3rd Annual Fields on Wheels Conference

"SOLVING THE PUZZLE"

EFFICIENCY AND COMPETITION IN WESTERN GRAIN HANDLING AND TRANSPORTATION

November 16th 1998

A joint event presented by:
The University of Manitoba
Transportation Institute
The Canadian Transportation Research Forum
The Organization for Western Economic Cooperation

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"FIELDS ON WHEELS"

Proceedings of the Third Annual Agribusiness Logistics Conference and the Semi-Annual Meeting of the Canadian Transportation Research Forum
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Monday, November 16th, 1998

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Preface

The grain handling and transportation system in western Canada has been the subject of almost continuous inquiry and review since the early 1900s. For much of the century, the system has been highly regulated under successive National Transportation Acts and by the Canadian Wheat Board. In spite of moves elsewhere in Canada's transportation systems to move towards less regulation and increased competition, only limited market competition was permitted in the highly administered Prairie grain handling and transportation system. Over the last fifty years, a slow, but steady, rationalization of the system has occurred with the often-belated abandonment of country elevators and railway branch lines.

Through the 1990's, grain companies and railways increased the process of change in the handling and transportation system by investing in new, often concrete, inland grain terminals and railway rolling stock and by more rapidly abandoning many smaller, older, less efficient and little used grain elevators and railway branch lines. In the 1995 federal budget the first step towards dramatic and faster change in the grain handling system was undertaken with the end of Grain Transportation subsidies.

In 1997, the federal Minister of Transport appointed Justice Willard Estey to undertake a comprehensive review of the western Canadian grain handling and transportation system. Justice Estey released his final report on December 21, 1998 and made fifteen recommendations designed to increase the efficiency and accountability of the system and to offer benefits to farmers in the tangible form of a six year guaranteed rate reduction. Most controversial was the advice that the Canadian Wheat Board "have no operational or commercial role in the handling and transportation of grain".3 In summarizing the overall direction of his recommendations Justice Estey noted:

"...the Recommendations set forth a plan for the acceleration of the evolution already well under way in the relationship between the stakeholders in this industry. All regulatory and policy functions are left untouched."

On November, 16th, 1998, a forum on Efficiency and Competition in Western Grain Handling & Transportation was held at the Fort Garry Hotel in Winnipeg by the University of Manitoba Transportation Institute, the Organisation for Western Economic Cooperation and the Canadian Transportation Research Forum. The forum involved all major stakeholders in the industry and invited presentations in five sessions on many of the major competitive issues facing the industry in reform.

2 Estey, W.Z., Ibid. p.58
In session 1 chaired by Janet Weiss, President of the Canadian Transportation Research Forum, presentations were made on the role of trucking in the rapidly changing grain industry. Dr. Parsons, President of the Organization for Western Economic Cooperation (OWEC) noted that trucking had the potential to introduce competitive pressures for both grain companies and railways and to improve choice for farmers. Many of the traditional issues of captive shippers arising from market dominance by railways and grain companies were addressed with increased levels of competitive trucking. Grain transport regulation under both the Canada Transportation Act and the Canadian Wheat Board Act was seen as a major constraint on the full development of competitive pressures for the industry.

Professor Alan Clayton, from the Department of Civil Engineering at the University of Manitoba reviewed the impact on rural and provincial roads of the growing levels of truck traffic. The findings placed the regional prairie demands for increased trucking in a national and continental context and pointed towards the need for increased road planning to meet the emerging needs of a more commercial industry.

Session 2, chaired by Dean Elliot, Faculty of Agricultural and Food Sciences, looked towards the development of electronic markets for grain trucking and grain hopper cars. Sheldon Fulton, Director of AgraLink Exchange Ltd. outlined the rationale behind an Internet-based system for buying and selling grain and the extension of this system to permit the trading of truckload freight. Subsequently, a live demonstration of the system was presented. Dr. Barry Prentice, Director of the University of Manitoba Transport Institute described how the same method of buying and selling transportation over the Internet could provide an alternative to the institutional allocation of covered grain hopper cars. The government-owned hopper car fleet could form the nucleus for an electronic market. Under this system, railcars would be allocated on short-term leases through an auction system. A transparent electronic market would be equitable, self-sustaining and encourage competition between handlers and the railways.

