major airline accidents caused primarily by crew mis-management (i.e. poor decisions, ineffective communications, interpersonal conflicts, lack of situational awareness, task saturation, etc), NASA hosted a symposium focusing upon the need to train crews in cockpit resource management. In 1981, United Airlines and Scientific Methods jointly produced a course called Command/Leadership Resource Management, which became the prototype for the rest of the industry. The consultants, primarily psychologists and business management consultants, were then hired by other airlines to produce airline-specific variations of the course.

The training was quite different from the technical training that pilots typically receive. There were no standard operating procedures, no checklists, and nothing they could touch or see. In fact, there was little in the way of specific actions they were to take as a result of this training. They were taught to be more empathetic, to listen better, to be more

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assertive and diplomatic, and to be “better”. While these are all good things, they are hard to pin down. Much of the training and early CRM evaluation revolved around attitudes. It was thought (and still is by many people) that by measuring an individual’s attitudes via a paper and pencil test, an organization could predict a pilot’s managerial performance on the flight deck.

Due to the subjective nature of this “first generation CRM”, everyone had their own interpretation of what constituted “good CRM”. Many pilots, especially those who have had successful careers with no accidents and violations or those who have risen perhaps through the ranks, considered this training quite valuable—for the other guy. Most of these pilots felt they were already managing quite well and therefore, the training did not apply to them.

This is not to say that this early attempt at CRM was a futile exercise. It was a step in the right direction. It recognized the importance of the team and the role of pilots as team managers and team members. This awareness training, however, did little in the way of actually improving behavior and producing better decisions.

CRM, as practiced in some airlines, has actually been a negative influence on flight safety. Following a major accident, one manager said of his airline’s approach to CRM, “I think CRM started out as one of those feel-good things. I think you could also statistically prove that more accidents have occurred because the captain was not a strong enough person.”2 Most popular CRM programs fail because, while they try to encourage teamwork, communications and situational awareness (SA), they do not provide a CRM structure or specific procedures that will make this happen routinely on all flights.

III. Today’s Popular CRM

In the late 1980’s, we saw the emergence of “behavioral markers.” These markers are an attempt to define management actions. Most of today’s CRM programs incorporate these markers. While this is certainly an improvement over first generation CRM, it has its share of disadvantages as well. Behavioral markers, as used in this context, are a fairly large set of independent behavioral descriptors. Some are operational, lacking a management perspective, while some are quite vague, and still subject to interpretation. From the pilot’s perspective, as well as that of

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2. J. Lynn Lunsford and Terry Maxon, Computer Cited in Cali Crash: Mix-up Over Codes for Columbia Cities Blamed, THE DALLAS MORNING NEWS, August 23, 1996, at 1A. In the article, Captain C.D. Ewell, chief pilot and vice president of flight operations, American Airlines, was quoted in reference to American Airlines Flight 965, a Boeing 757 which crashed on approach to Allfonso Bonilla Aragon International Airport, Cali, Columbia on December 26, 1995, killing all but four of the 163 persons aboard.
those tasked with evaluating CRM performance, the behavioral markers are not organized in a manner that is easily taught, used or observed.

Popular CRM, now fortified with these behavioral markers, is often viewed as a "toolbox." When a crew is presented with a particular situation considered to require CRM skills, they select the proper tool (or technique), use it, and then return it to the toolbox. This approach treats CRM as a specialized, reactive technique to extract a crew from a negative situation or at least minimize the adverse affects of a particular event. We call this event-driven CRM because the programs require designers and administrators to develop CRM-specific simulator scenarios for training and evaluation. These scenarios are developed around a set of CRM triggers which prompt the crew to use a specific CRM tool to satisfactorily resolve a particular event.

CRM that is used "only when needed" is rarely used at all in reality. First, if crews only practice this in CRM-specific training and evaluation sessions, they will not gain sufficient familiarity to become confident, proficient, and comfortable with these techniques. It follows that in some situations in which the crew is under high stress and workload (those times when CRM is particularly critical) they may not have the excess mental capacity to apply these seldom used techniques. Instead, they will revert back to the skills that are more comfortable, their "natural behavior." They will act just as they would have prior to CRM training. Psychologists call this the law of primacy.

Flights conducted using event-driven CRM are essentially unmanaged until someone recognizes a problem that requires these very specialized management skills or techniques. It is absolutely critical that flights are managed from start to finish. Management begins with a thorough, relevant, strategically oriented, pre-flight briefing, before the crew even steps on the airplane and continues through the post flight debrief that analyzes the positive and negative aspects of the flight, resulting in specific actions on the part of the crew. One of the primary purposes of CRM is to identify and avoid potential problems, or at least mitigate the negative impact of events that may be unavoidable. Crews cannot rely on an "event" to initiate the management process. Such a reactionary approach is ineffective at best. CRM must be active on all flights, including the simple, routine, fair-weather flights when traffic volume is low, ATC is providing assistance, and the runways are long, wide, and dry. If crews do not manage when conditions are favorable and easy, it is highly improbable that they will do so when they are experiencing and effective management becomes critical. This is analogous to only using your seatbelt when you are certain you are going to crash your car. When you need it most, you neither have the time, presence of mind, nor the ability to locate and securely fasten it.
There is also a growing trend in the industry to integrate some CRM procedures into operational checklists, primarily emergency and abnormal checklists. There is some merit to this, as it provides a bridge from certain operational situations into the management function. The problem arises in the attempt to transform an operationally based checklist into a comprehensive guide to flight deck management. Such a composite checklist can seduce pilots into thinking that this takes care of CRM. A pilot may simply wait for the checklist to remind them of what to do and they will believe they are managing well. Nothing could be further from the truth. Effective, proactive management starts long before the checklist is taken out, and continues well after the flight is completed.

Both airlines and pilots often complain that, captains lose much of their authority under CRM, and it becomes management by consensus. Captains feel that CRM forces them to surrender some of their command to their copilots. A spokesman for American Airlines, after the December 20, 1995 accident in Cali, Columbia, stated that “we are doing some things, getting away from CRM, putting the captain more in charge.”3 Perhaps the spokesperson’s response is based on the fact that popular CRM is unstructured and subjective. Even the airlines’ program developers and instructors never really understood how to effectively manage the team operation. They saw it as a “win-lose” proposition—if the copilot were to be more assertive and speak up when he saw things differently, then this must come at the expense of the captain’s authority and his ability to make unilateral decisions. It is a debit-credit approach. Popular CRM creates a great deal of confusion because of its highly subjective nature. Every crew and every pilot will interpret it to mean something different. At what point does a copilot cross the line from merely assertively expressing his concerns and opinions, and becomes aggressive, perceived by the captain as a threat to his or her command?

A CRM system, however, is synergistic. It is a “win-win.” The captain who manages well, is not only the manager and leader of the crew in a physical sense, but is also responsible for managing the flight’s intellectual assets. The captain’s scope of authority does not diminish, but actually expands. At the same time, the crew has very specific management responsibilities for which they are trained. They participate at all levels of the flight (intellectually and physically) under the captain’s command. It is a cooperative and focused team operation with one leader and an active and involved participating team.

It is critical that the captain exercise his or her authority as a strong leader. Either extreme is dangerous, be it the captain who lets the copilot make all the decisions, or the captain who issues orders that must not be

3. Id. (quoting American Airline spokesperson John Hotard).
questioned. An effective leader and manager leads the crew through the decision making process. He or she solicits relevant information from the team and leads an objective evaluation of the data. The captain is always in command and has final responsibility and authority for the flight. This should never be in doubt. But it does not mean that he or she does so in a vacuum without benefitting from the crew's knowledge, skills, and experience.

IV. THE POPULAR "VISION" FOR TOMORROW'S CRM

So what is next for mainstream CRM? What is the popular vision for "Fifth Generation CRM?" In 1996, Dr. Robert Helmreich defined Fifth Generation CRM in "The Evolution of Crew Resource Management." He states that the next advancement in CRM must "focus on managing human error"; must provide "training in limitations of human performance"; and embrace a "continuation of earlier generation training topics under error management framework." Unfortunately, this new generation of CRM is merely a fresh coat of paint on an old approach that has seen limited practical value in the real world.

Another recent study conducted by researchers at the University of Texas at Austin, concluded that one of the reasons earlier attempts at CRM had failed is that the pilots never quite understood what this training was supposed to accomplish. So Fifth Generation CRM will need to clearly state its objectives—"to reduce the incidence of error, to trap errors before they become consequential, and to mitigate the consequences of those that occur . . . the [behavioral markers] taught in CRM should be recognized as countermeasures against error."5

Fifth Generation CRM offers no new advances to help the industry achieve these goals. Merely stating the purpose will not make it happen. In Dr. Helmreich's own words, Fifth Generation CRM will continue to teach behavioral markers—not exactly an advance in the technology. While it now has some direction, it is still as vague and subjective as ever. It appears to be more marketing hype than substance. There are still no procedures, nor is there any sort of a structured process. It is still reactive.

4. Robert L. Helmreich, Department of Psychology Aerospace Crew Research Project, The University of Texas at Austin. "The Evolution of Crew Resource Management." IATA Human Factors Seminar, Warsaw, Poland, (October 31, 1996). In this paper, Dr. Helmreich discusses the five generations of CRM.

V. A MANAGEMENT SYSTEM, A NEW PARADIGM

So what is the answer? How do we significantly reduce, if not totally eradicate, the single greatest threat to aviation safety—mis-management? The solution is a management system in which not only the flight crews are trained, but everyone in the airline from senior management all the way down. Everyone must then be required to use the system. That’s right, we must require it, just as we do with all other important procedures. We would not for a moment consider allowing a pilot to continue flying if he or she could not demonstrate proficiency in all the required operational procedures. Yet the industry continues to allow flights to go unmanaged. A familiar refrain among pilots, unions, trainers, and managers is that CRM must be “non-jeopardy.” That is because popular CRM can not be objectively evaluated. A management system, on the other hand, has specific procedures that can be quite easily evaluated.

This discussion will use particular system, the QUANTUM Management System, as a model with the acknowledgment that other developers may find alternative ways to accomplish its goals. Simply put, the purpose of a management system is to help teams make the best possible decisions all the time, in a consistent, reliable, and repeatable manner. This must produce observable improvements on all flights, including training, evaluation, and line flights. In addition, these new behaviors must be permanent and self-reinforcing, actually continuing the improvement process years after the initial training effort.

A management system is error-tolerant. People will always make errors. So while we must do everything we can to prevent errors, some will still occur. An error-tolerant system is designed to quickly identify and correct errors in their infancy.

A management system has five basic attributes:

1. It guides the crew to the best decision.
2. It identifies and corrects errors in the early stages of development.
3. It provides timely and action-oriented feedback to identify the root causes of effective and ineffective performance to continuously improve future operations—increasing the probability of repeating the successes and eliminating the failures.
4. It provides a mechanism for continuous monitoring of the status of the flight’s management.
5. It provides a backup that is ready and able to replace any missing management functions detected by the monitoring process.

Most CRM programs endorse the debrief process as a method of learning from flight experiences. However, they only address operational failures. These are generally, symptoms of management failures. The feedback referred to here goes far beyond that. The various components
of the management system enable crews, with some practice, to identify the basic underlying managerial causes which manifest into hundreds or thousands of seemingly independent, unrelated operational errors or successes. Every debrief should end with a specific action the crew will take to either reinforce the positive behaviors or eliminate the negative ones. It is not unusual to see fleet or organizational operating procedures change in this manner, thereby improving the performance of all crews in the future.

This is accomplished through Professional Responsibilities and Standard Management Procedures. All management procedures are derived from hundreds of specific behavioral objectives, specific attitudinal objectives, and specific informational objectives, which are the end product of extensive task analysis. The purpose of the task analysis is to identify exactly what an individual must know and do in order to manage well. The Professional Responsibilities and Standard Management Procedures are organized into a logical structure, the management system, designed to achieve specific goals.

The training system itself, is tasked with changing long-standing behavior (habits) that an individual has developed over a lifetime. While the industry standard two-to-three day workshop will develop an awareness of the relevant issues, it is largely ineffective in producing meaningful improvements.

In addition to a management system, airlines need a training and implementation system that: 1) provides bridges from the classroom to the work environment; 2) guides, reinforces and requires the new behavior; 3) teaches in a manner in which each individual participant can easily understand and assimilate the new material; 4) provides a means for an individual to “catch up” later if he/she should fall behind at any point; and 5) allows the pilots time to think about the new requirements, the logic behind them, and test them in various situations. We cannot ask a professional in any field to blindly accept new procedures without giving him or her the opportunity to thoroughly evaluate them and then build confidence and proficiency in utilizing them.

It is important that the training successfully reaches each pilot within the airline. While this seems to be stating the obvious, a quick look at current CRM training methods used in most airlines suggests that this is a very real concern. Each pilot who is not satisfactorily trained and is allowed to fly on the line represents an unnecessary risk—a potential accident. It is important to adopt a comprehensive management, training, and implementation system incorporating specific Standard Management Procedures that can be taught, required, and evaluated as objectively as any Standard Operating Procedure.
VI. INTRODUCING A MANAGEMENT SYSTEM TO THE AIRLINE INDUSTRY

Such a management system has been in existence for many years and is in fact successfully used by smaller flight organizations that have recognized the value in going beyond the mere lip service offered by popular CRM training organizations. These are flight organizations that want and expect to see significant, measurable, day-to-day improvements in all aspects of their flight operations as a result of their training investment. They demand a tangible return on their investment and can not afford to throw money away just to simply check off the “CRM box” to meet minimum training requirements.

While implementing the complete management system in a large airline may seem daunting, this does not have to be the case. Once airline management commits to adopting a management system, the actual implementation process can be as aggressive as company management desires. It can be spread out over a number of years, implementing one procedure at a time, or it can be taught and implemented in a single process. This should not be construed as a quick fix. It requires a commitment and an investment in time, effort, and money. If it is done in small increments, it is important that each training phase brings the airline closer to its ultimate goal.

So why hasn’t this systems approach been embraced by the flying community? There are numerous reasons, none of them particularly compelling when considered objectively.

CRM training and consulting has developed into a specialized field, complete with its share of self-proclaimed experts. On top of that, the government has awarded numerous research grants to study various aspects of CRM. A number of individuals have gained international recognition as a result of their advocacy of certain popular CRM methodologies. What would happen if they were to be proven wrong?

From the perspective of the airline training or operations managers who must make the decision or recommendation, new approaches are understandably viewed as too risky. They can’t really be faulted for following the industry leaders even if the results are marginal, at best. There are a lot of people in the airline industry who admit that popular CRM produces limited benefits in daily operations (as well as emergency and abnormal situations), but the safe bet is still on the mainstream solutions. There used to be a saying in the computer industry that “no one ever got fired for buying IBM.” It may not have been the best system for the particular company’s needs, but the risk was perceived as being much more acceptable than going with Brand “X” which may have been a better choice based strictly upon system performance and the requirements
of the job. Nothing is 100% guaranteed. In the event of a problem, the manager would rather be in the position of defending the IBM selection than the Brand “X”, even if a cost/benefit analysis clearly favored the Brand “X”. This is human nature. Unfortunately, we find that larger airlines (or the CRM decision makers within the airlines) are more susceptible to such perceived peer and organizational pressure than are the smaller flight organizations that make their decisions purely on the basis of return on investment analyses.

How about a research grant to objectively evaluate the feasibility of new concepts and ideas that have the potential to positively impact flight safety? While in theory, this sounds like a fair route to take, it too has its share of potholes. Once the grant money has been awarded, it is perfectly legal to change the purpose of the research project. This is exactly what happened to one such research grant. The research team applied for FAA funding to evaluate the feasibility of a management system (titled “Analysis of Cockpit Management System Training in a Regional Carrier Environment”). Soon after the grant was awarded, the project was changed to “Developing and Evaluating CRM Procedures for a Regional Air Carrier.” It is all perfectly legal, but did the FAA, taxpayers, and flying public get what they thought they were buying?

Why this change in direction? Airlines, training organizations, and researchers find that it is easier to slightly modify currently held philosophies and CRM programs in which an individual or organization has invested a great deal of resources (effort, time, people, money) and in which reputations may be at stake, than to abandon them for a new approach. But why would the airline, the immediate beneficiary of this research, choose to accept only minor modifications in something that has produced only limited benefits, rather than evaluate something that has the potential to make dramatic improvements in safety, flight efficiency, and passenger service?

The answer becomes evident in light of the airline’s purpose for participating in the research project. The FAA is encouraging airlines to develop new cost effective training programs under the Advanced Qualification Program (AQP), which is geared towards training to proficiency versus the completion of a pre-defined number of training hours. CRM is one of the requirements of AQP. This research project represented an opportunity for the development of the airline’s AQP training curriculum to be subsidized by the government. In addition, the airline training personnel, as well as the principle investigators were only knowledgeable in the popular approaches to CRM. This represented their comfort zone and there was little incentive to venture into the unknown.

By staying with what they already knew, they could concentrate their efforts on areas in which they were primarily interested. As the grant’s
name change indicates, some of the key researchers were primarily interested in the development of evaluation techniques, not in the CRM issues (the development of CRM procedures consisted of adding a few somewhat vague "procedures" to the airline's operational checklists). The problem here is that while there is a need for a reliable means of determining whether the CRM training is effective, the measurement tool itself does not directly contribute to flight safety. Evaluation techniques are of secondary importance.

One of the advantages of a true management system is that, by definition, it has a built-in evaluation mechanism. The procedures are easily observable. Either they are performed correctly or they are not. Since all flights must be managed, there is no need to expend precious resources and further delay the implementation process by designing CRM-specific simulator scenarios to evaluate a crew's performance. Any scenarios the airline currently uses will work quite well for use in training and evaluating crews in a management system. If the management process is in place, the crew will be able to effectively manage any event they are likely to encounter. Unfortunately, this is bad news for the evaluation experts. It leaves them little to do.

The simulator is, without a doubt, a powerful and economical training and evaluation devise. However, the best way to evaluate the effectiveness of the management, training, and implementation systems is to observe and evaluate crew performance on line flights. This is where the performance counts. Simulator crashes are of no real concern since no one gets hurt. It's a learning experience. Modern simulators are capable of producing realistic flight experiences and do a fine job of approximating the real world environment. No matter how realistic the experience, it is not the real thing. When crews fly simulators they know they will encounter emergencies and are prepared for them. This is not the case on the line, when flying highly reliable equipment in an environment in which they may never have experienced a traumatic event. Crews that demonstrate acceptable CRM performance in the simulator may actually do very little managing on the line flying multi-million dollar airplanes carrying hundreds of passengers.

The result, in this case, is that the FAA will not get what it originally contracted. Taxpayer money has been spent on unnecessary "research." The flying public is no closer to increased safety. Airlines will not have the opportunity to see an objective evaluation of a completely new approach to the single greatest threat to aviation safety, passenger service and flight efficiency.
VII. CONCLUSION

Adopting a management system involves a radical change in the direction of CRM for the airline industry. It means moving from the event-driven CRM “toolbox” to a process-driven CRM system. It means abandoning the subjective approach (and yes, even the behavioral markers) in favor of a task analysis based, objective management system that defines specific procedures that can be monitored and backed up. It means no longer relying solely upon tactical thinking, but on a combination of tactical and strategic thinking. It means CRM is no longer merely recommended or encouraged, but required.

Which brings us back to our questions at the beginning of this article. Who would you rather fly the airplane under adverse or demanding conditions? Most people would initially opt for the captain, most likely an experienced pilot who has probably seen it all. Now consider that the NTSB found that 80% of the accidents occurred when the captain was the pilot flying (generally, pilots swap legs, so that about 50% of the flights are actually flown by the captain). Consider also, that in most accidents, there was a failure in the monitoring and backup functions. What does this say? The captain is generally an effective monitor and backup. He or she will not hesitate to take decisive action when necessary. The copilot, on the other hand, may not be as quick and confident in correcting the captain. This suggests that with today’s popular CRM practices, we would be better off with the copilot flying and the captain monitoring. This would produce a full crew complement.

However, if both crewmembers have demonstrated their knowledge and proficiency in the management system (which is a requirement to fly for the airline), it is not so critical who is actually manipulating the flight controls. The copilot has the necessary skills and responsibility (as well as the full support of the airline’s management) to effectively monitor and backup the captain, supporting the captain’s strong leadership and command. It is a true team operation.
I. EXECUTIVE SUMMARY

In a historic first, on 16 and 17 October 1997 at the University of Denver, the Secretary of Transportation of the United States Rodney E. Slater, the Secretary of Communications and Transportation of Mexico Carlos Ruiz Sacristán, and the Minister of Transport of Canada David M. Collenette gathered to discuss intermodal transportation issues. They were joined by a roster of transportation executives from some of the preeminent companies of North America. This meeting, the North American Intermodal Transportation Summit, was held under the aegis of the Intermodal Transportation Institute (ITI) at the University of Denver and under the leadership and direction of Gilbert E. Carmichael, chairman of the ITI Board of Directors, and Joseph S. Szylowicz, faculty director of ITI and professor in the Graduate School of International Studies.

Senior North American executives from aviation, rail, highway, and maritime operations as well as third party, customer-shipper, labor, and environmental experts were invited to participate in panel presentations at the Summit. In addition, industry executives and ITI and guest faculty joined the three transportation secretaries in a concluding Roundtable Discussion.

The purpose of convening a meeting on North American intermodal transportation issues was to identify the opportunities of developing a seamless intermodal system within Canada, Mexico, and the United States; to identify the barriers and the obstacles to an intermodal system; and to define the activities, or next steps, that should be undertaken to achieve an integrated system.

PROGRESS TOWARD AN INTERMODAL SYSTEM

The Summit provided many realistic perspectives on the progress that has been made in achieving intermodalism. Although numerous shortcomings were identified, it is striking that all of the participants essentially share a common vision, based on the following points:

• There is an urgent need to promote national and regional intermodal transportation systems for passengers and freight, within, between, and among countries, that appreciates the interests and concerns of all and enhances mobility in a way that is environmentally benign, safe and secure, efficient, and ethically based. Such a system will enhance national and regional competitiveness in the global economy.

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Historically, national transportation systems have been built on the basis of separate modes. Different modes have different strengths and weaknesses. Public policy as well as public and private investment should support the expansion of an intermodal system that will build on the strengths of each mode while reducing the overall adverse impacts of transportation.

Existing transportation systems have contributed greatly to national development and to individual well being. Nevertheless, these systems confront nagging problems of congestion, pollution, safety and security, and energy consumption. Because of different national conditions, cultures, and values, no single set of prescriptions is appropriate. Appropriate new policies can be devised, however, through the creation of enhanced levels of cooperation in transportation by governments, key stakeholders, and the public.

The evolution of an intermodal passenger system lags behind that of the freight transportation system. The role of intermodal transportation in reducing pollution and congestion will be largely determined by public policy at several levels of government and among various agencies at each level.

The evolution of an intermodal passenger system lags behind that of the freight transportation system but deserves equal attention by policy makers as well as public and private investors.

Technology represents an important part of any solution, for various innovations hold considerable promise to improve existing transportation problems. Technologies, however, are not panaceas and must be viewed within their socio-cultural contexts. Assessments should be carried out prior to implementation in order to identify and deal with potentially negative impacts.

Notwithstanding these common visions, there was a marked difference of opinions in the views of progress, as expressed by the nongovernmental representatives, on the one hand, and by the governmental representatives, on the other. The governmental representatives were far more optimistic about the progress that has been achieved than were the other participants who, to varying degrees, expressed their frustration with the status quo, especially in regards to specific barriers that continue to inhibit the achievement of an intermodal system for North America.
To illustrate, border crossings remain troublesome and a serious concern to the private sector. Although actions by governments and transportation companies have served to alleviate delays at highway and rail border crossings and have eliminated bottlenecks within countries, the growth in the volume of freight traffic overtakes the scale of past accomplishments and requires urgent policy attention as well as constant evaluation of the operational processes.

BARRIERS TO AN INTERMODAL SYSTEM

The specific problem areas that were identified as blocking the creation of a North American intermodal system can be summarized as follows:

- Nature of planning processes in governmental and private-sector organizations
- Lack of financial resources for infrastructure
- Limited cooperation among the modes
- Unequal resource allocation to the modes
- The need for governments and their agencies to think in intermodal rather than modal terms
- Labor and management relations
- The need to develop private-public partnerships
- The need to improve the integration of transportation planning with environmental, energy, and other relevant agencies within each country
- The lack of cooperative mechanisms among the countries to facilitate the achievement of a regional intermodal system
- The need to deal with urban congestion issues and to emphasize passenger intermodalism within and between cities.

THE ACCOMPLISHMENTS OF THE SUMMIT

The Summit, however, contributed to the development of an intermodal system for North America in more ways than merely identifying problems. It also accomplished the following:

- It enabled top transportation officials from Canada, Mexico, and the United States to outline their views of the future of intermodal transportation in a collective setting and to discuss policy issues privately.
- It brought transportation officials together with key stakeholders, pioneers in intermodalism, and academic experts to identify issues,
problems, and obstacles that hinder the achievement of intermodalism.

- It began the process of outlining policies and actions that can help overcome the barriers identified.

- Although these matters are difficult to deal with and the political implications that exist when the role of the state in promoting intermodal transportation is still being defined, there was general agreement on the urgent need for further action involving academics, stakeholders, and policy makers.

The participants in the Summit represented government, industry, labor, and academia; however, notably missing among the participants were members of the legislative branch of government. In future meetings, key members of the legislature should be included in the proceedings, as it is they who will sponsor and enact legislation that will foster the development of intermodalism within, between, and among the three countries.
II. INTRODUCTION

In its role as Secretariat for the First North American Intermodal Transportation Summit, the Intermodal Transportation Institute (ITI) at the University of Denver has prepared the following report on the proceedings.

THE CONCEPT

In a historic first, on 16 and 17 October 1997 at the University of Denver, the Secretary of Transportation of the United States Rodney E. Slater, the Secretary of Communications and Transportation of Mexico Carlos Ruiz Sacristán, and the Minister of Transport of Canada David M. Collenette gathered to discuss intermodal transportation issues. They were joined by a roster of transportation executives from some of the preeminent companies of North America. This meeting, the North American Intermodal Transportation Summit, was held under the aegis of the Intermodal Transportation Institute (ITI) at the University of Denver and under the leadership and direction of Gilbert E. Carmichael, chairman of the ITI Board of Directors, and Joseph S. Szyliowicz, faculty director of ITI and professor in the Graduate School of International Studies.

The Intermodal Transportation Institute invited the secretaries of transportation of the three countries of North America to outline, publicly, their vision of an appropriate intermodal system for the 21st century. ITI also invited senior North American executives from aviation, rail, highway, and maritime operations as well as third party, customer-shipper, labor, and environmental experts to participate in panel presentations at the Summit. During the Summit, the University of Denver also provided facilities for the private, bilateral, intergovernmental discussions among the three countries.

The purpose of convening a meeting on North American intermodal transportation issues was threefold:

• to identify the opportunities of developing a seamless intermodal system within the North American Free Trade Agreement (NAFTA) countries of Canada, the United States, and Mexico;

• to identify the barriers and the obstacles confronting the development of an intermodal system and the methods or mechanisms to overcome them; and

• to define the activities, or next steps, that should be undertaken to achieve these ends.
The Summit was held in October 1997, a particularly crucial time in the formulation of transportation policy in the United States. The current public policy debate about the future of transportation is urgent and intense and includes discussion of the reauthorization, implementation, and further development of the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). The Summit was designed to produce high-profile visibility for the concept of an intermodal transportation system for North America and for the current transportation policies and priorities of Canada, Mexico, and the United States. In addition, the Summit was the first formal meeting of the highest transportation officials of North America to address matters of cooperation and concern in intermodal transportation. It is auspicious that they consented to do so.

THE HOST

The North American Intermodal Transportation Summit built upon the ongoing activities of the Intermodal Transportation Institute (ITI) at the University of Denver. The University of Denver is the oldest, private university between the Mississippi River and the Pacific Coast. Offering undergraduate, graduate, and nontraditional degree programs, the University has a student population of nearly 9,000 and a full-time faculty of over 400.

The Intermodal Transportation Institute began in 1991 as the Center for Transportation Studies but changed its name to the Intermodal Transportation Institute in 1996 to reflect the concern with the development of a sustainable intermodal transportation system for the 21st century. ITI combines the substantial faculty expertise and the administrative support at the University with an advantageous geographical location in a city that is steeped in a rich tradition of transportation.

The city of Denver has flourished, in large part, because of its transportation connections and because of the vision of men like John Evans. John Evans founded the University of Denver in 1864 while he was governor of the Colorado Territory and also built the first rail line to Denver in 1869. In this century, Denver has continued its historical transportation connections with the opening of Stapleton International Airport in 1929 and, most recently, with the opening of the state-of-the-art Denver International Airport in 1995.

In cooperation with industry, government, and the public, ITI is committed to education, research, and outreach that will promote the integration of the transportation modes into a seamless transportation system for passengers and freight across the globe. ITI also participates in a “think and do” tank on important public policy issues with the University’s Environment Institute, the Institute for Ethics and Values, and the Center for Public Policy and Contemporary Issues.
ITI is implementing an innovative, interdisciplinary master of science degree program as well as certificate and professional development programs in intermodal transportation systems. These programs will focus on intermodal issues in both passenger and freight. The role of ethics in transportation will be emphasized throughout, and industry leaders and government experts will be active participants in the program. The Master of Science in Intermodal Transportation Systems will begin in the Fall of 1999.

Today, the College of Law at the University of Denver provides the only multimodal and, perhaps, the most comprehensive program in transportation law in the United States. The law faculty coordinates the well-established Transportation Law Institute and publishes the *Transportation Law Journal*, the only comprehensive law school publication in the field of transportation law.

**THE PARTICIPANTS**

The Honorable Rodney E. Slater, Secretary of Transportation of the United States  
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The Honorable David M. Collenette, Minister of Transport of Canada

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Paul S. Dempsey is faculty associate director of the Intermodal Transportation Institute and professor in the College of Law. An expert in aviation policy, he has written more than fifty articles for law review and professional journals, scores of newspaper and news magazine editorials, and seven books. Since 1979 he has been faculty editor of the Transportation Law Journal, and since 1986, he has been a frequent commentator on ABC Nightline, the MacNeil-Lehrer News Hour, CNN Crossfire, and National Public Radio. He has his ABJ and JD from the University of Georgia, LLM from George Washington University, and DCL from McGill University.

III. THE CONTEXT

The Vision, the Trends, and the Issues

Joseph S. Szyliowicz, Andrew R. Goetz, and Paul S. Dempsey
Intermodal Transportation Institute
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The transportation system of North America represents a huge investment in infrastructure and delivery capacity, and throughout the 20th century, transportation services have been a major force in economic development. Individual modal networks—highway, rail, air, ports and waterways—convey vast amounts of freight and impressive numbers of passengers.

During most of this century, each mode strove to be a full-service provider, meeting the requirements of the customers from origin to destination. In the US experience, partnerships between modes of transportation were limited, until recently, to those that were absolutely necessary. The Canadian experience, however, has been significantly different. At the turn of the last century, the Canadian Pacific Railway Company ran an intermodal empire, with ownership and operation of railroad, ocean steamship, lake steamship, local freight delivery and pickup services, and later adding intercity trucks and an airline. Arguably, the absence of antitrust legislation and a regulatory climate that did not segregate modal ownership and operation were responsible for this path of development. The development of transportation services in Mexico provides another pattern. Foreign shipping companies dominated early transportation until national maritime and railroad companies were created in this century. Today, the privatization of the Ferrocarriles Nacionales de Mexico (FNM) railroad and the intermodal development of Transportacion Maritima Mexicana (TMM) and Ado y Empresas Coordinadas bus services are proceeding rapidly.
However, within all three countries today, the customers are changing and their needs are changing. Not only has the emergence of global trade widened the options, it has also increased the challenges and created new opportunities. On the demand side of the market equation, customers now insist upon transportation service that is fast, efficient, safe, reliable, and provided at the lowest possible cost.

On the supply side, technological innovation has spurred new concepts and new thinking about what is possible. Computers, communications, and ultramodern operating equipment have expanded capacity and augmented marketing potential. The container has become the standard conveyance package for international freight. Mammoth ocean vessels deliver 2,000 containers-per-ship to dockside, where railroads pick them up by the trainload for delivery inland or for transshipment on land bridges. The next generation of container ships will double that capacity.

In recent years, however, insightful observers have come to note that conventional networks, built around individual modes, have pushed-up against capacity and service limits. The following trends illustrate the problem:

• highway congestion has reached unacceptable levels;
• highway fatalities and injuries have persisted at troubling levels, despite billions of dollars of investments to improve safety;
• inadequate land-side connections have devalued the premium of speed and frequency upon which commercial aviation has built its reputation;
• small towns and rural regions have been disconnected from transportation main lines because they could not offer the volume of freight or passengers that the individual modes require for cost-efficient operations; and,
• urban regions throughout North America have confronted problems of land use, pollution, and congestion.

Paradoxically, transportation is both a visible cause of these problems and also the apparent remedy. A vision of transportation for the 21st century now is emerging. By integrating the separate modal networks into an integrated, intermodal system, transportation will not only meet the economic and mobility needs of North America, but it can also alleviate the nagging problems of pollution, safety, energy consumption, and congestion.
NAFTA AND ECONOMIC COMPETITIVENESS

TRENDS: In a world that is rapidly dividing into a number of regional trading blocs including the European Union, Japan and the Pacific Rim Countries, Mercosur, and NAFTA, transportation networks will play an increasingly important role, particularly in economic competitiveness. To meet the requirements of this new global economy, change in transportation systems is being forced, by becoming more intermodal and by incorporating new technologies.

Transportation among the trading blocks—NAFTA, APEC and the European Union—appears to be adapting more quickly to the changing global environment. Intermodal transport within trading blocks, however, has shown itself to have a greater inertia to change. NAFTA's goal of creating a free-trade area of more than 375 million people with a three-nation GNP of over $8 trillion—where goods and people can move easily—places significant demands for change upon the North American transportation system.

At the same time, major changes are occurring in the ways that North American firms do business. These changes are moving the transportation system inexorably toward an integrated, intermodal system. As an example, the recent actions to create partnerships among the railroads operating in the United States, Canada, and Mexico offer the potential for the development of a North American rail system, which could improve economic competitiveness substantially.

ISSUES: It is imperative that the evolution of an intermodal transportation system in North America position the economy of the continent so that it is capable of meeting the increasing competition from Europe and Asia. Although actions by governments and transportation companies have served to alleviate delays at highway and rail border crossings between Mexico and the United States, the sheer increase in volume of freight traffic may well overtake the scale of past accomplishments. The new transportation industry partnerships must move quickly to capture operating efficiencies to achieve the benefits that were the objectives of these partnerships.

ACCELERATING INTERMODAL DEVELOPMENT

TRENDS: The marketplace currently drives the evolution of the freight intermodal transportation system. A large number of intermodal services come as the result of initiatives on the part of freight customers. State and local governments have begun to consider intermodal issues in their transportation planning efforts, and some have sponsored the development of intermodal terminal facilities as an effort to improve their competitiveness, to reduce congestion, and to help solve air-quality problems. Governmental actions at the federal level, such as the 1991
Intermodal Surface Transportation Efficiency Act in the US, have begun to alter national policies toward intermodal projects and solutions.

ISSUES: The proper role of government in promoting intermodal transportation is still in the process of being defined—a process that should be brought to discussion and resolution. The role of intermodal transportation in reducing pollution and congestion will be determined by public policy at several levels of government and among various agencies at each level. The evolution of an intermodal passenger system lags behind that of the freight transportation system, and since many passenger operations use public infrastructure, a different governmental role in the promotion of passenger intermodalism may be called for.

TOWARD SUSTAINABLE TRANSPORTATION

TRENDS: Although transportation systems are essential to society and its commerce, there are negative impacts on land-use, safety, and pollution levels. Acquiring sites for new transportation facilities—airports in particular—has become more difficult. Urban-area ports compete with residential and non-transportation demands for land and access. Public accessibility has suffered in the development of new air passenger terminals. While some modes and many routes are burdened with congestion, others have substantial unused capacity. Adding increments of capacity to existing highway transportation routes often results in staggering costs. And, paradoxically, the expansion of highway infrastructure capacity to end congestion has merely made congestion worse, to which point the conditions in Los Angeles amply attest.

ISSUES: Minimizing adverse impacts, maintaining equity, enhancing economic growth, and permitting consumer freedom of choices represent an enormous challenge. Specific governmental actions to achieve certain goals—such as reduction of air pollution at the local level—have linkages to the development of an intermodal system over a much larger region. Public policy and economic investment should support the expansion of an intermodal system that builds upon the strengths of each mode and that reduces the overall adverse impacts of transportation. Visions of the future are essential for human progress. As Dag Hammarskjöld once remarked, “only he who keeps his eyes fixed on the far horizon will find the right road.”
Chancellor Daniel L. Ritchie  
University of Denver

Universities are uniquely suited to facilitate discussion of public policy issues, particularly those that require thinking, quite literally, beyond the boundaries and into the future. The University of Denver welcomes the opportunity to host this Summit.

Chairman Gilbert E. Carmichael  
Intermodal Transportation Institute  
University of Denver

Our aim at this North American Transportation Summit is to identify problems—and how to resolve them, to recognize opportunities—and how to realize them. With your active participation, this landmark event can be informative, stimulating, and productive.

Provost William Zaranka  
University of Denver

The University of Denver is committed to helping the Intermodal Transportation Institute bring together international transportation leaders and policymakers to discuss important issues that will lead us into the next century.

Jeffery D. McMorris  
Board of Trustees; ITI Board of Directors  
University of Denver

We believe that it is time for industry, governments, and non-governmental organizations to work together for an efficient, safe, and sustainable system of transporting freight and people. We stakeholders must forge a better system and be the architects of a new public policy.
IV. THE PROCEEDINGS

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Two panels of senior North American executives from aviation, rail, highway, and maritime operations and representatives from labor, third-party and customer-shipper groups, and an environmental research organization convened to discuss key issues of intermodalism. The participants on Panel I were asked to address issues from a modal perspective, including specifics on the plans and the visions of their company or industry. The participants on Panel II were asked to discuss specific issues from an intermodal perspective.

The panelists were invited to consider the following:

- the opportunities and the obstacles confronting the development of a North American intermodal system and how they may be overcome;
- the effect of current governmental policies on industry progress toward intermodalism;
- NAFTA-related issues influencing intermodal development;
- the role of technology in the evolution of an intermodal transportation system;
- infrastructure requirements and financing; and
- the adequacy of existing intergovernmental agreements and cooperative arrangements.

Panel I: Transportation Modes and Stakeholder Perspectives

Moderator: Thomas L. Finkbiner, Norfolk Southern Corporation

Panelists: Clifford J. Hardt, Federal Express Corporation (air)
            Agustin Irurita, ADO y Empresas Coordinadas, S.A. de C.V. (bus)
            Katharine F. Braid, Canadian Pacific Railway Company (rail)
            Theodore Prince, “K” Line America, Inc. (maritime)
            Edward M. Emmett, National Industrial Transportation League (shippers and customers)
            Thomas R. Brown, RISS Companies (third-party providers)
The issues raised by Panel I provide an insightful glimpse into the potential realities and the current weaknesses that will affect the realization of a comprehensive North American intermodal system. The panel highlighted the importance of globalization and its impact on the intermodal system. Despite the variety of perspectives, the common themes that emerged were efficiency, funding, planning, cooperation, and the role of governments. The panelists, all in their own way, suggested that a major shift in attitudes and policy structures by key actors was required if the potential of intermodalism was to be achieved. The paradox that remains is how to achieve cooperation given the high levels of competition that exist within, between, and among the modes.

Specific obstacles impeding the growth of an intermodal system include the following:

- inadequate infrastructure and capacity,
- inappropriate investments and capital shortages,
- inadequate information channels,
- weak modal interactions,
- inadequate planning by governments—local, national, and international—and corporations,
- absence of government regulations and influence in key areas,
- inability to change existing business practices,
- congestion, and
- standardization issues.

Above all, for intermodalism to succeed, it is essential that an intermodal transportation system be able to meet customer requirements by increasing reliability and service quality and to take advantage of the strengths of each mode while working to minimize their shortcomings. Nor should the role of culture be ignored. Attitudes and values differ in the NAFTA countries, and any attempt to create a North American intermodal system must take such differences into account.
Introduction to Panel I

by Moderator Thomas L. Finkbiner
vice president, Intermodal, Norfolk Southern Corporation; ITI Board of Directors

We are fortunate to have such an impressive group of people on this panel representing the users of the North American intermodal network. While intermodal represents a significant opportunity for shippers and carriers alike, progress toward the realization of its promise has appeared to be disappointing, for one single reason. All of the intermodal constituencies treat the movement of goods according to the comfort level that they have with their own mode or according to what they wish to obtain. These panelists will discuss their aspirations and will point out what must happen for intermodal to achieve its promise.

Transportation Mode: AIR

by Clifford J. Hardt
vice president, Air Ground Terminals and Transportation, Federal Express Corporation; ITI Board of Directors

I will address, in general terms, the issues affecting aviation. As you can imagine, air transportation has many of the same issues, or concerns, as the other transportation modes, and they include, but are not limited to, infrastructure, funding, regulatory matters, and MPOs, or Metropolitan Planning Organizations.
INFRASTRUCTURE

Unlike the other modes, aviation is managed multilaterally by the ICAO or International Civil Aviation Organization. This organization was created 50 years ago as a special agency of the United Nations. The ICAO is instrumental in developing standards and in recommending practices that address safety, security, air traffic modernization, the environment, and technology and research development. The real global system of aviation is founded on the success of ICAO.

Even though the ICAO has met with real success, infrastructure issues are still a major concern. For example, the growth in air traffic has created airport congestion; few airports have been built in the last 10 years; the Air Traffic Control (ATC) system has changed little in the past 10 years; and, delays are more frequent. The air industry is in danger of becoming gridlocked.

ENVIRONMENT

All modes of transportation affect the environment, and the level of noise, in particular, is of interest in the US. Airports can establish curfews and limit the time of high use. Most airports try to maintain a balance between the needs of the community and the interests of business. However, establishing restrictions and maintaining this balance can create operating opportunities.

Emissions are a global problem, and as such, global standards need to be established by the ICAO. At present, however, US Government is working on US standards, which may or may not agree with global standards. The new ATC system, which can give more direct flights rather than vectoring, is one solution.

SAFETY AND SECURITY

Air travel is one of the safest modes of transportation, but it has high visibility when accidents occur. Air safety issues need to be more focused on audit and compliance. While much has been accomplished to ensure air security, much more needs to be done.

FUNDING

As with all of the other transportation modes, funding is a primary concern. How does the industry pay for improvements? How does the industry receive its fair share of government monies? Usage charges are
one way that is being discussed to solve the problem. Today, airlines pay landing fees to support the costs of operating airports.

The National Civil Aviation Review Commission began an investigation to examine the services provided, the costs of the services, and the users of the services, or systems. It has made some preliminary recommendations regarding funding and the role and responsibility of the Federal Aviation Administration (FAA). One recommendation states that aviation, like highway transportation, should have its own dedicated sources of funding, such as a tax. However, implementing such a tax will be difficult, and industry consensus does not exist.

REGULATORY MATTERS

The regulatory bodies and agencies must recognize that the world is truly becoming a global economy. The interdependencies of supply chains around the world and the speed of the various modes of transportation make it critical that regulations recognize the customer's requirements. For the global economy to function, governmental control must be kept to a minimum while maintaining safety, security, and equitable funding initiatives.

METROPOLITAN PLANNING ORGANIZATIONS OR MPOs

These organizations have an impact on all modes of transportation, and air is no different. Their historical focus has been on passenger transportation issues and local community requirements. While many of these organizations listen, there seems to be limited efforts to improving airport/truck interface, and in some cases, they are trying to limit truck access in conjunction with airport authorities. These two groups, MPOs and airport authorities, must acknowledge the need for highway infrastructure around airports and must plan this infrastructure for five to ten years in advance.

It is unfortunate that what influence we can attain is limited, due to our inability to come together and discuss these crucial issues as intermodal partners. I can assure you that Federal Express Corporation has a stronger voice in Memphis, Tennessee, than it does in St. Louis, Missouri. It is my opinion that if we spoke with one intermodal voice, we would certainly be better off than we are today. It is meetings such as this, with representatives of all modes and other interested groups, that will provide the opportunities to developing an “intermodal voice” and to becoming “intermodal partners.”
The bus transportation industry in Mexico has had a long and sustained development. Today, it represents the most common means of travel in the country, carrying more than 2 billion passengers annually, and its share in the massive, intercity transportation market is more than 90 percent. Its development has been very closely linked to that of the economy of the country.

Now, after more than 30 years of stable growth, the bus transportation industry suffers the growth-development, stagnation-sustained progress. Since 1990 bus transportation has become a deregulated service on federal roads and a regulated and protected industry for local carriers on most state roads.

Bus service is provided with some 40,000 buses in several well-defined market niches, such as the following:

- **Luxury Service** Buses with sleeper seats, meals, air conditioning, lavatory, and video systems.
- **First-class Service** Buses with video systems, lavatory, air conditioning, in direct terminal-to-terminal service.
- **Economy Service** Buses with basic service that pick-up passengers and packages along their route.
- **Feeder Services** Small vehicles that carry passengers from rural areas to small cities.
- **Tourist Services** All types of buses from luxury to economy service.

A network of bus stations and terminals, from which services are offered, has been developed throughout the country. This is a private
network, owned and operated by the carriers, and it allows the user to choose among multiple services. For example, there are four central stations in Mexico City, with one of them offering departures to Puebla, 84 miles away, every three minutes.

Carriers operate as any other regular company, but 95 percent of them maintain individual economic results for each bus, that is, for its corresponding owner. This complex framework renders highly competitive and efficient results. A number of big corporations control more than 60 percent of the services offered, with each one of them operating in a different region.

The quality of the service achieved by most medium to big companies is truly acceptable, with some services equivalent to the world’s best. The same does not apply to a number of small, unorganized companies that operate illegally with obsolete and highly polluting vehicles. This contrast is present in many ways throughout the country.

The parcel business has developed parallel to passenger transportation through the use of the bus luggage bins. Most bus companies will offer these parcel services solely to the cities to which they carry passengers. Some offer a nationwide parcel service as well as freight services; others, extend it through agreements with other bus lines. Air transportation is also used. The service provided is very comprehensive and prices are extremely competitive. Security, quality, and delivery schedules are equivalent to that of any industrialized country.

**CONNECTIONS IN INTERMODAL TRANSPORTATION**

Although intermodal transportation is scarcely developed, some interesting connections exist.

**Urban to Intercity**  Transfer points have been established in some cities enabling passengers to carry out faster, more comfortable travel.

**Airplane to Bus**  Internal terminals exist in several airports with connections by bus to nearby cities. This allows the passenger to switch transportation modes without leaving the airport.

**Bus to Freightliner**  The companies that offer nationwide parcel service use compartments in their buses to provide freight service to distribution centers in specific cities.

**Bus-Freightliner-Airplane**  International parcel-service companies use all three means of transportation.

**Ship to Bus**  Additional bus services are offered at the docks for passengers going to resorts by the sea.
THE PRESENT SITUATION IN MEXICO

NAFTA represents an opportunity for the development of commerce among its three members as well as for Mexico. Economic openness, privatization of state-owned companies, and deregulation are important changes that should go hand-in-hand with change in cultural issues. Open and equal systems will allow for expanded economic development between and among countries. The same applies to politics, where democracy is a basic requirement that supports a broad economic relationship.

Mexico is immersed in a process of change that affects each and every citizen in all aspects of life. Change can generate uncertainty and encourage a focus on the past. As change happens, the benefits are often not easily seen and resentment can set in, and in this case, NAFTA, economic openness, deregulation, democracy, etc., can be blamed.

Mexico is immersed in a process of change—abandoning old behaviors and customs and searching for the new.

Competition is not a strong value in the Mexican culture. Time is also viewed differently—not with the modern sense of urgency. It is fairly common to hear “Why such a hurry?” And, corruption exists. For example, the current legal system requires change so that it is applicable to everyone. It is in this environment of abandoning old behaviors and customs, of change, of searching for the new, and of trying to understand, that we, the Mexican entrepreneurs, are evolving.

There are some clear examples of change in some companies and in some regions in the country; regretfully, many more have been unable to find their way and their problems have multiplied. This must be understood in order to examine the opportunities, the obstacles, and the challenges to the development of an intermodal transportation system in the region.

OPPORTUNITIES

• Establishing a regular international bus service between Mexico and the US represents a great opportunity for passenger and freight. There are obstacles to providing this service, such as illegal immigration, local and state laws that limit and complicate the establishment of services, the lack of flexibility to develop this new market, and some customs barriers to investment.

• Instituting the new technologies, the electronic coordination (Internet) of transportation services, will require the joint efforts of the different carriers and the enlightened understanding that a trip is an entire origin-destination segment, regardless of the transportation mode.
Changing the concept of terminals to main points for connecting services (bus-plane-boat) and eliminating the concept of terminal-originated or terminal-terminated services will encourage the inclusion of intermodal transportation in the facilities.

BARRIERS

There are some obstacles in Mexico to the development of intermodal services, such as:

- The lack of a strong legal system that grants security to investors. The arbitrary application of the law must be eliminated.
- An existing infrastructure that needs improvement and expansion to meet the demands of the marketplace. It is also important to implement fees that are appropriate for the use of this infrastructure, both for roads and telecommunications.
- The lack of competitiveness in the culture. With greater understanding by the population, the move to a more competitive society could be motivating and could contribute to the elimination of monopolies and subsidies.
- The poor condition of public safety. It is imperative to improve public safety and to give citizens confidence in their day-to-day life, thus guaranteeing the free flow of passengers and goods nationwide.

In addition, open commerce among nations demands reciprocity in treatment and equivalent legislation to ease business activities. The accords made under NAFTA for freight and passenger transportation have not been put into practice. Several interest groups are lobbying against them, preventing them from operating. Reciprocity to what has been agreed upon must be respected, as well as current legislation that has been approved in each country. Mexico is being pressured to enact parcel regulations allowing American freightliners free transit, but NAFTA provides for the exclusivity of freight movement within Mexico for Mexican carriers. Such pressures make it difficult to reach understanding and closeness between companies and nations.

Developing an intermodal transportation system is essential in order to use resources more efficiently and to provide passengers with better services. It is important to remove all barriers that stand in the way of reaching this goal. It is also necessary to understand the differences in development and culture among the nations and to search for possible solutions. If we, the entrepreneurs and the government, fail to identify the obstacles to establishing intermodal and international services, development will be delayed. The opportunity set forth by this meeting is a valuable instrument for progress.
I am pleased to share some thoughts—based on the Canadian experience—about the future of intermodalism and the railroad role in that future.

OPPORTUNITIES AND CHALLENGES

Intermodalism is one of the fastest growing rail sectors today. Sustained economic growth domestically and in some overseas markets points to the need for more capacity.

Opportunity lies in the ability of railroads to move large volumes long distances; railroads can also help improve overall transportation safety and mitigate environmental and land-use issues.

By definition, what one player in an intermodal system does affects the others. For example, difficulties with trucking and highways are increasingly apparent—highway damage, traffic congestion, air-quality problems, safety, truck-driver shortages and turnover. Making matters worse are the marginal returns on trucking operations, despite hidden highway subsidies. Railroads can help alleviate some of these problems through intermodal expansion.

Increasing the size of ships may reduce ports of call and demand greater investments in the ports selected. Bigger ships and fewer ports can reduce land transport competition but improve intermodal economics. For railroads, bigger ships can mean longer trains and larger inland terminals. In this context, ISTEA funds should not be diverted to road-only projects. A reauthorized ISTEA should be used to enhance transportation efficiency by focusing on intermodal projects.

Railroad mergers can be an opportunity and should improve the economics of the mode’s participation in intermodal systems and should en-
hance operations. Reducing the number of interchanges can improve cycle times. Railroads can expand participation in intermodalism by adding routes, cars, locomotives, terminals, and information systems, but to really seize opportunities, they must improve reliability, especially on-time performance. This involves rail service itself and the inter-relationship of railroads with the other modes.

The two basic intermodal interfaces—transfer terminals and information systems—can only benefit from joint approaches and lots of cooperation. Port access is a problem for some railroads, as is inadequate dockside infrastructure for marine-rail container transfers. Congestion on the railroads can deter trucking lines from finding intermodal solutions. An intermodal perspective is critical to the quest for optimal transportation solutions, be it for manufactured goods traffic or bulk materials.

Opportunities for the railroad vary by commodity and by service requirements over distance in two distinct categories—long haul and short haul. The long haul is the field of natural advantage for rail. It is where interconnectivity among North American rail carriers is critical—be it at traffic transfer facilities or in the flow of information among them. Railroad opportunities lie in bringing increased “seamlessness” to railroad industry-wide and inter-company service approaches and to teaming—individually and collectively—with ocean-shipping lines, trucks, and couriers to meet overland long-haul needs. Short-haul opportunities depend on increasing both the competitiveness and the compatibility of rail with trucks, in part, through technological improvements, such as new container-car types. There is great potential for rail intermodal growth by controlling and lowering costs, through increasing rail intermodal speed and reliability, and by improving information systems.

**OBSTACLES AND BARRIERS**

For all publicly owned railroads, the one major obstacle to intermodal development is investment capital—how to obtain, to generate, or to find the funds or capital to invest in intermodal capacity at the speed of market expansion. Most railroads have not received tremendous rates of return on their investments, and even traditional railroading is highly-capital intensive.

Capital investment is critical to realizing the potential of intermodalism, and the acceptance of more risk than many public companies like may become necessary. All categories of investment carry risks. This issue is high on the minds of executives of shareholder companies because the ability to spread that risk is less for a corporate project than for a public project. In addition, the rate of return required by privately owned railroads is higher than the rate of return implicit in traditional
government spending on roads. And, the low rate of return on terminals, for example, can make it difficult to justify the investments.

One of the keys to exploiting railroad participation in intermodalism is mitigating the risk. Government policy as well as cooperation between and among the railroads and among railroads and other modes can help mitigate some of this risk. Mitigating this risk includes encouraging common intermodal standards and related public policies. It also means maintaining these standards and policies for a sufficient time to permit investments to be repaid. Areas where standards and policies can tilt the balance one way or the other include container sizes, truck vehicle weight and dimension specifications, fuel taxes, and customs and international issues concerning the free and smooth flow of goods.

For the railroad industry, there is a serious investment risk from technological obsolescence. This risk is perhaps as much regulatory as it is technological. For example, if 53-foot containers become the standard trailer sizes for trucks, some railcars will no longer be economically viable. For their part, however, railroads have failed to standardize railcars, and the continual upward pressure on truck dimensions will keep this issue alive.

For many of the opportunities for the railroad industry to be realized, however, there is a need for labor cooperation. For intermodal opportunities, the cooperation needs to take the form of flexibility regarding job functions and a willingness to learn and use the new skills required to make intermodal seamless.

PUBLIC POLICY AND INTERMODALISM

No obstacle to intermodalism rivals the basic disadvantage posed by public policies that have favored highways over railways in all three countries. Getting intermodalism right requires modal balance. Today, railroads provide their own roadways, yet they pay property taxes on the railroad rights-of-way. Then, they pay fuel taxes, which in turn help build more highways.

In Canada, the transportation laws that were written over the past thirty years contained language to let each mode do what it does best. But, among the various levels of government, modal equity gets lost. Making intermodalism happen will depend on the right policy and tax framework. In Europe, public policy is tilted to favor rail. In North America, I will take basic fairness—from which all society and all modes will benefit.
Cross-border harmonization is needed to obtain the full advantage of North American trade. While there is a free-flow of goods, there is not yet a free-flow of transportation services needed to move the goods. Obstacles include the following:

- contradictory safety regulations between Canada and US,
- restrictions on the use of rail crews,
- lack of harmonization of customs reporting, and
- slow border crossings between the US and Mexico.

The three North American national governments could foster intermodalism by seeking state-of-the-art solutions to expediting border crossings.

**NEXT STEPS**

As we consider how to create the right intermodal system—the post just-in-time (JIT) system, if you will—a few considerations come to mind. In any purchase and delivery (P&D) situation, there are uncertainties and risks, everything from weather problems to traffic and labor disruptions. There is always some factor that may be beyond the JIT planner’s control. In most cases, JIT means shifting the inventory burden to the supplier. The supplier may try to shift that inventory farther down the line. In any event, someone is left holding someone else’s inventory burden. This all happens by bilateral contract between two parties within the overall P&D chain. Somewhere along the way from the mine site to the smelter—to the component plant—to the assembly plant—to the wholesaler—to the retailer—to the customer's address, JIT usually involves one or more inventory buffers.

Conceptually, any post-JIT environment can go one of two ways—towards a perfect P&D paradigm or towards a tailored transportation system. In the perfectly smooth, continuous supply chain P&D paradigm, I go to a retailer to buy a new refrigerator to my own specifications. This purchase triggers all the component manufacturers to start turning out the parts; they are assembled instantly; and, by the time I get home, the refrigerator is installed and working. Nothing is produced until the consumer gives the word. Components flow right through to the consumer as assembled products.

This is rapid-fire P&D on demand with no inventory burdens along the way. If achievable at all, it would be highly costly and, quite possibly, very energy-intensive. It would also put enormous strains on most P&D systems. Does the consumer want to pay the fee? Does society? For most shippers, the financial price for something approaching a perfect P&D
paradigm would be self-defeating. Price and cost considerations will rule the day.

Under a tailored transportation system, JIT, for many shippers, has more to do with reliability and correct information about the scheduling of shipment arrivals than anything else. Usually, these shippers do not care if shipments are on the move for three hours or thirty as long as they get to the unloading dock on time. But, if there is going to be a late arrival, the receiver has to know early so a contingency plan can be implemented.

For railways to fit into this paradigm, costs must be controlled, reliability must be assured, information systems have to be first class, and carriers must be geared to striking the optimal balance between price and service in individual situations. Railways can provide an inventory buffer especially over long distances, going faster or slower to keep up with the needs of the P&D system and its price/service requirements. To enhance broad intermodal service coverage, however, railroads have to work together to smooth out their interfaces and strengthen their linkages—not just for dedicated train services but for all intermodal services. The European concepts of Intercontainer and Interfrigo may be worth a visit.

The focus on the customer is the point, and the continental economy can only benefit when the use of transportation depends on the true market advantages of each mode.

This will depend on the elimination of policy distortions that favor one mode over another, which should then encourage each mode to do what it does best. This process might be facilitated by a para-jurisdictional body, possibly a joint international agency, that can foster intermodalism, promote investments (the right ones at the right time), and work to eliminate inefficient biases and obstacles.
Recent developments in intermodal technology have grabbed the attention of industry professionals and observers. As an international steamship line, “K” Line has a primary interest in vessels and an ongoing involvement with railroad, truck, barge, and air transportation. “K” Line is an asset-based network operator, and there are several elements of the intermodal system that it connects with to deliver the service product effectively to its customers.

Yet, international steamship lines suffer as an industry. More often than not, in planning the future of the steamship business, the members of my profession and trade consider only the infrastructure, the capital investment, or the technology inherent in intermodal transportation. We overlook the opportunity to redefine the process used to integrate the various transportation modes. Unfortunately, infrastructure is often built for today and not for tomorrow. Concentration on the infrastructure at the expense of the process and underlying service provided is done at great risk.

I remember the “old” Pennsylvania Station, built in New York City by the former Pennsylvania Railroad to handle its then booming intercity passenger business. The station was build to last 1,000 years. However, the development of civilian aviation and the construction of the Interstate Highway System caused the intercity passenger business to abandon rail service. Ironically, Pennsylvania Station took three times as long to tear down as it did to build, ignominiously ending as landfill in New Jersey.

The maritime industry, like most transportation industries, has a very diverse service provider chain. Yet, its various players seem only to see as far as the next participant. For example, ports see marine terminals as their customers, who in turn see steamship lines as their customers, who
only then see the actual customer. This linear relationship can be made more complex by the addition of other players, such as railroads and Non-Vessel Operations Common Carriers (NVOCCs). There is little or no real communication or effective connection between the actual customer and the various service providers. Decisions made on existing relationships may cause an overall misjudgment of the ultimate commercial reality.

CUSTOMER FOCUS

How will intermodalism impact marine transportation? The most important thing to consider is customer focus and view. As a service provider, steamship lines must fulfill customer requirements. Otherwise, there will be no customer, and no need for intermodal transportation. Most customers seek a reliable pipeline of transportation for their goods. It would appear that, with rates continuing to decline, customers realize that they can obtain fairly competitive rates from any carrier they choose. As a result, customers are going to select the carrier that best provides the service. It is no longer a choice between high-cost/high-service and low-cost/low-service. The customer of today can have low-cost/high-service. Despite industry fixation on transit time, or speed, for most customers, the real issue is reliability. Customers are seeking complete certainty that the goods will arrive on time and intact.

Unfortunately, international customers often encounter a variety of difficulties. Customers may experience problems firsthand, while other problems that impact the underlying carrier may, sometimes, affect the customer. While advancements have been made toward seamless transit, customers still see intermodal as being fraught with obstacles and real or potential problems or hazards to their cargo—and ultimately their business.

By its very nature, an intermodal system calls upon various modes of transportation. Several years ago the focus was on seamless transportation. The obvious analogy is a relay race where speed and reliability depend not only on the speed of participants, but also on the ease and the smoothness of the exchange between participants. Despite major technological developments, the process of intermodal transportation begs improvement so that the quality of through transportation will be beyond reproach.

Today, inland transportation is much more important to steamship lines than it has been in the past. Twenty years ago, the standard transit from Hong Kong to New York was 40 days by all-water service through the Panama Canal. In the late 1970s, intermodal transportation became an option. Cargo from Hong Kong was discharged on the West Coast and
moved to New York by rail for a transit time of 30 days. In 1984, development of the integrated double-stack service from the West Coast further reduced the transit to 24 days. By 1990, direct service from Hong Kong to the West Coast and further intermodal improvements provided 17-day service. This is transit time reduction of more than 50 percent. The development is due not only to intermodal technology but, more importantly, to an integrated process.

Such developments should continue as trading patterns change. In 1984, Los Angeles to and from Chicago was the primary double-stack corridor. Other West Coast ports and major inland points became network points as traffic grew and infrastructure was added. Canadian and East Coast ports were able to offer service as demand and infrastructure grew. As Mexico, Latin America, and South America develop as important trading partners, it is realistic to expect other ports to emerge as key gateways. Quality intermodal connections will need to follow.

INFRASTRUCTURE CONCERNS

It is unrealistic to build a single infrastructure and expect it to be sufficient indefinitely. Economic life and physical asset life are different. A good case study on infrastructure versus process is marine terminals and on-dock rail. US industry practice on the West Coast has been vertical integration. Steamship lines have developed their own independent terminals. Productivity benchmarking indicates this is very expensive when measuring TEUs handled per acre, per year. Hong Kong handles close to 30,000 TEUs per acre per year, yet most US ports handle only a small fraction of this. In the US, we build the infrastructure because it is affordable—not because it is necessary. Lack of government intervention has allowed this over-investment.

Although this investment has been successful to-date, the long-term implications may not be so sanguine. Ocean shipping, in a regulated environment, supports cost-based pricing. The price to the customer is based on the costs involved in producing a move and a margin is added. Deregulation eliminates this methodology. As competitive markets develop, price-based costing ensues. Customers determine the value of the move and are willing to pay the carrier up to that amount. If the carrier wishes to handle the business, it must find a way to get under the cost threshold so as to make money and continue to support its business. This simple microeconomics lesson has been demonstrated in other transportation modes, such as air, rail, and truck, and asset-based, network-operating industries, such as telecommunications and electric power.

The industry needs to review the paradigm by which terminals are developed. On one hand is the “Field of Dreams” theory, “if we build it,
they will come.” These ports seem to feel that they must have the latest and greatest in marine facilities, including on-dock rail to attract steamship lines to their facilities. On the other hand, there exists the model of the lemmings, where one follows the other into the sea as a biological response to over-population or to “over capacity.” This is the “if they have it, I must have it, too” theory, which disregards economic sense yet seems to be rampant in the industry. The big, bigger, biggest phenomenon has already happened with vessels. Can terminals be far behind?

In the maritime industry today, economic rationale often seems to have been supplanted by ego. The results can be grave. Today’s environment supports terminal pricing at average costs; however, deregulation could result in terminal pricing at marginal costs. This could result in the inability of a port to support a sufficient return to pay back borrowed money. Washington Power in the early 1980s demonstrated that technical and engineering superiority, even accompanied by a AAA credit rating, was not sufficient to preclude billion-dollar bond defaults. We may see port revenue bond defaults in the not so distant future. As carriers exit the industry, ports could be left with very expensive terminals.

On-dock rail follows in the footsteps of marine terminals and seems largely unquestioned in its benefits. “K” Line has been operating on-dock rail longer and in more places than any other steamship line. It is an integral part of its product; however, “K” Line recognizes that there are questions. There are a number of problems involved in the traditional transfer from marine terminals to rail intermodal terminals, and using on-dock rail does not eliminate them, it merely shifts the obstacles.

First, railroads have severe space constraints in West Coast ramps, and international shipments often are delayed. However, marine terminals have congestion problems, too, and on-dock rail can and does exacerbate them. Whereas ramp space can be used for any type of operations, on-dock rail is specialized and therefore limited—that dedicated space in the marine terminal cannot be used for anything else. Second, highway congestion, especially in Los Angeles, is often cited as a key impediment to transfer. However, most ports have switching and short-line situations that are even more congested than the highways. Mode transfer is effective only after cargo is on a mainline train that has departed towards destination, but there are no controls on how efficiently cargo is loaded. Third, there have been well-publicized issues of trucker drayage problems involving the bridge

The industry needs to review the paradigm by which terminals are developed— not the “if we build it, they will come” practice or the “if they have it, I must have it, too” theory.
transfer from the marine terminal to the railhead. Yet, there are also constant uncertainties revolving around port labor.

Some analyses would show that on-dock rail is a very expensive operation. Although it takes place in a marine terminal, on-dock rail is a traditional, intermodal terminal ground-to-railcar transfer. A study needs to compare what occurs in various intermodal terminals, not just what takes place in marine terminals. Given rudimentary benchmarking, not only is the labor cost per on-dock lift much higher, but the capital required to perform each lift is also significantly greater. Ultimately, economic reason should prevail over the compulsion to build.

Infrastructure questions should not be considered apart from other issues, such as transition issues that are as important as construction projects. Improvements will ultimately fail if a bridge to the future is absent. For example, the Alameda Corridor in Los Angeles has been cited as a panacea for Southern California on-dock. In anticipation of the Alameda Corridor, significant on-dock capacity has been brought on-stream. Unfortunately, this capacity has been brought on years before the corridor is ready. Existing infrastructure and San Pedro Port access remain unchanged.

Without significant investment and/or port involvement in controlling the operating costs, congestion problems in and out of marine terminals will only get worse and the intended benefits will disappear. By the time the Alameda Corridor is ready, some of the intended benefactors may be unintended victims. Furthermore, infrastructure projects need to be carefully considered in terms of cost/benefit tradeoffs. Poorly planned user fees may cause long-term problems. Even worse, some projects are undertaken without any consideration of what user fees should and will be.

**THE ROLE OF GOVERNMENT**

Finally, we should consider how government might help improve the intermodal process. Understanding that customers require reliable transportation, we need to recognize the role of regulatory issues. On the federal level alone, four agencies are predominantly involved with international cargo. They are the Department of Agriculture, the Immigration and Naturalization Service, the Drug Enforcement Agency, and the US Customs. Any one of these agencies can put a halt to cargo movement. While recognizing the government’s role to protect public safety, we need to encourage the federal government to consider a more coordinated approach on regulatory holds.

Customs issues are most critical. Inbound movement of cargo is essential. There is not enough space on the West Coast to hold all cargo until such time that customs clearance is achieved. A straw man initially proposed by US Customs two years ago would have eliminated inbound
movement. In a rare display of unanimity, steamship lines overwhelm­ingly objected to such a proposal. The subsequent tin man is still under review.

Borders are still not seamless. We still await the intended benefits of NAFTA to enable free trade and transportation within North America. Without addressing some of the more obviously political issues, the fact remains that borders are not as seamless on international cargo as they were intended to be. Cargo destined for Canada, moving through a US port, is at an inherent service disadvantage to cargo that moves through a Canadian port. The same is probably true in reverse and exists as well with Mexico. Furthermore, cabotage restrictions pre­vent cost efficiencies that could only improve international trade efficiency.

Reliability extends beyond transit time and speed. Cargo needs to arrive at destination. Unfortunately, many places in North America are beset by an epidemic of cargo crime. Whether it is hijacking or enroute pilferage, the impact is significant. Local governments seem unable or unwilling to address this problem, given more serious crime issues. Not­ing that such violations involve international and interstate commerce, the role of the federal government should be a much more aggressive one in this category.

Transportation without reliability is nothing. If a service provider cannot provide a reliable product, that provider will be replaced. An intermodal transportation system needs to transcend the issues of reliability so that it can prove itself to be as worthy an option as single-mode transportation.
First, I must say that it is an honor to be a panelist at such a historical event, and, it is a particular honor to speak for shippers. For those of you who are not familiar with The National Industrial Transportation League, a little history is in order. The League was formed in 1907 to represent the interests of shippers, primarily before the Interstate Commerce Commission, which dealt with railroad issues. Since that time, the League representation has broadened to represent shippers' interests in other modes, including trucking, maritime, and air, which is why I am so eager to speak at an intermodal summit.

The League has also changed in another way. We now deal regularly with international issues. In that regard, the League delegation to the recent Tripartite Shippers Meeting in Scotland included representatives from the Canadian Industrial Transportation League and the Canadian Shippers Council. In the future, we hope to include Mexican shippers, too.

There are two irrefutable facts about transportation. The first fact is that modes of transportation exist only to serve customers. Too frequently policy makers forget this because governments tend to organize along modal lines and reflect the interest of the carriers.

The other fact is constant change, and change brings winners and losers. Too frequently, governments and the public focus on potential losers. This is understandable because the winners from change are not yet present. Here are two examples of change.

First is the Interstate Highway System. What would have happened if all of the owners of cafes, motels, and gas stations along the old US highway system had banded together and organized a large political ac-
tion committee? They could have argued that the multi-billion dollar interstate highways would put them out of business and cause the loss of millions of jobs, and they would have been correct! However, how much better off are we, as a nation, because of the Interstate Highway System.

A similar example is trucking deregulation. Thousands of inefficient motor carriers could not compete in a deregulated market, but many thousands more have been created to take their place. Change creates losers, but it makes winners of us all in the long run.

The two irrefutable facts—modes existing for shippers and constant change—are blended in intermodalism. It is the product of customer demand for seamless service, and it is major change. With globalization, intermodalism will spread around the world.

Since shippers have a perspective on all transportation modes, I will review each mode, listing observations of each with a focus on concerns for the future. Ocean shipping is the only mode with tariff filing and enforcement administered by the US Government. No confidential contracts are allowed for US importers and exporters, unlike shippers in the rest of the world. As a result, we are already seeing cargo diversions to Canada. In the near future, I suspect cargo will be diverted to Mexico, too.

There is deregulatory legislation before the US Congress now that the US Department of Transportation has endorsed in principle. It is supported by shippers, US ocean carriers, and forward-thinking foreign flag carriers. Railroads and truckers should be in the forefront seeking change, too. Organized labor and some ports have opposed deregulation, but ports really need to consider the needs of their ultimate customers, the shippers. The bottom line for ocean shipping is that deregulation will occur and it will be a good thing.

To many shippers and to most of the public, air cargo is mysterious. Freight is usually given to a “middleman” and magically reaches its destination. In the case of integrators, like UPS or FedEx, shipping is as easy as mailing a letter. However, a number of scary policy issues arose after the crash of TWA 800. For example, some proposed banning cargo from passenger aircraft or requiring the named shipper to appear in person when shipping cargo. Another suggestion has been security clearances for everyone in the manufacturing and packaging chain. Any one of these proposals could become a nightmare for shippers and the air-cargo industry.

The Federal Aviation Administration, at the direction of the White House, has organized a Cargo Working Group to examine issues of air-
cargo security. The League is pleased to have representatives as members of this group as it works on such a major international transportation issue.

Now to railroads, where the bright spot of the present-day intermodal system is growing dim with the service meltdown on the Union Pacific, a situation that raises questions about rail-to-rail competition. Most observers, and railroad operators, will admit that trackage rights do not provide adequate competition.

Of course, the fundamental nature of railroads has to be understood. The vast majority of rail shippers are served by only one railroad. If they are unhappy with the service provided by that railroad, they cannot call another competitor to come to their facility. Shippers have no recourse, so whenever I hear railroads talk about how much they compete with each other, I find it amusing. There is no free market in the railroad industry, and I am not saying there should be. Pretending that market forces work for rail shippers, however, is "hogwash." International partners of US rail shippers should be concerned over developments in the US railroad industry as mergers give us fewer and fewer mega-railroads.

The last, but certainly not the least important, mode is trucking. There is a truck involved in almost every intermodal freight movement. Deregulation of the motor-carrier industry has been wonderful for US shippers and the overall economy. In fact, deregulation has allowed intermodalism to work. However, there are still some problems in the trucking industry.

A major obstacle to the development of an integrated transportation system for North America is the failure of the United States to implement fully NAFTA. This is embarrassing and counterproductive to progress. The continued efforts of the railroads to stagnate efficiency by opposing truck size and weight improvement are bad for business. Ultimately, their efforts are bad for safety, too, because they will result in more trucks on the roads.

My bottom line is that deregulation has created the need for partnerships among shippers, carriers, and others. Intermodalism is the result of such partnerships and intermodalism creates the need for more partnerships. That is the reason for this Summit.
It is a pleasure to comment from the perspective of an intermodal marketing company (IMC) on the challenges and the opportunities implicit in the development of a North American intermodal network. IMCs are the “token entrepreneurs” of what is primarily a big ticket, big asset, large institution business. Accordingly, IMCs are at the bottom of the intermodal food chain. No one in this business really takes you seriously unless you have assets—especially large, highly visible, heavy, slow-moving assets. However, during 1996, IMCs accounted for approximately 38 percent, or 3,230,000 intermodal shipments in the US, the single largest source of intermodal revenue for US railroads.

In North America today, we experience what is probably the world’s most efficient logistics system. In the US, for example, while the nation’s freight expenditures have quadrupled from $116 billion in 1975 to over $450 billion in 1996, transportation costs have declined from 8 percent to 6 percent of GDP over the same period.

We can be justifiably proud of the role that the intermodal network has played in North America. It is, in many ways, a phenomenal success story that has been recognized throughout the industrial world. Some even see it as a model for their future growth and development. Yet, as we face the future, we also encounter a fundamental truth about this network and its commercial framework—the past in the intermodal business is a very poor author to the future. Why? Because, today’s network evolved out of a unique set of circumstances, which are largely no longer in existence and which are unlikely to be reproduced in the future.

What were the circumstances of growth during the past three decades? Essentially, North American intermodal grew:
• without a blueprint or plan;
• initially, by the conversion of carload to intermodal traffic;
• and later, by ocean-carrier conversion from East to West Coast ports to serve Midwestern, Northeastern, and Southeastern markets by rail;
• through the exploitation of underutilized route and terminal capacity, in a largely sunk cost environment; and, finally,
• with more complexity in its marketing channels and product delivery to the customer than is either economically rational or necessary.

As a stakeholder in this business, I continually experience cognitive dissonance when I focus on its nature. At the same time that it demonstrates great economic vitality, social significance, and customer value, intermodalism is also lacking in strategic direction from its major stakeholders. It is fragmented, overly complex, undercapitalized, and largely dysfunctional in its information exchange between trading partners. Perhaps this business is much as Dr. Johnson said of the dancing dog—"It's not so much that it is done poorly as that it is done at all."

None the less, even with a very imperfect framework, intermodal volume has grown for the past 15 years at over twice the growth rate of the US economy—an average 5.5 percent annually. For all of its apparent success, however, IMCs still have a very modest share, just 3 percent, of the overall domestic freight market. Yet, this rate of growth impresses. In a quote from the *State of the Truckload Industry* on 8 August 1997, Alex Brown states that "intermodal has grown from 2% to 3% of the market. While intermodal remains small in the context of the overall market, growth since 1985 has been impressive. Our sense of intermodal is that it works well in high density lanes, but that it is not really much of a factor in the bulk of the transportation markets in the U.S."

So today, 16 October 1997, as we attend this intermodal summit, we are asked to look not backward but forward, to identify what opportunities avail themselves and what obstacles appear as we enter the next century.

**PLANNING WITH THE CUSTOMER IN MIND**

Implicit in the mixed review presented here is the notion that we "wouldn't, shouldn't, and couldn't do it this way in the future." The future needs to be more planned and more clearly orchestrated to meet the customer's requirements than has been in the past. The capital preconditions of growth are too large to allow for a continued anecdotal approach to growth. Again, the cognitive dissonance is apparent. At the same moment that what brought us here seems frail and under-structured, it also seems to engender its own mitigation.
The stable and separate hierarchies of railroads, trucking companies, IMCs, and shippers are being superseded by a new railroad route map, new relationships—often between former competitors and blurring lines between sales channels, and far fewer asset owners and train operators. These shifts, of course, are only a part of a larger transformation that is embracing the entire economy—globalization—and a drive to more efficient uses of capital in a world of increasing scarcity.

Clearly, the IMC channel is undergoing its own major changes. The Hub Group and CH Robinson have become very successful public companies. The Hub Group, consequently, is moving toward more centralized control and execution, while RISS Companies, Mark 7, and others continue to build toward becoming multi-service logistics providers. The IMC channel will continue to consolidate, especially as rail carriers move to increase minimum revenue thresholds for contract holders.

These changes, however, should be the footnotes in the white paper entitled “The Year 2000 and Beyond: The North American Intermodal System.” The bold print, headline and text, should be the intermodal formula for meeting the changing and increasingly demanding expectations of the customers, something that is barely accomplished today. The information path between the real customer and the carrier has to be dramatically shortened.

The fin de siècle intermodal system in North America is a product of what the carriers had left over and what the entrepreneurs could create with minimal resources beyond their own sales acumen and desire to succeed. Credit these folk with a lot—they put the ball in motion and the business has grown beyond anyone’s expectations. And credit the customers—especially the liner company—whose needs and demands drove the major intermodal product innovation of our time—the double-stack train.

CUSTOMER EXPECTATIONS

What will the customers expect of intermodal vendors in the future? While not complete, the list will include the following:

- Reduced transit time—not truck-plus-one but equal to truck.
- Reduced effective cost—not just lower prices but lower effective costs that can come, in part, from:
  - greater dependability—allowing customers to remove the protection stock often maintained due to the variability of the intermodal product and
  - the appropriate vehicle—the North American home market is a 53-foot market.
When shippers are forced to cube down to the smaller intermodal equipment, the intermodal revenue opportunities are depressed, which adds to the costs of the end users. Incredibly, about 40 percent of the IMC fleet is still 45-foot trailers!

The characteristics that will meet these needs in an economically rational fashion include the following:

- A low cost of operation with high asset utilization. This requires equipment type simplification and stakeholders, especially IMCs, taking responsibility for the assets when they are not in the direct control of the railroad.

- Integrated enterprise systems, not linked by EDI, but systems that can be used by trading partners through the Internet or other business networks.

- Flexibility and a willingness to discard those parts of the past that no longer work, even though some of the parts are still profitable.

Where do the market opportunities reside? Here is where the merger picture comes into crisp focus. Looking past the immediate problems, mergers, if properly executed, will create opportunities for intermodal growth. If the vision includes the Norfolk Southern and CSX partitioning and operating Conrail, we see a multiple of new, shorter distance, inter-regional markets that will represent the most important growth opportunity for intermodal since its inception. CSXT’s Peter Carpenter put it well in a recent interview, stating that “the sizzle—the synergy—has to be north-south...Long haul, single line service between the growing, boom, increasingly industrialized, southeast and the major population centers of the northeast.” CSX believes it can quadruple rail share in these markets and convert 321,000 truckloads in three years.

Norfolk Southern’s application indicates that there is, essentially, a potential to double Conrail’s intermodal volume between certain local city pairs in a relatively short time frame. Norfolk Southern argues that, for a number of reasons, Conrail typically has a much lower current share of on-line traffic potential than the average for other carriers that are serving city pairs at similar distances. Assuming that this structural deficit in market share is corrected by the investment of Norfolk Southern in capacity and in marketing acumen, and assuming that CSX is correct about the intermodal potential in its territory post-acquisition, this may lead to the possibility of major new obstacles.
First and foremost will be intermodal capacity and access to it, and the question will be who gets access to the network and on what terms. Second will be rationalizing and restructuring the intermodal delivery mechanism to make it more efficient and more customer friendly. IMCs have an enormous responsibility in this context.

Today, the intermodal industry is straining to handle the volumes of traffic available to it. The future will require even more investment. And, that leads to the conundrum that must be faced—how does an asset intensive industry finance rapid growth from its earnings stream when Wall Street continues to expect sufficient free cash flow to protect dividends in those years when the business cycle trends downward? One financial analyst refers to this as the investment-growth dilemma, a dilemma that has ramifications for IMCs as well as for the rest of the “intermodal food chain.”

Panel II: Intermodal Transportation Issues—Passenger and Freight

Moderator: Craig R. Lentzsch, Greyhound Lines, Inc.

Panelists: William Bon, Brotherhood of Maintenance of Way Employees for Mac A. Fleming (labor)
George Davies, Apogee Research International Ltd. (environment)
Emilio Sacristán Roy, Ferrocarriles Nacionales de México (safety and security)
Sunil Harman, Miami International Airport (airports)
Ruben C. Medina, Transportacion Maritima Mexicana (seaports)

Panel II Overview

Panel II reiterated many of the same issues that were raised in Panel I. The panelists emphasized the need to enhance the quality of service, to improve the efficiency of the various modes, and to link the modes together in a manner promoting safety and security as well as protecting the environment. The need for governments to standardize rules and regulations was restated.

Additionally, this panel provided two very interesting case studies, one in the US that showed ways in which partnerships can create an in-
termodal terminal to improve the quality of service at an airport, and the second in Mexico, where a shipping company has been transported into a major intermodal company.

However, a new point emerged, one that deserves particular attention—the position of the workforce. There is little doubt that labor and its leaders feel alienated and marginalized. Any progress towards intermodalism must take into account the concerns and the interests of the workforce.

As the moderator of the panel discussion on intermodal issues for both passenger and freight transportation, I want to first provide an overview from the perspective of the mode that I know best, intercity passenger service by bus. In addition, I want to attempt to identify and frame the key issues facing intermodal transportation. The preparatory material from ITI suggested four issues and arranged for panelists to discuss labor, environment, safety and security, and ports and terminals. From my review of the panelists remarks, discussions with members of the ITI Board of Directors, and my own experience, I want to change the discussion of ports and terminals to infrastructure and add the issues of government and the legal system, technology and communication systems, and mode bias—or the perception of the stakeholders of each mode.

I have, then, grouped both freight and passenger intermodal issues into seven broad categories. Each category includes many specific barriers and obstacles to a seamless intermodal network which, when resolved, should enable a person to travel from Meridian, Mississippi, to Oaxac, Mexico, or from Yellow Knife, Canada, to Miami, Florida, or Pueblo, Colorado, to London, England, while only using the automobile for local transfers.
The following are specific examples of the issues that I have identified in my passenger experience:

INFRASTRUCTURE ISSUES

Terminals, ports, airports, roads, right-of-ways, and air space are manifestations of infrastructure issues, and, all of the infrastructure issues have one common bond—capital. It takes money to create infrastructure and it takes money to solve infrastructure issues. Capital creates our biggest challenge. The predominant single mode of passenger transportation in the US today is the private automobile. There are 160 million personal motor vehicles in the US alone, representing an investment by the American people of $1.5 trillion. It is a voluntary investment in infrastructure that private business or government cannot match. By comparison, for example, Greyhound Lines operates a nationwide network of 400 terminals and 2,000 buses for a total investment of only $300 million.

Now, like all owners of an investment, car owners want to use their cars as much as possible. They are convenient and flexible and the more they use their cars, the cheaper it becomes. While the full cost of operating a car today is 40 cents per mile, the marginal cost is only 5 to 10 cents per mile. By comparison, the intercity bus is the cheapest form of public transportation, and my average fare is 9 cents per mile. An intermodal system must be able to compete with a well-capitalized, low-cost automobile alternative.

INTERMODAL TERMINALS

In addition to the broad capital issues, there are also some specific infrastructure barriers to an intermodal system. In the US, most passenger terminal facilities are not intermodal in design, operation, or orientation. Having separate facilities for air, rail, transit, and intercity bus creates an overwhelming barrier to intermodalism. Passengers are not packages. A mode change in and of itself is a barrier, and if that mode change requires a lengthy walk in an uncontrolled environment or a cab ride, then the passenger will not even consider the mode change.

There are no places in the US where transit bus, transit rail, intercity bus, intercity rail, and air all come together. There are places where some combinations of modes do come together to reduce the physical barriers of intermodal travel. New York’s Port Authority Bus Terminal and Bos-
federally funded, $22 million airport that was half empty and, in spite of
rail, and air all come
ton's South Station are two facilities where transit, rail, and intercity bus
come together and mutually support each other. In addition, Greyhound
participates in 72 intermodal termi-
nals, which is 18 percent of our loca-
tions. These facilities usually
include transit and occasionally rail.
One bus station is in an airport and
one more is on airport grounds.
Greyhound has 56 more intermodals
in various stages of development. Three of our intermodal development
efforts are illustrative and, I hope, educational.

In Chattanooga, Tennessee, Greyhound was evicted from a tradi-
tional, old, decrepit downtown bus terminal. This community had a new,
federally funded, $22 million airport that was half empty and, in spite of
the support of the US Department of Transportation, the Congressman
from southeastern Tennessee, and Greyhound, the city fathers would not
let Greyhound use a small portion of their airport as a bus terminal. So,
Greyhound built a terminal across the street from the airport, and today,
on a code-share basis with Valuejet, it is running direct, nonstop service
to Atlanta's Hartsfield Airport. This bus service is giving the people of
southeast Tennessee their first access to low-cost air travel.

In Phoenix, Arizona, the transit authority built a transit hub in down-
town Phoenix. Land adjacent to the hub facility was available, but the
city would not permit Greyhound to build a bus station there. Interest-
ingly, however, they did permit Greyhound to build a terminal at Sky
Harbor Airport, and, this summer Greyhound carried 120 passengers per
week to the airlines at Sky Harbor from rural Arizona with no incremen-
tal cost to it or to the passenger.

The best look into the future is the experience of relocating the
Greyhound terminal in Atlanta, Georgia. With only eight months notice,
Greyhound relocated its terminal to the Garnett Street MARTA station,
providing easy interchange between the subway, transit buses, and inter-
city buses with rail access to the airport. The rapid creation of this in-
termodal facility with private capital was possible due to the vision of Bill
Campbell, the mayor of Atlanta, and the cooperation of the Atlanta City
Council, the Georgia DOT, MARTA, and the US DOT. Inclusive mul-
timodal terminals may be the most important part of a seamless in-
termodal system.

GOVERNMENT STRUCTURE AND THE LEGAL SYSTEM

This category includes enforcement, borders, trade, infrastructure
funding, and liability risk. In the US, the barriers to intermodalism start
at the top. The executive and administrative functions of the federal government are organized principally by mode and are supported by a small, but important, office on intermodalism. In the US Senate, three different committees have jurisdiction over intermodal issues. Historically, infrastructure funding has been mode specific.

Changes are coming, however. The US House of Representatives has consolidated its efforts under the Transportation and Infrastructure Committee. We have ISTEA, and its reauthorization is likely to have larger, broader pots of money, simplified processes, and more emphasis on intermodalism.

TECHNOLOGY AND COMMUNICATION SYSTEMS

There is no single database, point of contact, or common ticketing for planning an intermodal trip. Most travel agents will not sell bus tickets, many do not sell rail tickets, and city transit is completely segregated from the intercity system.

In Canada, however, Greyhound Lines of Canada conducted a bold air/bus experiment. With private capital, they created through-ticketing and a common distribution system. For 15 months, Greyhound carried 1.2 million people and saw 10 to 12 percent use the air/bus combination. While the experiment failed as a business, it proved the efficacy of air/bus intermodalism.

The members of the panel will specifically address the issues of labor, the environment, safety and security, and ports and terminals. However, I want to point out that all of our transportation modes require significant labor input and intermodal systems will be no different. Labor must be included in the process of developing a seamless transportation system, and intermodalism should be a friend of the environment because the economy of scale that an intermodal system creates should produce significant, long-term environmental improvements.

Safety and security, however, are issues of responsibility and perception. Our goal should always be a completely safe environment, and an intermodal system can be safer than mode-specific travel. The individual modes of transportation are already safer than private travel. For example, Greyhound Lines, Inc., had only one passenger fatality in the last three years, 1994-97, while traveling over 20 billion passenger miles.

The last and, perhaps, most complicated barrier to an intermodal system is mode bias. As Pogo said, “we have met the enemy and he is us.” Each mode’s perceptions, biases, and prejudices frequently have been the greatest barriers to intermodalism. In fact, the passengers on Amtrak, Southwest Airlines, Greyhound buses, and in our transit systems are all hard-working people with a need to be somewhere. They look alike.
Each mode's perceptions, biases, and prejudices frequently have been the greatest barriers to intermodalism.

while they are all different; they act the same while they pursue different life experiences. Fundamentally, they have similar needs and a common purpose. A seamless intermodal system will let each mode provide the service it performs best and empower the passengers to make the choice to get where they need to go, when they need to go, inexpensively, easily, safely, and with dignity.

Intermodal Transportation Issues: LABOR

by Mac A. Fleming

president, Brotherhood of Maintenance of Way Employes and ITI Board of Directors

Mac Fleming, the president of the Brotherhood of Maintenance of Way Employes (BMWE), was scheduled to address you, but he was unable to attend due to urgent business. I have spent a decade as the general counsel of BMWE, and Mac asked me to share some of his thoughts in his stead.

The Brotherhood of Maintenance of Way Employes represents the rail employees that construct and maintain the track, bridges, and buildings of the vast majority of the freight and passenger railroads of the United States and Canada. Our members repair the sophisticated machinery that we utilize in maintaining the track. We also construct and maintain the electric catenary system of the electrified portions of the national passenger railroad, Amtrak.

First, Mac asked me to convey his thanks for the invitation to address the Summit. However, some of what I will say may be unwelcome or controversial. BMWE does not like to be at odds with the many friends

(Fleming Paper was presented by William Bon, general counsel, BMWE.)
who will address the Summit. Indeed, US Transportation Secretary Rodney Slater will be here. He has been a good friend to BMWE and transportation labor. He has used his good offices to assist the parties in labor negotiations to reach fair and reasonable settlements. We appreciate his current efforts assisting Amtrak and BMWE to settle our current contract bargaining and, hopefully, avoid disruption to passenger transportation.

THE PERIL OF OVERLOOKING LABOR

BMWE does not like to be at odds with Secretary Slater or with our friends on the ITI Board of Directors. Nonetheless, we have some serious objections to the thrust of this Summit. Fundamentally, the approach of the Summit tends to “disappear” labor. While acknowledging the importance of the interests of customers and consumers, a key stakeholder in these enterprises is marginalized. Without their employees, transportation enterprises, whatever the mode, are nothing but useless accumulations of fixed capital. Yet, the enterprises have failed to seek a real partnership with their human capital. Instead, as this millennium draws to a close, the managers of enterprises both propose and dispose the future of the firm. Only as an afterthought are the workers invited to be enthusiastic about what is already a fait accompli. In most cases, the workers are told that they must make present-day sacrifices in order to enjoy some glowing future, when, presumably, the benefits of restructuring will trickle down to their level. Of course, for the managing elite and the holders of an equity interest in the firm, no delayed gratification is asked or demanded.

Many of the economic watchwords of the last quarter of this century are merely recycled ideas that have been antithetical to the vast majority of the populations who live with the consequences of their implementation. In the US, these concepts—deregulation, privatization, global competition, and free trade—have been used as bludgeons to eliminate good-paying jobs and to reduce the living standards of some three-quarters of the population, while they are gleefully embraced by both those who profit from them and a squad of neoliberal ideologues. Given these realities, we at BMWE remain hopeful that continental intermodalism and sustainable development may be visions that will benefit all stakeholders in the affected enterprises. Yet, based on our experience with other waves of change, we are skeptical that this will be so.

Unfortunately, there has been a disconnection between the champions of restructuring and the views of the employees that implement the changes. Academics and other industry observers have credited the Staggers Act with the renaissance in rail transportation. From the standpoint of employees in the rail industry, however, the results of Staggers have
been disastrous. While Staggers largely deregulated the industry, it provided a legal framework that enabled the Interstate Commerce Commission (ICC) to invent a new role as a labor relations agency. Under Staggers, the ICC stripped employees of statutory protections that mitigated the effects of the sale of rail lines. The ICC, and its successor the Surface Transportation Board, transformed these same statutory protections into a mechanism for carriers to rip-up their solemn contractual undertakings, arrived at through collective bargaining, whenever they proved inconvenient. Under Staggers, we saw employment drop from 457,000 workers on the US Class 1 railroads in 1980 to fewer than 200,000 today. We understand that the experience of our brothers and sisters in the other transportation modes has been no better.

Now, looking at the preliminary draft of the “Denver Declaration on Intermodal Transportation,” we see that the words “labor,” “workers,” and “unions” are missing. Although the declaration draft seeks to improve the integration of transportation planning, there is no hint that such planning must take into consideration the guarantee of decent and safe conditions for those who work in the integrated intermodal system of the future. Once again, it appears that the interests of the single most important sector within the transportation community—the frontline workers who provide the services—will be dealt with as an afterthought. Worse, the men and women who have dedicated their lives to transportation careers may be treated as if they were just another commodity, like a locomotive or a boxcar, rather than as the lifeblood of the enterprises.

Labor does not oppose progress, new technology, or changes in organizations and processes. Transportation unions are not shortsighted Luddites who wish to stop or reverse the clock of history. Labor wants employers to do well and to have the wherewithal to pay good wages. Labor has always risen to the occasion. It has adapted to the higher skills demanded by the new technologies. But the track record of industry has been one of exploding corporate profits and very generous executive salaries, paired with declining or stagnant real wages. The renaissance of industry, fueled by the exponential growth in employee productivity, has primarily benefited those who are high up on the corporate ladders.

RAILROAD TRENDS

We do not agree that the rail industry of the 1970s is rapidly heading for extinction, but we do believe that what is actually occurring is an adjustment between the modes and neglect by caretaker managers. In the
1920s rail was king; between 80 and 85 percent of all intercity freight moved by rail. There were few interstate highways, and those that existed were not the limited access roads of today. The airline industry was still an embryo. The automobile industry was still in its adolescence.

In the early 1930s, freight still had to move by rail or water. With the onset of the Great Depression, there was little impetus to create innovative transportation alternatives, as the country was crushed under the weight of enormous excess capacity. Once the war ended, however, a long wave of economic expansion began, fueled by pent-up demand and by new outlets for capital investment in industries created from wartime technological innovations. The interstate highway system was built, and air travel became commonplace. By 1980, the portion of intercity freight moved by rail had declined to a little over 30 percent.

Much of the contraction of the rail industry occurred before Staggers, but the job losses were ameliorated by both contractual and statutory schemes that eased the transition of long-service employees away from the industry. With Staggers, many of these protections were stripped away. The industry bottomed out, even as technological changes, such as piggyback cars and containers, melded rail routes with other modes. And, Staggers permitted the restructuring without recognizing the sweat equity of the employees.

Unfortunately, the overreaching concerns of the carriers were not limited to their labor-relations departments. Management short sightedness has created a situation where the zeal to boost the bottom line by paring track and employees has left some without sufficient capacity to move the freight volumes of today. Now, the railroads are unable to hire qualified people fast enough to meet the demands of the economy. Even a casual reader of the business section of any major periodical knows that the Union Pacific/Southern Pacific merger has created a transportation bottleneck in the West and Southwest, which will not be resolved in the foreseeable future. Ironically, some of the very shippers who were solicited to support the transaction find themselves without reliable service. Worse, the tangled operation has sacrificed safety, with three fatal crashes, several workers killed, and more injured because the mega-carrier seems too big to manage. This, however, has not warned others of the disease of mega mergers. Now, CSXT and Norfolk Southern seek to carve up Conrail, with the collaborators promising fierce competition the day after the feast. There is simply no reason to expect that the oligopolies that will result will be any better able to manage the transition without consequences to worker safety and customer service.
THE IMPACT OF LABOR ON INTERNATIONAL ARRANGEMENTS

Beyond the rail industry, we have already seen the results of international arrangements that do not consider the effects on workers and communities. Trucking safety standards differ between the US and Mexico. In the air industry, different standards regarding aircraft maintenance and the treatment of flight crews have raised the fear that the differences will be resolved by a race to the bottom. In the manufacturing sector, NAFTA failed to deliver on its promises. Good union jobs flow south, even as the real wages of Mexican workers have gone into precipitous decline with no sign of recovery from this post-NAFTA slide. Rather than a general prosperity, with working people entering or remaining in the ranks of the consumer-spending, middle-income groups, stagnating or declining living standards prevail. So, too, with the environment, as local environmental degradation and pollution of shared waterways result from the race to attract capital.

LABOR AND INTERMODALISM

Transportation labor accepts intermodalism. It is here; it already exists. The members of BMWE make it work even as this Summit talks about it. We believe that, as societies, we must continue to build on what already exists and to shape energy and space efficient and ecologically friendly transportation systems. We believe that the involved enterprises must be responsive to customer needs. But, we also believe that creating these systems involves social interests beyond the carriers and their immediate customers. We believe that international accords, understandings, and shared goals must, in each instance, protect the public, the workers, and the environment. We believe that the costs of change should not be borne solely by labor. Wages, benefits, and working conditions should not decline in any mode in order to accommodate the new continental and international intermodalism. Collective bargaining must be the cornerstone of the relationship between labor and management. Moreover, until we, labor, are included in the planning process, with the ability to reject schemes inimical to our interests, then you are not really talking about intermodalism. Instead, intermodal planning will be just another neoliberal disguise for the transfer of wealth from the pockets of workers.
It does not need to work this way. In the long run, enterprises will prosper if they can be competitive in their industries and also act as good corporate citizens and employers. To succeed in that role, dialogue must expand to include all affected communities of interest. And, for the dialogue to be real, it must begin at the beginning, for no post-hoc invitation to embrace the decisions of the governmental or management elite will be judged as other than public relations ploys that seek to manufacture consent. Extending the invitation to labor to be heard today is good, but a brief address at this Summit will not substitute for the kind of dialogue that should already be ongoing.

Again, I am sorry to have to put forward this discordant note among friends, but transportation employees should not be taken for granted. Time and again, when the legitimate interests of workers are ignored, discord and turmoil results. This is not inevitable. A real and substantive partnership can make development of an intermodal transportation system a winning proposition for all stakeholders in our respective societies.

Intermodal Transportation Issues: ENVIRONMENT

by George Davies

president and CEO,
Apogee Research International, Ltd.

An intermodal approach to transportation opens up greater possibilities to move toward a sustainable transportation system. However, we must recognize that all transportation activity has an impact on the environment. No transportation mode is environmentally benign. The movement of goods and people over similar distances can have significantly different impacts on the environment, depending on modal choices. A high-quality intermodal system, accompanied by market prices that reflect full environmental costs, can help make our North American transportation system more sustainable.
In Canada, between the truck and rail modes, some 40 percent of the freight is moved by truck, representing 60 percent of the value. Rail is the reverse with 60 percent of the tonnage moved, representing 40 percent of the value. This relatively higher value-added per-ton in the trucking mode is a reflection of the volume of lower-unit-value-commodity cargo that is moved by rail.

THE IMPACT OF TRANSPORTATION ON THE ENVIRONMENT

Apogee Research International has done considerable cost analysis of the environmental impacts by mode and has priced these impacts. Many of the costs are borne by society, as the costs are not currently reflected in the market prices being charged shippers. For instance, Apogee has calculated that the external costs of pollution for goods moved by truck is some 2 1/2 times the external costs of pollution for goods moved by rail (0.72 cents per ton-kilometer for truck versus 0.29 cents per ton-kilometer by rail). A breakdown of the external pollution costs by mode shows the following range of pollution costs per ton-kilometer:

- semi-truck $.72
- double trailer $.58
- piggyback rail $.36
- containerized rail $.29

However, these figures are an underestimate of the full range of environmental and social costs by mode. Full-life-cycle impacts, such as construction, manufacturing, maintenance, and disposal/recycling, were not factored into the equation. Only operating impacts are included. In addition, Apogee only calculated the costs associated with pollutants that have local and regional impacts as particulate matter—NOx (nitric oxide and nitrogen dioxide), VOCs (volatile organic compound), and SOx (sulfur dioxide). For local and regional pollutants, there is an established science of estimating costs to health or environment. Apogee did not calculate the impact of global pollutants, such as carbon dioxide or CO₂.

As the world leaders begin to make decisions about global warming prevention strategies, much greater costs will have an impact on various modes. The relative magnitude of the impacts on the modes can be understood by looking at the emissions of CO₂ in Ontario, a province of 11.5 million people and an economy that is...
heavily dependent upon manufacturing and trade, particularly with its six neighboring US states. Here, the private motor car, commuting to and from work, is responsible for 50 percent of the CO₂ emissions in Ontario; the intercity passenger car is responsible for 22 percent, the intercity truck some 15 percent, and the intercity rail freight 6 percent. Transit is responsible for 2 percent. Obviously, measures to reduce global CO₂ emissions will have the effect, or should have the effect, of shifting people from cars to urban transit and intercity freight from truck to rail.

The freeing of markets has demonstrated how quickly the transportation modes can respond to shippers needs to move goods quickly and efficiently to market. While market signals now determine the most efficient private decisions in transportation choices, a full accounting of the environmental costs is not available, which would allow for the market to make the right environmental and social choices in determining modal splits.

MOVING TOWARD “SUSTAINABILITY”

Government is faced with the challenge of how to intervene to help move transportation activities to greater levels of sustainability. One of the most effective ways to do so will be to level the playing field across the modes by assessing fairer taxes, by eliminating subsidies, and by moving to reflect fully the environmental costs in market prices and best practices. While there is still a role for targeted regulation, for example, in fleet fuel efficiency standards, market mechanisms have proven their effectiveness and efficiency in obtaining environmental improvements at least cost. The example of tradable emission credits to attack sulfur dioxide emissions demonstrated that the market could obtain results at about 10 to 40 percent of the cost predicted for a traditional governmental regulatory approach. The discussion of solutions to tackle global warming at Kyoto, Japan, in early December 1997, can be expected to examine the applicability of tradable emissions credits. Measures to address global warming will have a major impact on the transportation sector and will open up new opportunities for intermodalism.

There are many transportation “best practices” on how to achieve a lower impact on the environment—from how to move people to and from work to how to move goods to and from the marketplace. The commuter rail system in Toronto replaces the need for six more expressways, and Toronto and Ottawa have among the highest rates of transit utilization on the continent. Both the commuter rail system and the transit system in Toronto are currently covering 80 percent of their operating costs from fares, and this is before pollution costs have been fully reflected in the pricing system, which will further increase the use of urban transit.
INTERMODAL CONNECTIONS

Good intermodal connections are helping Toronto achieve high rates of utilization with the public transit park-and-ride; with fair integration with suburban and regional transit systems; with route and schedule integration; with a commuter rail station that also handles intercity rail and connects directly to the subway; with some intercity buses; and most importantly, with an underground walkway to office building concentrations in the downtown area that allows over 80 percent of the people arriving by commuter rail to walk to work. However, much more can be done to improve the intermodal passenger system within Greater Toronto. Key to greater transit utilization and better transit economics is improved land-use planning. Urban development in the Toronto area must be planned in a manner that achieves much higher densities, less urban sprawl, and establishes workplaces close to living areas. In one newly planned community of 35,000 people northeast of Toronto, 30 to 40 percent of the workforce is expected to find employment within the community.

There are successful cases of intermodalism in the movement of intercity passengers. Greyhound, Canada’s largest intercity bus company, established its own airline, provided interline ticketing and routing that used the bus system as a feeder system to airports, and achieved high user acceptance. Unfortunately, the service was undercapitalized and is no longer in operation.

Canada has also examined the feasibility of high-speed passenger rail between Toronto, Ottawa, and Montreal through a federal provincial task force that I chaired. The system was designed to interconnect with both airports and transit systems. However, the task force concluded that it was a great concept that could not be economically justified at this time but recommended that the government and the private sector revisit the feasibility in five years when circumstances may change.

Environmental considerations and costs will have a major impact on the transportation system responsible for moving both people and goods. An effective and efficient intermodal system can help ensure that the impact is managed in a way that will cause the least disruption to the economy and to people. We need to learn much more about best practices, apply them throughout the world, monitor their results, and learn from their experience. There is so much more to be done, and we are only scratching the surface of intermodal possibilities.
The free flow of merchandise throughout the North American Continent has become a reality. An efficient system of transportation is a crucial part of this flow, a system that brings together all modes of transportation, in essence, an intermodal transportation system. However, it is necessary to recognize that we still have a distance to go. The transportation system in each country differs in quality and service, so there is a need to design the proper strategies in order to reach common objectives.

With the issues of safety and security, the situation is not different. Each mode has a full set of regulations to ensure that it is safe and secure. However, a set of regulations has to be applied to an intermodal transportation system, and, of course, the conditions and situations affecting safety and security are different in each country. In this regard, the preoccupation of carriers and shippers to preserve the integrity of their freight against damage, theft, and vandalism is well justified.

Each of the modes has responded to the problems of safety and security, initially merely as regulations and later as technological solutions. The concerns have produced extensive regulation on infrastructure, vehicles, and operations as well as on the techniques of loading, handling, and packing materials. In the case of railroads, the US Federal Railroad Administration and the American Association of Railroads have a set of regulations, standards, and procedures.

The development of intermodal transportation and the increased use of the container, which promoted the interaction of modes, required a uniform set of rules and regulations on the following:

- the design, construction, and operation of vehicles and containers
- cargo liability and insurance
- documentation
• responsibility of the different agents
• border traffic, customs, and other inspections

Today, the need for standard agreements and terms in intermodal transportation across borders is evident. This is an important, long-term challenge. Considering that it took almost a century to arrive at a common and homogenous rail system, the task for intermodalism becomes more illusive.

However, this comprehensive set of regulations is yet to be established and agreed upon. Back in the 1970s, the United Nations made a formidable effort in the design of such convention. Mexico became a signatory, yet it could not achieve worldwide agreement. New efforts have to be initiated for North America.

INTERMODAL OPERATIONS

Railroad intermodal transportation in Mexico consists of basically two forms, the piggyback and the container. A brief experiment of rail over barges failed. The first, the piggyback, is mainly used for the export of tomatoes and other vegetables in refrigerated trailers from regions in Northwestern Mexico to California and Arizona.

The second, containers, refers to the import and export of manufactured goods and parts, particularly the high-value automobile parts. The transportation of containers is the fastest growing traffic of the railroads as well as the ships. Despite its growing traffic, however, railroads are behind the truckers in the movement of containers. The fast growing use of the container is due, to a large extent, to the great protection of the integrity of merchandise as well as the greater possibility of rendering a “just in time” service, which requires that the service be provided on preferential terms, in train dispatching, crew programming, and terminal services.

Within Mexico, however, the movement of containers is still very limited when compared to the US and Canada. In Mexico, the containers are seldom moved in special doublestack flatcars but are usually transported in ordinary gondolas. In some instances, the international freight traffic is also transported in such an inefficient manner, especially that directed to the seaports. However, the trains interchanging at the border, performing it at the final destination, where specified areas have been authorized as inspection sites.

Piggyback traffic has yet to grow much more. At least 90 percent of the trailers arriving by train at the Mexican border from the US or Can-
ada are transferred to trucks. In the case of containers, at least 50 percent of them arrive by rail and are transferred to trucks. At the ports, about 90 percent of the containers from overseas are transported inland by truck instead of rail. This is largely due to the inability of the railroads to keep their schedules and not to safety or security issues. This situation will improve with the increase in the efficiency and the reliability of the railroads due to the privatization effort.

Safety in intermodal traffic is directly related to infrastructure, operations, vehicles, and handling. The safety record in intermodal service in Mexico has been very high, basically due to the uniform standards of the Mexican infrastructure, vehicles, and services with those of US and Canada. In fact, the number of safety incidents registered for the whole railroad industry was 1,257 in 1995 and 878 in 1996; in the case of container traffic, only one claim was registered in both years. It must be recognized, however, that some claims may have been made to the freight forwarders, as well as to the insurance companies, that were not, in turn, made to the railroads. Nevertheless, the record is very good. Regarding piggyback traffic, incidents practically disappeared with the practice of forming mixed trains with container cars. The safety records of the container and refrigerated trailers moved by trucks are not nearly as good, basically because there are no uniform standards of control and regulation.

Security is a major concern in Mexico. Security issues are the major problem confronting container traffic for both railroad and trucking companies. Trucking thefts have increased as vandalism has lost its relevance. Today, shippers are increasingly worried about the security of their freight on highways and are willing to exchange reliability and timing for greater surveillance. The Mexican trucking industry is overcoming the 1994 crisis and is willing to cover the costs of improving security.

Security is not as serious a problem for the railroads as for trucking, yet some freight shipments have been hit hard, particularly in the auto industry. Special programs with added surveillance have been shared by the shipper and the carrier and applied at the intermodal terminals. It
seems that containers are more easily violated within Mexico where no doublestack trains run. Vandalism does occur; however, with the exception of some incidents at the border, it is relatively minor.

CONCLUSIONS

The US, Canada, and Mexico have signed NAFTA with the conviction that it is possible to achieve greater economic prosperity for the respective countries through free trade, which is based on fair and clear rules that permit healthy competition and that respect cultural customs and differences. Transportation plays a key role in the development of the free-trade markets, which is why a specific calendar was set for the removal of barriers and for the establishment of compatible technical standards and rules.

The railroads are driving the intermodal system in Mexico, due to the influence of the Association of American Railroads and to the existence of uniform standards across the North American Continent, which have existed for many decades. It is important, however, to arrive at a comprehensive set of rules regarding safety and security in connection with intermodal freight transportation, including:

- specifications for vehicles (trucks, locomotives, and cars);
- emission standards for vehicles;
- licenses, inspections, and medical requirements for drivers and engineers; and
- standardized road signage and signals.

In order to develop a more uniform transportation infrastructure, it is important to have a planning process that is considerate of and compatible with environment technologies, safety and security concerns and issues, and the overall optimization of transportation facilities. As in many other areas in intermodal transportation, and specifically in safety and security, Mexico lags behind its two North American counterparts. Yet, with their assistance, Mexico will be able to eliminate the gap in a reasonably short period.
Intermodal Transportation Issues: AIRPORTS

by Sunil Harman

chief of aviation planning,
Miami Intermodal Center Project,
Miami International Airport

The Miami Intermodal Center (MIC) Project is sponsored by the Florida Department of Transportation (FDOT). The FDOT prime consultant, ICF Kaiser Engineers, is leading the effort in the preliminary engineering and design work and in the preparation of environmental impact documents for the project.

In November 1996, FDOT entered into a pre-certification, post-franchise agreement with Florida Overland Express, L.P. (FOX), a private consortium of nearly 30 companies led by Bombardier, GEC Alstom, Fluor Daniel, and Odebrecht Contractors of Florida, to undertake ridership and alignment studies for a high-speed rail system linking the MIC and the Miami International Airport with Orlando and Tampa. The 320-mile system would utilize all-electric trains derived from existing TGV trains, currently in use in Europe. FOX anticipates completing the certification process in 1999.

Dade County, Florida, located at the southeastern most corner of the United States, is undergoing rapid population and employment growth, particularly in its suburban areas. Between 1990 and 2020, the population in Dade County is expected to increase by 70 percent to over 3 million residents. Employment is expected to grow by 28 percent for the same period.

Suburbanization of population and employment has led to a significant increase in automobile use. Because of the disbursement of jobs and residences, the automobile accounts for 95 percent of travel in urbanized areas. Miami International Airport (MIA), located in an urban, land-locked area, approximately 9 km (6 miles) west of Miami's central business district, is the world's ninth largest airport in terms of total annual passengers, but physically it is one of the smallest. Miami's geographical location, relative to international markets in Central and South America, the Caribbean, North America, and Europe, has resulted in MIA exper-
Dade County is served by several transportation modes: Amtrak, Tri-Rail (a regional commuter rail system), and Metrorail (a countywide heavy rail system). The local bus service, Metrobus, is provided by the county’s transit agency and several smaller private-sector service companies. Greyhound Lines furnishes intercity bus service.

There is, however, a lack of connectivity between these local, regional, and intercity transportation modes, as there is no central, intermodal, transfer facility. Moreover, none of these modes provide direct access to MIA, except for Metrorail, which provides infrequent service to the passenger terminal area. Metrorail’s nearest station is almost 6 km (3.7 miles) north of the airport. Amtrak and Tri-Rail service terminate at stations located approximately 6 km (3.7 miles) and 2 km (1.2 miles) north of the airport. Shuttle-bus service provided only between MIA and the Tri-Rail station is frequently adversely affected by area roadway congestion. And, Greyhound bus ser-
vice terminates approximately 3 km (1.8 miles) east of the airport and is accessible to MIA only by private automobile or taxi.

Therefore, the Miami Intermodal Center, is proposed to serve as a regional hub for Amtrak; Tri-Rail; Metrorail; future high-speed rail service between Miami, Orlando, and Tampa; a proposed east-west rail line; bus; taxi; private automobile; bicyclists; and pedestrians. The MIC will house selected airport landside terminal functions, such as ticketing and baggage service, and will be connected to MIA via an automated, fixed guideway transit system—the MIC/MIA Connector. In addition, the MIC will accommodate the Airport/Seaport Connector to provide premium rail service between the airport and the seaport. Included within the MIC program is a six-lane expressway connection (the Interconnector) between State Road 836 and State Road 112, which will also provide expressway access to the MIC and MIA. The Interconnector will also serve as an additional east-west connection, linking I-95 on the east and the Florida Turnpike on the west.

EARLY MIC SITE SELECTION AND PLANNING PROCESS

The MIC project began in the early 1980s when the Dade County Aviation Department (DCAD), the county entity that operates MIA, developed strategies for relieving the congestion at the MIA passenger terminal area. Some of the earliest attempts at resolving area-wide congestion included looking at the feasibility of building an additional airport in the Everglades. However, this project was stopped for environmental reasons. In 1989, Metro-Dade accepted the Miami International Airport Area Transportation Study recommending implementation of a multimodal transportation access facility. Such a facility would link commuter, heavy rail, light rail, and future high-speed rail as well as bus service, thereby providing needed regional connectivity and improved access to the airport. In the early 1990s, the State of Florida implemented multimodal policies to encourage the use of transportation modes other than the single-occupant vehicle. The policies specifically limited the number of lanes on state highways. The passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 by the federal government spurred local planners and decision-makers to undertake planning efforts to link the two local commuter rail systems, Tri-Rail and Metrorail, with MIA, and to improve roadway access at MIA.

Dade County initiated studies for what was originally called the MIA Intermodal Center in 1992-93. The resulting report identified ten sub-areas within the study area as possible locations for the MIC. A comprehensive site evaluation recommended two sites, which were located immediately east of the airport, for further study and evaluation.
STATUS OF ENVIRONMENTAL IMPACT STUDIES

The development of the MIC was further pursued in 1993 when an Environmental Impact Statement Study was initiated. Prior to this, six federal agencies, namely, the Federal Highway Administration, the Federal Transit Administration, the Federal Railroad Administration, the Federal Aviation Administration, the Maritime Administration, and the United States Coast Guard signed a Memorandum of Understanding with the Florida Department of Transportation (FDOT) to coordinate each agency's role in implementing actions related to the MIC.

Site evaluation and selection processes were developed to assess the most feasible alternative for location of the MIC. Criteria were based on:

- ability to accommodate airport-related functions; light, commuter, and heavy rail; bus and vehicular access;
- compatibility with surrounding communities and with existing, as well as future, land-use plans;
- creation of joint-development opportunities, described as capability of a site to generate opportunities for joint and associated developments within the limitations of Federal Aviation Administration and zoning regulations;
- impact on natural environment; and
- costs.

FDOT's Draft Environmental Impact Statement (DEIS) for the MIC was approved by the Federal Highway Administration in October 1995. The Dade County Board of Commissioners subsequently adopted the DEIS, and the recommended development alternatives for all MIC project components were included in the county's official long-range transportation plan on 7 March 1996. The completion of the FDOT's ongoing PE/FEIS process for the project should result in approval from the Federal Highway Administration, which would facilitate funding for final design, land acquisition, and project construction. It is estimated that the core functional areas could be operational by 2005.

RELATED ACTIVITIES AND STUDIES

Other major projects external to the MIC may result in programmatic and design impacts as the project proceeds through final design and implementation. These projects are occurring concurrently and are being closely coordinated throughout the MIC design process. The projects include:
The MIC facility will serve as a central transfer point for a wide variety of transportation modes on trips using light, commuter, and heavy rail, future high-speed rail, the Airport/Seaport Connector, bus, private automobiles, bicyclists, and pedestrians. The MIC will also become an extension of Miami International Airport landside terminal functions, accommodating airline ticketing, baggage claim, rental-car services, limousine services, and parking, as identified in the MIA Airport Strategic Terminal Planning Study.

Other key components of the MIC will include an automated people-mover system, referred to as the MIC/MIA Connector, to link the MIA terminal area with the MIC, rental car facilities, and other associated development. Forecasts indicate that a total of 80,000 passengers per day are expected to use the MIC. Of these, 60 percent or 48,000 will be traveling to or from the airport on the MIC/MIA Connector.

The MIC Core, consisting of a central facility to house MIA-related and intermodal functions, will encompass an area of 123,146 square meters (1,325,000 square feet) and rise to height of 48.7 meters (160 feet). MIC functions will be distributed on five levels:

**Basement Level B** will contain service-access functions, mechanical and ancillary spaces, baggage-handling facilities, and a baggage tunnel linking the MIC to MIA.
Arrivals Level 1 will service the arrivals, vehicular loop, and curbfront activities and will have the public lounge and circulation spaces, baggage-claim facilities, inbound baggage make-up area, and associated ancillary and support spaces. A 12-bay bus facility for Metrobus and other regional bus service will also be located at Level 1, east of the MIC Core.

Departures Level 1A will contain the departures, vehicular loop, and curbfront activities as well as public lounge and circulation spaces, ticketing and baggage-check facilities, outbound baggage make-up areas, and associated ancillary and support spaces.

Main Concourse Level 2 will contain the main public and circulation concourse, the MIC/MIA Connector access vestibule and platforms, Tri-Rail access vestibule and platform, Amtrak access vestibule and platform, Metrorail access vestibule and platform, East-West access vestibule and vertical circulation, Airport/Seaport Connector access vestibule and vertical circulation, the high-speed rail lobby, lounges, and vertical circulation and associated ancillary and support spaces.

Upper Platform Level 3 will contain the high-speed rail platform areas, the East-West and Airport/Seaport Connector platforms, the Airport/Seaport Connector passenger waiting lounge area, and associated ancillary and support spaces.

Additional levels may contain collateral ancillary and support facilities for MIC, MIA, rental car, and joint development functions. A 1,500 space park-and-ride facility for the east-west corridor rail is proposed immediately east of the MIC Core with direct access to the east-west platform.

The capital cost of the MIC and its components is estimated at $1.8 billion (1995 dollars). A 20-year program is assumed, based on current projections of patronage demand. Except for the MIC/MIA Connector and Tri-Rail, the cost of building and operating the rail systems serving the MIC is not included in the MIC costs (other than right-of-way), and they will be borne by the tenant modes. Major elements of the MIC, such as rental car and public parking facilities and landside MIA terminal facilities, will be developed incrementally, depending upon the demand for increased capacity.

**JOINT AND ASSOCIATED DEVELOPMENT**

The synergy resulting from the development of a major intermodal facility in close proximity to Miami International Airport creates significant opportunities for private-sector development within and adjacent to these facilities. An aggressive joint development program has been established for the MIC to capture this potential and, thereby, help to offset
capital and operating costs of the facility. This development will also enhance the ridership on public transportation modes serving the MIC, and the joint development plan will include office, hotel, conference, retail, and entertainment space.

CONCLUSIONS

The Miami Intermodal Center, as a significant component of the region’s transportation network, will help solve mobility problems that plague the growing South Florida area. Strategically located next to Miami International Airport, the MIC will promote the intermodal goals stipulated in the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). And, the MIC will also enhance the long-term viability of Miami International Airport by incorporating certain landside functions into its core and consolidating rental car functions adjacent to it, thereby relieving traffic congestion at the airport.

Intermodal Transportation Issues: SEAPORTS

by Ruben C. Medina

director, Port Business Division,
Transportacion Maritima Mexicana (TMM)

Today, statistical data obtained from the United Nations states that close to 90 percent of the exchange of goods between nations is performed via maritime transportation. Historically, regular liner maritime transportation started in the early 19th century when an American shipping line started a timely service between New York and Liverpool. Soon, regular sailing routes were established from the European countries to the West Indies, Australia, and India. These liner-shipping routes were accepted as the means whereby general cargo was transported across international waters. Extensive investment and development of the maritime fleets followed in order to serve the growing overseas markets with European and American maritime interests dominating the arena.
Towards the latter part of the 19th century, the opening of the Suez Canal shortened the routes between Europe and the Far East, and, in the early part of the 20th century, the Panama Canal further reduced the steaming distances. Though distances were shortened, however, the ship owners were facing mounting costs as cargo handling productivity declined and operating costs increased, not to mention the inadequate use of the vessel's capacity. Ships were spending too much time in port and too little at sea, and a vessel is only profitable at sea, not in port.

At this time, the most modern "break bulk" ships were making an average of two-to-three roundtrip voyages per year. This meant that 60 to 70 percent of the time the ships were sitting idle at port. There was a reason for this high-cost scenario. Productivity in the ports was quite low, the equipment for handling the cargo was inefficient, and the way the general cargo was packed for shipment was neither adequate nor conducive for the fast turnaround of the vessels. In addition, pilferage and damage were extensive, which hampered both the shipper as well as the ship owner from providing the final consumer with reliability and cost efficient merchandise.

The goods, or general cargo, were handled, at times, no less than 25 times between Europe and the US Midwest. Therefore, the percentage of what is called "end products" selling prices that were attributed to transport were increasing at an alarming rate.

Expensive items of capital hardware would stand idle for days, not to mention weeks, affecting both the overseas as well as the domestic traffic movements. Depressed profit margins were, therefore, the stimulant for change and innovation in maritime transportation.

Changes were implemented at each interface of the transportation chain, creating a more streamlined approach to the entire concept of cargo handling, and the concept of "consolidation of cargoes" emerged. This concept of "fewer but heavier" loads at the ports led to the evolution of box transportation, which was the birth of the container and the beginning of intermodal transportation.

INTERMODAL BREAKTHROUGH DEVELOPMENTS

This breakthrough came from the United States domestic market, and the credit is given to Malcolm McLean, the initiator of Sealand Services. A trucker by profession, McLean was concerned with the costs of handling cargo in the cities from the Northeast Coast to the Gulf. In essence, his idea was to lift the entire truck trailer onboard the ship, utilizing his tractors to the fullest at each end of the route.

This trailer/load scheme became a large steel box filled with cargo. In the past it would have taken 15 to 20 single cranes to load the same
TMM has come a long way in just 42 years. The possibilities for continued NAFfA, too, has enhanced this perspective.

Saavedra Ceron to explore the South Pacific. This was the beginning of shipping companies. The first class service will not survive in the global marketplace. The regularity and the reliability of the shipping schedules on the world's foremost trade routes have enabled the large multinational shippers to set up "just in time" processes in which the container ship is part of the production-line process. Liner shipping is now interrelated with world economies. The traditional ship owner is now a "through transport operator" with knowledge of the road hauler, container controller, and marketing agent. In other words, the shipping line is now involved in what is called "multimodal-integrated transportation." It is a must, and those that do not offer this first class service will not survive in the global marketplace.

THE MEXICAN EXPERIENCE

As an example of the evolving "multimodal-integrated transportation" system, I want to discuss the experiences of Mexico and my company, Transportacion Maritima Mexicana (TMM). Mexico has been transporting goods by sea since the 15th century, when Hernan Cortez sent Saavedra Ceron to explore the South Pacific. This was the beginning of trade between Mexico and the Philippines, followed by a flourishing trade between Mexico and both Spain and South America.

However, while Mexico continued to trade, it was served by foreign shipping companies. It was not until 1952 that Mexico had its first national shipping line, Transportacion Maritima Mexicana (TMM). And, TMM has come a long way in just 42 years. The possibilities for continued growth are unlimited, at this moment, because both the government of Mexico and various companies have a clear vision for the future. NAFTA, too, has enhanced this perspective.

Today, TMM is the largest transportation and distribution company in Latin America. It owns and operates 6 port concessions, owns and
manages railroads, possesses chemical, oil storage, and warehousing facilities as well as value-added facilities at manufacturing sites. TMM also owns and manages trucking companies (both cross-border and dedicated-service contract carriers). A fleet of 38 container vessels attends the 6 liner services to and from Mexico to Europe, the Far East, and South America. Also, TMM owns and operates 5 car-carrier vessels servicing the Far East to the United States and from Europe to South America.

Today, TMM is the largest transportation and distribution company in Latin America.

TMM also participates in bulk cargo transportation, whether in crude oil or parcel tankers, as well as operates 11 supply vessels that attend Pemex offshore drilling facilities. Today, the TMM container fleet amounts to over 90,000 boxes.

Most recently, TMM has become the majority shareholder of “Flota Mercante Gran Colombiana,” based in Bogota, Colombia, and of “Compañía Transatlantica Española,” based in Madrid, Spain. Also, TMM has strategic alliances for some trade lanes with APL, Hapaglloyd, and C.S.A.V. TMM is becoming a truly integrated multimodal transportation network, and its primary focus is on multiple lanes to and from Mexico.

Intermodalism will work if a truly seamless product can be constructed. TMM believes that it will be one of the first companies in the world to provide a truly integrated multimodal product. Today, TMM, with its partner Kansas City Southern Industries controls, TFM “Transportacion Ferroviaria Mexicana,” a significantly important NAFTA railroad link. In fact, TFM calls itself the “southern half of the NAFTA railroad.” This railroad, TFM, represents the shortest and most efficient route within Mexico and serves states that represent 78 percent of the population and 75 percent of the production of Mexico. This railroad is well positioned with the most efficient and shortest routes to and from primary population and production centers in the United States. This unique positioning will allow TFM to be the spine of a US-Mexico intermodal system as it connects directly to the Union Pacific in Laredo and to the Burlington Northern Santa Fe in Brownsville, Texas. TFM has already begun operating the former “FNM Northeast Railroad,” and freight volumes are significantly increasing. It is anticipated that this railroad will become a very successful venture as it is user friendly, competitive, and fair with all of it connections north of the border.
TMM has other operations that exist close to this spine. Setesa Operations are value-added facilities where logistical activity occurs at primary automobile plants and other manufacturing sites throughout Mexico; TMM tank farms provide for the storage of chemical and food grade chemicals; and warehouses that TMM controls and manages provide additional storage space. In addition, TMM manages port facilities—Tampico-Altamira, Veracruz, Manzanillo, Acapulco and Cozumel—that are connected through to the TMM railroad system. TMM will be expanding into the terminal ports in Mexico City, San Luis Potosi, Monterrey, Queretaro, Neuvo Laredo, and Laredo at Tex Mex. TMM has the potential of offering a totally integrated product.

The next step for TMM is to take all of these assets and to begin to market them as an integrated product. In early 1998, TMM will be forming a Mexican logistics company, and that company will utilize the natural positioning of all of TMM's assets and market them under one price for users both within Mexico and within the United States. TMM maintains that no company has ever had this kind of density or opportunity, serving 78 percent of a nation's population and 75 percent of a nation's productivity. TMM intends to use all of these assets in a way that makes sense, to enhance all of the elements of the supply chain, and to begin to provide customers with a truly integrated service.

CONCLUSION

This is a product offering that is nonexistent today. Some companies own some ships, some own some railroads, and some own some trucks. They call themselves integrated multimodal providers, but very few of them can control enough assets to maintain high quality service throughout their entire supply-chain channel nor can they offer competitive prices because of their many partners. The components of this supply-chain management system have their hand out waiting for a profit.

This is the vision of TMM and its Chairman José Serrano. In 1998, TMM intends to take all things that it has done over the years and begin to offer a product in the broadest sense of the word—to land ports, to seaports, to terminals—all linked to TMM ships, railroads, and trucks as well as to the TMM value-added services. TMM, because of its geographical position and its willingness to meld its services into an integrated product, is in an extremely solid position to work with US, Canadian, European, Asian, and Latin American partners to make a Mexican integrated-intermodal product a reality.
Summary of the Conclusions of the Panel Discussions

Considering both of the panel discussions together, the key points raised by the stakeholders may be summarized as follows:

- Major changes are taking place in all aspects of transportation as a result of globalization and national developments, within modes, in their relationships, and in their relations with customers.
- The existing infrastructure is inadequate, particularly with regard to terminals for truck, rail, port, and air.
- Governments have adopted and implemented rules and regulations that are not clearly defined and that inhibit the effective and efficient operation of the private sector.
- Local and regional planning organizations are insensitive to the needs of the freight community.
- A new concept of the trip needs to become accepted, one that recognizes it begins at the home or the factory and ends at a final destination. Terminals must be viewed from this perspective.
- Relations among countries and modes should be based on principles of reciprocity and equality.
- Each mode possesses advantages and disadvantages.
- Increased cooperation between modes is essential. To some extent, they may remain competitive, but there may very well be some continuing consolidation between modes, such as Virgin Air operating passenger trains in Great Britain.
- Transportation does not generate high returns on investment, thus limiting the amount of resources available for upgrading and modernization.
- Governments must establish common standards and procedures.
- Governmental policies and subsidies should be based on the principle of modal equity.
- Attention should be paid to processes that integrate the different modes.
- Greater attention must be paid to meeting customer expectations and lowering their perceptions of the risks involved in intermodalism by achieving greater reliability in deliveries.
• There is a need for shortened information paths between the real customers and the carriers, increased reliability, and better integrated information systems.

• Planning and decision-making structures and processes of private firms as well as of governments require renewed attention.

• Governments should better coordinate the rules and the regulations issued by their various departments.

• Given the rapid changes that continue to characterize technologies, international trade, and customer demands, it is essential to plan for the future.

• Each mode should strive to achieve greater efficiency.

• The role of national cultures and values must be recognized.

• The needs and the interests of the workers must be taken into account when devising and implementing intermodal policies.
Gilbert E. Carmichael
Chairman, ITI Board of Directors
Vice Chairman, MotivePower Industries

Gilbert E. Carmichael serves as chairman of the Board of Directors of the Intermodal Transportation Institute at the University of Denver. A leading international authority on railroad and intermodal transportation policy, Carmichael was the Federal Railroad Administrator in the US Department of Transportation during the administration of President George Bush.

Carmichael helped to develop President Bush's national transportation policy to reform laws to permit intermodal transportation initiatives and to formulate new federal policy toward the rail mode and Amtrak. He also supervised international railway technical assistance programs and sponsored the first World Railways Congress in 1991, which brought together senior government and railway officials from 60 nations.

He has presented and published numerous papers on the transportation industry, promoting the need for a North American and global “intermodal” freight and passenger system utilizing the world’s rail network.
An Overview of the 21st Century North American Intermodal System

Allow me to offer a brief vision of North America’s intermodal transportation system early in the 21st century, not a long-distance vision but one that could be in place ten years from now. A couple boards a Greyhound bus in Columbia, Mississippi. They will not see their checked baggage again until they retrieve it at the carousel at DeGaulle Airport in Paris or the train station in Vouray, France—their final destination. There will not be any enroute haggling with ticket agents because the coupons and boarding passes cover the entire trip.

A Greyhound bus delivers a traveler to Jackson or Meridian, Mississippi, where the passenger walks through a modern intermodal facility that is comfortable, convenient, and a hub for downtown retailing. The traveler then boards a high-speed train and is delivered directly to the New Orleans International Airport terminal and one hour later boards a nonstop flight to Paris. Most of the infrastructure to accomplish this trip was already in place in 1997—as was the computer technology for reservations and ticketing.

Meanwhile, a customer at a Macon, Georgia, auto dealership orders a car. Within days his automobile rolls off the assembly line in Ontario, Canada. Within one week it is in a dealer’s lot in Georgia. The auto company’s logistics manager can remember that in 1997 it often took three weeks, or a month, to get the vehicle from the factory to the dealer.

A doublestack train leaves the Seattle, Washington, dockside and arrives in Kansas City, Missouri, with the same reliability and schedule as UPS second-day air.

The mayor of Denver, Colorado, cuts the ribbon for a new freight intermodal facility on the city’s northeast side. City and county planners had concluded three years earlier that a rail-truck intermodal center would reduce pollution and traffic congestion. Project costs were shared by two railroads, a major trucking company, the state transportation department, and the city—which was able to use federal funds under the ISTEA law now in effect.

Twenty regional high-speed rail passenger corridors are in operation—at speeds of 90 to 150 miles an hour—with construction under way for 200 mile-an-hour service from Chicago to New York via Detroit and Buffalo.
Passenger revenues cover operating costs because the individual routes connect transit, intercity bus service, Amtrak long-distance trains, and commercial airports. One of these rapidly expanding corridors runs from Vancouver, British Columbia, to Eugene, Oregon—a total of 425 miles—because back in 1996, the State of Washington had concluded that this project could be built for the same amount of money as adding one lane each way on the 74 miles of Interstate 5 between Seattle and Portland. Federal trust fund money helped finance the project, which also had private investors. The common sense of this solution even earned the endorsement of the Federal Highway Administration.

Two high-capacity, high-speed freight railroad lines between Mexico City and the United States carry ten times the volume of freight that existed before NAFTA, and the unemployment rates in all three nations are the lowest in memory. Meanwhile, construction crews are laying track to the Guatemalan border, as a Pan-American Rail System is beginning to take shape. Alaska transportation officials are meeting with their counterparts at Dawson in the Yukon to put the finishing touches on a plan to connect Alaska by rail to Western Canada and the lower 48 states.

Two hundred North American cities have intermodal passenger terminals that link bus, rail, transit, airports, vans, and rental cars. The majority of them are in the city center and the others at major airports. These synergies have made the passenger rail systems of all three countries self-sustaining for operating costs. Greyhound Lines and several other intercity bus companies have just reported the best quarterly financial results in their history.

Every North American container port has dockside rail access. As the doublestack trains move inland, they operate on mainline tracks—and at high speed, because the majority of the grade crossings have been closed, separated, or use new, low-cost, crossing protection devices that are far more fool-proof than earlier systems.

The majority of the continent's truck drivers are able to spend most evenings with their families because intermodal partnerships between trucking and railroad companies have slashed the number of costly, fatiguing, long-distance runs.

The United States highway death toll, which had climbed above 43,000 in 1997, now is at 30,000 and dropping. Federal safety officials no longer have to cite deaths-per-million-vehicle-miles to argue that highways are becoming safer because now the raw numbers provide a more dramatic and meaningful illustration.

No major commercial passenger airport in any of the three nations has constructed a multilevel parking garage during the past three years—because conventional rail, light rail, and bus services are faster and cheaper. Denver's airport is connected by a modern rail link to its down-
town. By merely crossing a platform at the airport, arriving air travelers can board trains, hourly, to take them to Fort Collins or Pueblo or the urban stations in between.

Several university transportation schools now offer post-graduate degrees in the intermodal transportation and logistics sciences. The air is getting cleaner in every urban center in North America. The amount of downtown real estate consumed by parking lots has dropped by 20 percent, and property values have been bolstered by the return of people to city-center life.

Through collaboration and cooperation across borders and between and among governments and industry, this vision of an integrated transportation system for this continent can become a reality, now.
The Honorable Rodney E. Slater
Secretary of Transportation of the United States

The Honorable Rodney E. Slater became Secretary of Transportation of the United States in February 1997. Prior to his appointment, he was Federal Highway Administrator, serving during a critical period in which federal highway policy became supportive of intermodal solutions to the nation’s transportation needs.

A former chairman of the highway commission for the State of Arkansas, Secretary Slater has also served as a special assistant to then-Governor Bill Clinton, as assistant state attorney general for Arkansas, and as director of government relations at Arkansas State University. He holds an undergraduate degree from Eastern Michigan University and a law degree from the University of Arkansas.
Address by
The Honorable Rodney E. Slater,
Secretary of Transportation of the
United States

This North American Intermodal Transportation Summit, held at the University of Denver, is an incredible opportunity to not only celebrate the ties that bind the United States and our neighbors but also to set a course for transportation in the 21st century. I hope that the private meetings with my colleagues today are as successful as President Clinton's were this summer, when Denver was the world stage for the G-8 Summit.

Denver is also the home of two of my colleagues in the Cabinet—Secretary of Energy Federico Peña, Denver's former mayor, and Secretary of State Madeline Albright. Secretary Albright is making her mark by traveling, not around the world, as you might expect, but to the middle of America, explaining why foreign policy is a bread and butter issue. So, too, is transportation.

Transportation is about more than concrete, asphalt, and steel. It is about providing economic opportunity. Today, we will discuss issues that our predecessors ten years ago never dealt with. Issues of how we can better move the billions of dollars of goods and the millions more people, north and south, since we tore down trade barriers with NAFTA.

This is just the beginning. President Clinton is holding discussions in South America. By 2005 he hopes that the entire hemisphere will be a free trade zone, and, as he declared, "we can see a new world in the making." To a great extent, this "new world" depends not only on how we bridge our differences on opening markets, but also on how we build bridges that bring goods to market and people to places.

For Americans for the last fifty years, transportation can be described in one word—the Interstate. It connected cities. It made manufacturers more competitive. It grew the suburbs. It brought jobs to millions. If, 40 years ago, our leaders had not imagined how we could change the face of America with a highway, we would not be the mobile, prosperous country we are today.

Clearly, it is our turn now. It is up to us to visualize transportation in the 21st century. A century when information superhighways will deliver
products to homes or offices around the world faster than a plane or train ever will. A century when whether a company is a freight forwarder, railroad, trucking firm, or airline—the consumer will know them as simply the shipper. A century where "soccer moms" will be replaced by services that move people, everyday in every way. A century where a larger percentage of federal dollars will go to fix—rather than expand—our infrastructure, making it more environmentally acceptable and safer than today. A century where ships will be bigger; buses, lighter; planes and trains, faster; and technology, which has yet to be developed, will have effects we cannot imagine.

How should we define a system for the 21st century that will dominate as the big I—the Interstate—did in this century? I define this integrated system with four new Is—international in reach, intermodal in form, intelligent in character, and inclusive in service.

The transportation system for the 21st century must be international in reach because we will live global lives. We will travel further and faster than we ever have. We will compete with companies half a world away, because the cost differences of transporting whatever we make versus whatever they make will not be a factor. We will need roads to markets that do not stop at our border. Since NAFTA was signed, American exports have grown 37 percent to Mexico and 34 percent to Canada, supporting 300,000 American jobs. In 1995, with our friends in Canada, we tore down aviation restrictions. Within two years, 3.5 million more people flew between our countries; 50 new routes were served; and the net economic benefit was $4 billion.

Why must the system be intermodal in form? Unless we bring highways, transit, rail, airports, and seaports together, we will not be as efficient as we need to be. Intermodal is the fastest growing sector in freight transportation in America, now a quarter of the market. We just built an airport terminal in Washington DC, and the subway goes right to the terminal, an important convenience.

The US Department of Transportation has an Intermodal Office, formed just a few years ago. This office has a goal—to be put out of business. It wants to see the day when it does not have to be the watchdog, because ingrained in highway, train, transit, and maritime planners is the concept to build systems that connect so that the customer has door-to-door transportation. And, that day will come sooner rather than later, because of the pioneering efforts of this University to offer an intermodal curriculum.

Why a system that is intelligent in character? We need smarter highways, and we need cars that do the driving. When people drive, they make mistakes that lead to accidents. When the car is in charge of the driver, our roads will be safer. Our border crossings have bottlenecks.
We are now conducting tests at six crossings of the US-Canada border and four at the US-Mexico border, aimed at electronically checking truck drivers and their cargo. And in the air, we are changing the way pilots will navigate in the future. Just last month we successfully demonstrated the new system with a plane landing in Tijuana.

Any integrated transportation system must also be inclusive. We come here representing 400 million people. Whether they live in suburban, urban, or rural areas or along the borders of our countries—clearly all must benefit.

So, today, as I meet with my distinguished colleagues, it is with the desire that we build this integrated system—international in reach; intermodal in form; intelligent in character; and inclusive in service. If we do not, others will. We have a big incentive to take forward steps today.

Secretary Ruiz Sacristán of Mexico and I will discuss what has been a thorny issue for us—cross-border access for trucks and buses. We will try hard to resolve a dispute over whether or not US small package firms can use the equipment that Mexican firms do. We will discuss drug and alcohol testing for drivers, expanding opportunities for our airlines, and providing assistance in both aviation and sea safety programs.

Minister David Collenette and I will talk about tearing down the last remaining restrictions on aviation and setting the stage for a truly binational agency that oversees the St. Lawrence Seaway. We will spend time discussing the legislation before the US Congress that will fund transportation for the next six years in the US. President Clinton has asked for substantial funds for border transportation needs and, in the Senate and House versions of the bill, border programs are included—and that is good.

Let me close with this in front of two friends, who share my title. This is a wonderful time to be a Transportation Secretary. The United States Department of Transportation is 30 years old, and we celebrated by going on a diet. We downsized. We are giving more authority to state and local governments, and, with President Clinton's leadership, we stood strong for increasing infrastructure investments. They are up 20 percent, at a time when we have cut the budget deficit to almost zero. The US transportation industry is healthy. Since President Clinton has been in office, almost 700,000 transportation jobs have been created.

Now, with our long borders, our rich history, our free markets, we want to create with our neighbors an integrated transportation system for the 21st century. Our best days are yet ahead of us. Thank you.
The Honorable Carlos Ruiz Sacristán
Secretary of Communications and Transportation of Mexico

The Honorable Carlos Ruiz Sacristán has served as Secretary of Communications and Transportation of Mexico since 1994, a period of exceptional accomplishment as the government of Mexico has restructured and privatized many of its key transportation functions. Mexico’s efforts to restructure its transportation system are a model for global undertakings of this nature.

Before his appointment, Secretary Ruiz Sacristán was general director of Petroleos Mexicanos, the Mexican state oil company. He is a former undersecretary of the Secretariat of Finance and Public Credit and held key positions at the Banco de Mexico, including advisor to the general director, treasurer, manager of international operations, and assistant manager of foreign exchange. He is also a former professor at Anahuac University of Mexico City and attended Northwestern University in Illinois, receiving a masters degree in finance.
Address by
The Honorable Carlos Ruiz Sacristán,
Secretary of Communications and
Transportation of Mexico

I am very pleased to participate in this North American Intermodal Transportation Summit. I would like to thank the Institute of Intermodal Transportation of the University of Denver for its kind invitation and extend my congratulations for the excellent organization of this meeting. This Summit is a perfect setting to exchange with Secretary Slater, Minister Collenette, and with all of you, members of the transportation community, points of view about the perspectives and trends of intermodal transportation within the NAFTA region. Also, it is a great opportunity to share with you our recent experience in implementing reforms and structural changes to modernize the transportation system in Mexico.

The development of an integrated transportation system is a priority in Mexico. We know that, in order to promote economic growth and social progress, it is necessary to make transportation more efficient and dynamic. It is also necessary to make transportation capable of moving passengers and products safely and in a competitive manner.

Historically, each mode of transportation was designed to fulfill the domestic, regional, and local needs of each nation. The modes were developed according to domestic policies, responding to national legal frameworks, and competing with each other rather than complementing one another. To a great extent, this situation reflected the prevailing bias towards economic closeness.

However, the current trends in economic development and global trade are transforming the system radically. Nowadays, the economic growth of every nation is built upon a free, open, and more competitive environment. In North America, we have a clear example of this new environment. With the Free Trade Agreement between the United States, Canada, and Mexico, our countries have created a wide array of opportunities and, at the same time, new challenges.

The development of an efficient, integrated, and competitive transportation system is one of the most important challenges we face. Free trade is bringing increasing volumes of merchandise across the borders.
Free trade, therefore, needs an efficient transportation system to support its growth. An efficient transportation system can be achieved through an intermodal approach.

Mexico realizes that its transportation system is key to fostering a competitive advantage that will allow the benefits of free trade. Mexico has, in turn, introduced policies devoted to supporting the expansion of a competitive and integrated transportation system. Until a few years ago, the Mexican Government had a direct involvement in the construction and the operation of just about all transportation infrastructure and services. However, the amount of resources needed for that purpose as well as the increasing allocation of public funds to sectors like education, health, and housing, gave way to changes in the government's involvement in infrastructure development.

Nowadays, the government is concentrating more on its regulatory function, while the private sector has increased its role in the development of infrastructure and services. This new strategy will bring more resources to improve the transportation infrastructure and to reduce the bottlenecks in the economy, and, at the same time, it will give the federal government greater flexibility to serve its basic commitments.

However, what we are doing does not only concern operational and economic issues, it is also related to governmental duties. We have introduced in the government a service-oriented attitude that is helping to reduce the obstacles and the bureaucratic red tape for the operation of an efficient transportation system. In addition, we are reviewing policies for each mode in order to level the playing field in terms of competitiveness, efficiency, and regulation, so they can evolve easily into a more integrated, intermodal system.

There are several key transformations and major achievements that are taking place within the transportation sector in Mexico. For example, integrating the railroads to other modes of transportation is essential to achieving an efficient system, which is why President Zedillo and his administration went ahead with a restructuring of the Mexican railroad system. The Mexican Congress first approved a constitutional amendment and then enacted a new railroad law. With this new regulatory framework in place, the privatization process proceeded through concessions for vertically integrated regional railroads as well as for short lines.

The first concession awarded was for the Northeast Railroad. The concessionaire is a consortium instituted by TMM, a Mexican shipping line, and the Kansas City Southern Industries. This company started operations as the first private railroad in June 1997.

The second regional railroad concession awarded was for the Pacific North Railroad. The winning group for this line includes two Mexican companies and a US railroad company. This group will start operations
no later than February 1998. With these two concessions, private operators will move more than 80 percent of the total freight in Mexico.

In addition, we have successfully concluded the privatization of two short lines in the north of the country (Coahuila-Durango). Over the next months, we will award concessions for the railroad lines located in the south of Mexico, which include the third main regional railroad of the country. Also, we will be promoting an intermodal system that will link the railroad with two very important Mexican ports. With this policy, we are eliminating subsidies, increasing investments on tracks and equipment, and, at the same time, fostering productivity for the rest of the economy.

In the air transportation sector, we also began by changing the legal framework. During 1995, Congress approved a new Civil Aviation Law that is oriented to safety, security, and healthy competition. In the same year, a new Airport Law was also approved to support the modernization and expansion of airport infrastructure with private investment participation. Based on this new regulatory framework, we will announce the general guidelines for the privatization of the airports before the end of 1997. Even though we have not yet concluded the strategic planning for this process, we are considering the following ideas: including in the concession process 35 out of 58 airports in order to avoid cross subsidies; arranging the airports into four groups; and anchoring each group with a major airport—Mexico City, Cancún, Guadalajara, and Monterrey.

A key element in a complete intermodal transportation network is the port system. This sector has also undergone major structural changes. In recent years, private companies have managed the container and the multipurpose terminals of the most important ports in Mexico. In fact, private companies manage over 85 percent of all container operations at the Mexican ports. As a result of this policy, the ports are very efficient with lower tariffs, proving that we are moving in the right direction.

We are also promoting investment projects in the Mexican ports that will encourage the integration of the different modes. The projects include the construction of transfer and storage centers and the development of efficient links with railroad and highways.

Land transportation in Mexico is by far the most widely used method of moving people and freight. For this reason, we are devoting a great amount of public and private resources to expand and to maintain the national highway network. The road infrastructure program considers the full integration of 10 main highway routes. With these routes, the main productive regions of Mexico will be connected to the most important urban areas, ports, and international borders.

The highway program will be accelerated with the creation of a $1 billion fund, financed by the revenue obtained from privatization and
from the private investments in profitable highway projects. We are also working to enhance the healthy development of the trucking industry within an environment that clearly promotes deregulation, competition, and safety.

With all of these structural and regulatory changes, the Mexican transportation system has finished a first step toward the development of an efficient and competitive intermodal system. We still have a long way to go. We need to overcome many challenges. From now on, we must think of transportation as an integrated system among all participants. We need to use new technologies and to adopt logistic systems in order to save time and money. We need to increase investment opportunities, and we need to move passengers and freight within the NAFTA region easier and cheaper. With more investment opportunities, it will be possible to support the development of an intermodal system that fosters trade and economic growth.

Mexico is in a growth process based upon domestic savings, structural changes, and an open trade strategy, where NAFTA is a key element. However, this growth process cannot be sustained if we do not develop a modern intermodal transportation system. Therefore, we will continue to implement coherent policies and initiatives towards this objective, based on new technologies, safety, security, and clear rules to attract more private investments.

It is imperative to enhance economic competitiveness and to improve the transportation system within North America. I am convinced that the only way to make real progress is for us to commit to a cooperative effort, in terms of both transportation planning and policies. Mexico is ready to play its part. This Summit, organized by the Intermodal Transportation Institute of the University of Denver, certainly constitutes an important contribution to these efforts. Thank you very much.
The Honorable David M. Collenette has served as the Minister of Transport of Canada since June 1997. He is a long-time member of the Canadian House of Commons, having been first elected in 1974. During his distinguished public career, he has served as Minister of National Defense, Minister of Veteran Affairs, Minister of State for Multiculturalism, and parliamentary secretary to the Postmaster General, to the leader of the House of Commons, and to the president of the Privy Council.

In the private sector, Minister Collenette has worked in the life insurance, plastics, and executive recruitment fields, and he was executive vice-president of Mandrake Management Consultants of Toronto. He holds an undergraduate degree from Glendon College of York University. While in the private sector, Minister Collenette was also extensively involved as a volunteer in overseas democratic development work and in monitoring elections in countries such as Haiti, Chile, Romania, and the Czech Republic.
Address by
The Honorable David M. Collenette,
Minister of Transport of Canada

It is indeed a pleasure to be here to exchange views on the important topic of intermodal transportation. There is a lot of talk these days about intermodalism—we could be forgiven for thinking that it is a new concept. Of course, intermodal transportation has always been used to move people and goods from one place to another.

In the early days of North American settlement, there was often no alternative. Where the train ended, the stagecoach or wagon train took over; where the waterway became impassable, the voyage continued by land. We just shifted from one mode to the next; we did not have a name for it.

As time passed, however, and more and more options became available, the combinations proliferated—each with different features. With population growth came development, and the relative advantages and disadvantages of the different modes changed as the transportation system became more advanced. The widespread availability of choice helped to bring costs and prices down by fostering competition among suppliers. It provided shippers with “back-up” options. At the same time, the speed with which shipments could reach their destination changed dramatically—and resulted in customers insisting on speedy service.

In the past, intermodalism may have meant the use of two or more modes. Today, a more modern definition is needed. Intermodalism, today, is about safe, efficient transportation by the most appropriate combination of modes. It requires a smooth transfer of people and goods both within and across modes and between intercity and urban transportation systems. What began as a convenience has now become a requirement and a challenge for service providers. A shipper who cannot provide the fastest possible delivery time at the lowest cost risks losing business to the competition. Today, customers do not just want speedy service and low cost, they also want to know where their shipment is at any given time in the process.

Advances in global positioning technology have made it possible to track vehicles, containers, and specific packages, even when they are being shipped by more than one mode and through multiple jurisdictions.
At the same time, intelligent transportation systems and electronic data exchange have greatly reduced the time required for administrative tasks and have opened up some very interesting possibilities for cooperation at international borders.

Transport Canada, Revenue Canada, and Citizenship and Immigration are cooperating with their US counterparts in a demonstration test of intelligent transportation systems, designed to speed customs, immigration processing, and toll collection at land border crossings. Information on a truck and its cargo will be forwarded electronically in advance of its arrival for processing. If equipped with a transponder, the truck will be able to pay the bridge toll automatically and electronically advise Customs and Immigration of its presence when it arrives at the border. If safe and legal, it will then receive a green light to proceed.

Similar tests are being conducted at the US-Mexico border. If the tests prove successful and electronic processing is implemented, it will substantially improve NAFTA truck traffic. The reduction in time could make a significant difference to shippers hauling perishable goods.

Advances such as these are critical in an era of global trade and investment. In today's world—in which people and goods circle the planet with less effort that it used to take to get across town—system integration and coordination among trading partners is essential. This has led our governments to take steps to ensure that our transportation systems work together efficiently, both within our borders and beyond.

The Canada-US Accord on Our Shared Border, signed by Prime Minister Chrétien and President Clinton in 1995, is an excellent example of how trading partners can harmonize their binational trade policies and practices. Compatibility of transport standards is important because it will streamline the movement of people and goods between our countries. This, in turn, will stimulate trade and investment opportunities. With over a billion dollars in trade crossing the Canadian, US, and Mexican borders every day, any improvement in procedures or to efficiency will generate significant returns.

We recognized long ago that transportation is a strategic asset that can drive a country's economy. The ability to move freight efficiently has become a measure of economic viability. What we define as "modern" intermodal freight has been an element of our system for almost 50 years—beginning with the use of flatcars to haul truck trailers by rail and moving on in the early 1960s to the use of 20-foot containers to haul domestic express freight.

Recent experiments in intermodal technologies have taken the idea a step further. While significant economies have been achieved in long-haul shipping, trips over shorter distances have historically been poor candidates for intermodal operations. To provide better service to users,
Canadian railroads have made major investments in their container facilities and in developing new technologies. Both Canadian National's Ecorail and Canadian Pacific's Iron Highway show great promise, for example. By simplifying the loading and unloading process and using smaller, decentralized terminals, these systems will experience less congestion and make intermodal transfers more attractive, even in the short haul.

At the same time, the railroads have been working closely with their US counterparts to devise methods to provide seamless service. The virtually seamless rail-freight shipping service now available throughout Canada and the US has sparked a growing interest from truck carriers, who are increasingly entering into partnerships to take advantage of the efficiencies that can be achieved through integrated systems.

However, it was the containerization of transoceanic freight that provided the critical volume to push development of an intermodal infrastructure. Canada's latest contribution to this infrastructure is a container facility called Deltaport, which opened recently on the West Coast, doubling Vancouver's container capacity. Success in shipping increasingly depends on capacity and accessibility. The new super-container ships are huge, and they need specialized docking facilities. Deltaport was designed to service the largest of them.

With state-of-the-art technology, advanced computerized systems for intermodal operation, and direct access to two transcontinental railways, this facility has redefined efficiency for loading docks.

Deltaport is important for what it can do for international trade, but its significance goes beyond that. It is a partnership unique in North America—a coalition of the Vancouver Port Corporation, TSI Terminal Systems, and Canadian National and Canadian Pacific railways. It is a clear case of the total being more than the sum of its parts, and it is an excellent example of what can be accomplished when we join forces.

While freight is currently the backbone of intermodal transportation, intermodal passenger service is showing signs of improvement. Rail passengers can also look forward to a seamless North American rail system. Beginning in January 1998, Via Rail and Amtrak will introduce a new pass designed to link Via's national network with the national US carrier's system through connecting points at Montreal, Toronto, and Vancouver. The new pass is expected to generate additional traffic. It will be sold worldwide through both the Via and Amtrak offices as well as through travel agencies. The pass is designed to let travelers focus on enjoying their trip rather than worrying about borders or barriers. This type of cooperation among industry partners is the ideal approach to encourage strong industry growth.
Considerable progress has also been made in providing seamless air transport over the past three or four years. The closer integration of the Canadian and the US air transport systems, made possible by the "Open Skies" agreement, has been of tremendous benefit to the traveling public. Moreover, the airlines have taken a major step forward in passenger convenience by forming international alliances involving code-sharing arrangements. Another step towards seamless air travel has been taken through the introduction of preclearance procedures in many major airports and an in-transit preclearance program that is currently being piloted at Vancouver International Airport.

Despite these very significant improvements in the quality of air services, however, connections with surface transport modes between airport and downtown areas are all too often inadequate. Gains achieved in air travel are offset by time lost in traffic jams. We have made significant improvements to the intermodal links for freight transport. We need to do the same for passengers.

Building the best possible transportation system is what these improvements are all about. This raises the question, however, of what we mean by "best." Safety, obviously, must be the top priority. The best possible system is one that is safe. But beyond safety, we have usually defined "best" largely from the point of view of economics and quality of service. Financial soundness and quality service are important to the long-term health of any industry. But, any reflection on how to achieve the "best" use of all modes must take in the broader perspective of sustainable development.

Today's definition of intermodalism has to recognize the impact of transportation on the environment. It has to ensure that the best use of each transport mode takes into account what is best for our land, our air, and our water. Transport Canada has stated its goal "to support the evolution of sustainable development through the provision of safe, efficient, affordable transportation services developed and operated in a manner that minimizes the environmental impacts of transportation." But no one country can take this approach alone. We need agreement with our trading partners so that a level playing field can be established for our transportation industries.

As we look to the future of intermodalism, we must bear in mind this expanded definition and make sure that we are taking into account all of the elements of an optimal intermodal system. Intermodalism means more than just using two or more modes of transportation. It means finding the best possible combination of modes for each shipment. It means taking a good, hard look at our systems—assessing how well they mesh and what kind of impact they have on the environment. And, it means making changes where necessary.
If we are to achieve these objectives, we must ask ourselves some hard questions:

- How can we encourage the use of advanced technologies (especially communications, and positioning and sensing systems) to enhance system performance?
- How can we ensure the development of strong intermodal links while reducing government intervention in the transportation system?
- How can we maintain service and price competition while moving toward closer system integration and carrier partnerships?
- How can we work more effectively in partnership with other national, provincial, or state governments and the private sector to improve intermodal links along our trade corridors?
- What is the “best” use of all modes in light of emerging “climate change” concerns?

As we approach the new millennium, we must not only remain open to change—we must be agents of change. We must set a course for success that is both economically sound and sustainable. This is our task. I urge our neighbors to join with Canada in this task.

Thank you.
Moderator Joanne Casey
president, Intermodal
Association of North America

(Second row, left to right) Anthony Perl, University of Calgary, Canada; Klaus Nielsen, United Parcel Service, Atlanta, Georgia; Andrew Goetz, University of Denver; Paul Dempsey, University of Denver; Noel Brown, United Nations; Ronald Hartman, Amtrak, Washington DC.

(First row, left to right) Katharine Braid, formerly Canadian Pacific Railway, Canada; Gilbert E. Carmichael, ITI Board Chairman, MotivePower Industries, Meridian, Mississippi; Secretary Carlos Ruiz Sacristán of Mexico; Secretary Rodney E. Slater of the United States; Minister David M. Collenette of Canada; Joseph Szyliowicz, University of Denver; Emilio Sacristán Roy, FNM, Mexico.
The Roundtable Discussion: An Overview of the Nexus between Government Policies and Stakeholder Concerns

This "first of its kind" Roundtable Discussion raised the level of awareness regarding specific intermodal transportation issues in the three countries. The panels on Thursday, 16 October 1997, addressed themes from modal and stakeholder perspectives. Friday, 17 October, the Roundtable Discussion focused on issues from a broader, multinational viewpoint—that of the governments and the economies of Canada, Mexico, and the United States—and participants spoke with candor and insight.

The feasibility of an integrated North American rail, highway, and port system was examined. A consensus emerged emphasizing coordination rather than integration. The complexity and sheer number of policy-making structures clearly complicates the creation of intermodal systems within and among countries. The importance of seamless borders to an "integrated" system was reiterated, and a particularly important concern identified the need to improve the current border-crossing procedures between the US and Mexico. The considerable financial investment needed to achieve an integrated system was acknowledged, as "equal quality among the partners" will require not only increased coordination, within as well as among the countries, but also a greater focus on processes and policies. The topic of "North American transportation corridors of national significance" was raised, in general, without specific identification of what would constitute such corridors.

A conversation regarding the existing transportation infrastructure and the need for additional capacity to improve mobility and economic competitiveness revolved around "hardware" versus "software." A consensus existed with regard to the need to expand the capacity through the implementation of new technologies. Although new "physical" infrastructure may be required in some cases, it was stated that more attention should be given to upgrading and to better use of existing facilities. It was pointed out that the North American rail system capacity appears to be sufficient. However, the need for more and better information was
ever present in the discussion. For example, it was argued that the kind of information that would facilitate the development of passenger intermodalism is not available to potential customers.

Pointing out that the focus of national transportation policies appears to be on intercity traffic issues, it was argued that inadequate attention is being paid to the problems of congestion within cities. Freight can be shipped to terminals but delivery to customers within urban areas is becoming increasingly difficult. With regard to intercity traffic issues, it was suggested that the ITS programs (Intelligent Transportation System) could make a major contribution to increasing the efficiency of the existing infrastructure in certain sectors.

The three secretaries of transportation agreed that decentralization is a key word for the role of governments in promoting an integrated transportation system. State, regional, and local governments and organizations must play a greater role in developing processes and in promoting policies. Secretary Slater pointed out, however, that the federal government, in particular, plays a crucial role in developing guidelines for pollution control and for policies on environmental issues.

The flexibility to channel funding where it is most needed was stressed. Secretary Ruiz Sacristán reiterated the role of the private sector in developing transportation systems because there are “never enough resources to go around.” Privatization is occurring at a rapid pace in Mexico and is transforming the railroad system, in particular. Minister Collenette addressed the benefits of change to a transportation system; however, in terms of privatization, the benefits to Canada may have been “over sold.”

Other topics that were discussed included the joint use of the transportation infrastructure by both the civilian and the military sectors. The
US has had the most experience with the operational sharing of infrastructure. Secretary Slater addressed the interests of the military in intermodal transportation, noting the logistics of gathering and moving supplies and men during the Persian Gulf War. The Canadians have not experienced the need to share the infrastructure since World War II. However, it was pointed out that the sharing of facilities by the private sector is not uncommon in Canada. The possibility of establishing a North American organization to promote transportation investment and to advance standardization for an intermodal system was suggested. In conclusion, the discussion reiterated the importance of transportation to the economic growth and the well being of the countries of North America.
V. THE REVIEW

The North American Intermodal Transportation Summit in Perspective

by Joseph S. Szyliowicz

The challenge that we all face now is how to move ahead, how to make intermodalism a working reality for the 21st century. We need to build an understanding of the significance of intermodalism, create decision structures that go beyond traditional modal paradigms, and build new systems that recognize the real costs of each mode. By hosting the Summit, the University of Denver, the ITI faculty, and the ITI Board of Directors have demonstrated their commitment to intermodal education, research, and outreach. This is a meaningful first step on the long journey ahead.

PROGRESS TOWARD A NORTH AMERICAN INTERMODAL SYSTEM

The Summit provided many realistic perspectives on the progress that has been made in achieving intermodalism. Although numerous shortcomings were identified, it is striking that all of the participants essentially share a common vision, based on the following points:

- There is an urgent need to promote national and regional intermodal transportation systems for passengers and freight, within, among, and between countries, that appreciates the interests and concerns of all and enhances mobility in a way that is environmentally benign, safe and secure, efficient, and ethically based. Such a system will enhance national and regional competitiveness in the global economy.

- Historically, national transportation systems have been built on the basis of separate modes. Different modes have different strengths and weaknesses. Public policy as well as public and private investment should support the expansion of an intermodal system that will build on the strengths of each mode while reducing the overall adverse impacts of transportation.
• Existing transportation systems have contributed greatly to national development and to individual well being. Nevertheless, these systems confront nagging problems of congestion, pollution, safety and security, and energy consumption. Because of different national conditions, cultures and values, no single set of prescriptions is appropriate. Nevertheless, appropriate new policies can be devised through the creation of enhanced levels of cooperation in transportation by governments, key stakeholders, and the public.

• The role of intermodal transportation in reducing pollution and congestion will be largely determined by public policy at several levels of government and among various agencies at each level.

• The evolution of an intermodal passenger system lags behind that of the freight transportation system but deserves equal attention by policy makers as well as public and private investors.

• Technology represents an important part of any solution, for various innovations hold considerable promise to improve existing transportation problems. Technologies, however, are not panaceas and must be viewed within their socio-cultural contexts. Assessments should be carried out prior to implementation in order to identify and deal with potentially negative impacts.

Notwithstanding these common visions, there was a marked difference of opinions in the views of progress, as expressed by the nongovernmental representatives, on the one hand, and by the governmental representatives, on the other. The governmental representatives were far more optimistic about the progress that has been achieved than were the other participants who, to varying degrees, expressed their frustration with the status quo, especially in regards to specific barriers that continue to inhibit the achievement of an intermodal system for North America.

To illustrate, border crossings remain troublesome and a serious concern to the private sector. Although actions by governments and transportation companies have served to alleviate delays at highway and rail border crossings and have eliminated bottlenecks within countries, the growth in the volume of freight traffic overtakes the scale of past accomplishments and requires urgent policy attention.

ACCOMPLISHMENTS OF THE SUMMIT

The most obvious contribution of the North American Intermodal Transportation Summit is its identification of the specific problem areas that block the creation of a North American intermodal system. These can be summarized as follows:

• Nature of planning processes in governmental and private-sector organizations;
• Lack of financial resources for infrastructure;
• Limited cooperation among the modes;
• Unequal resource allocation to the modes;
• The need for governments and their agencies to think in intermodal rather than modal terms;
• Labor and management relations;
• The need to develop private-public partnerships;
• The need to improve the integration of transportation planning with environmental, energy, and other relevant agencies within each country;
• The lack of cooperative mechanisms among the countries to facilitate the achievement of a regional intermodal system; and,
• The need to deal with urban congestion issues and to emphasize passenger intermodalism within, between, and among cities.

The Summit, however, contributed to the development of an intermodal system for North America in more ways than merely identifying problems. It also accomplished the following:

• It enabled top transportation officials from Canada, Mexico, and the United States to outline their views of the future of intermodal transportation in a collective setting and to discuss policy issues privately.
• It brought transportation officials together with key stakeholders, pioneers in intermodalism, and academic experts who identified issues, problems, and obstacles that hinder the achievement of intermodalism.
• It began the process of outlining policies and actions that can help overcome the barriers identified.
• While these matters are difficult to deal with, because of the political implications that arise at a time when the role of the state in promoting intermodal transportation is still being defined, there was general agreement on the urgent need for further action involving academics, stakeholders, and policy makers.

The participants in the Summit represented government, industry, labor, and academia; however, notably missing among the participants were members of the legislative branch of government. In future meetings, key members of the legislature should be included in the proceedings, as it is they who will sponsor and enact legislation that will foster the development of intermodalism within, between, and among the three countries.
VI. THE VISION AND THE STRATEGIES

The Next Steps to an Intermodal Transportation System for North America

by the Intermodal Transportation Institute

Building upon the various ideas and suggestions advanced at the Summit, the Intermodal Transportation Institute (ITI) submits the following actions as the logical next steps:

I. ITI will develop mechanisms to bring the public and the private sectors together in order to find appropriate solutions. Accordingly, ITI proposes to establish a NAFTA Intermodal Council composed of industry, labor, and government. This council will engage in joint assessment of problems and identify potential solutions. Although the Summit was an important first step in this regard, a process must be constructed that promotes ongoing development of awareness and identification of mutual gains from cooperation among industries, governments, and labor. The council will develop a work plan to address the major intermodal issues that have been identified and will meet on a regular basis to discuss its implementation and to review progress.

Specifically, the NAFTA Intermodal Council will be charged with the following:

A. Accelerate efforts to achieve common standards and rules and regulations in surface transportation.

B. Evaluate the adequacy of existing databases and information resources concerning North American intermodalism (passenger and freight) and suggest ways in which gaps might be filled.
C. Identify concrete steps that might be taken to encourage the achievement of both passenger and freight intermodalism in North America.

II. Concomitantly, ITI shall establish a tri-national team of academic experts to carry out research that facilitates the work of the council. Specific projects that have already been identified include:

A. Inventory the existing transportation research activities and capacities in each country.
B. Identify research and institutional strengths and weaknesses.
C. Develop recommendations to fill research gaps and enhance institutional capabilities.
D. Develop mechanisms, ranging from formal education programs to individual learning arrangements, to transfer knowledge concerning “best practices” rapidly and effectively to transportation professionals.
E. Develop programs to inform various publics (including K-12 students) about the role and significance of a North American intermodal system.
F. Carry out a baseline survey of intermodal information, research, and practices in the three NAFTA nations.

III. Thirdly, ITI will continue to function as the secretariat and requests that the Canadian, Mexican, and US governments formally accept this proposal. By doing so, they will facilitate the task of refining and implementing these suggestions.