Lunch was chaired by Peter Wallis, President and C.E.O., Van Horne Institute. At lunch, the Honourable Otto Lang provided a retrospective on the major developments that have occurred in grain handling in the Prairies over the past half century. It has been a slow, and at times painful, process of change and yet eventually the system does seem to be moving in the right direction.

Session 3 in the afternoon, chaired by Doug Duncan, Past President, Canadian Transportation Research Forum, undertook comparisons of the Canadian regulated and the U.S. commercial systems of grain handling and transportation. The current state of play in Canada was summarized by David Colledge, from the Western Transportation Advisory Council who had just completed a review of Canadian grain handling and transportation issues and opportunities for reform. The assessment identified inefficiencies throughout the system that were aggravated by both regulatory and system issues.

In contrast, Dr. Wilson, from the North Dakota State University at Fargo described developments
in US grain handling and transportation that arose from US rail deregulation in the early 1980s. This had led to efficiency gains throughout the US grain handling and transportation system, declines in the real cost of movement for farmers and large system productivity improvements.

Session 4, chaired by Dr. Parsons from OWEC, examined models of rail regulation designed to promote competitive behavior in grain handling and transportation. Mr. Ron Eley from the Government of Saskatchewan reviewed developments in Australia and found positive benefits from the regulated separation of track infrastructure from competitive carriers. In contrast a paper prepared by Messrs. Rennicke and Kaulbach of Mercer Management Consulting and presented by Mr. Tim Murphy, found that on the basis of their global review of rail systems, the highest levels of productivity improvement were to be found in competitive private rail systems. The emerging regulatory model of separating carriers from track infrastructure was leading to inefficient, expensive and often bureaucratic operating systems.

Finally, Session 5, chaired by Greg Arason, a member of the Transport Institute External Advisory Committee, was a panel discussion in which the major participants in the system provided their perspectives on the problems and solutions in the existing system and often the urgent need for reform. All stressed the importance of the reforms to maintain and expand Canada’s competitive position in world export markets for grains. The presenters were Mr. Larry Maguire, President of the Western Canadian Wheat Growers, Mr. Brian Hayward CEO of United Grain Growers, Mr. Rob Ritchie, President of Canadian Pacific Railways and Ms. Tammy Reynolds, Director for Corporate Policy at the Canadian Wheat Board. All saw issues that if solved could result in significant benefits for Prairie farmers. There were significant differences however, in the approach towards solutions and the assignments of responsibility for issues.

Dr. Brian Oleson, Agribusiness Chair in Cooperatives and Group Marketing at the University of Manitoba, and a long time observer and participant in grain handling reform summarized the day’s findings. Presentations and discussions brought forward important new information on the competitive structure of grain handling and transportation and the opportunities for system reform.

Subsequently on May 12th, 1999 the federal government through the federal Ministers of Transport, Agriculture and the Canadian Wheat Board announced their acceptance of the comprehensive and competitive framework for Prairie grain handling and transportation developed by Justice Estey. In their joint press release, the federal minister of Agriculture noted:

"The Estey report provides a comprehensive framework for developing a contract-based commercial system, which should improve reliability and lower costs. This will benefit farmers and all other stakeholders, and make Canadian grain exports more competitive."

In the same press release the Hon. David Collenette, federal Minister of Transport announced the appointment of, Mr. Arthur Kroeger to:

"work with industry stakeholders, including producers, and prepare recommendations by September 30, 1999, on the changes necessary to implement a reform package by crop year 2000-2001 based on the framework set in the report".

Fully adopting the changes recommended by Justice Estey clearly moves both grain handling and transportation towards a commercial system and clearly signals the start of a new century of competitive grain handling. The following chapters present some of the issues and benefits of moving towards more competition in grain handling and transportation in the Canadian prairies. They are published as a small contribution towards discussions that will continue well into the next century.

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Regina, SK

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Director, Transport Institute  
University of Manitoba  
Winnipeg, MB
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Dr. Barry Prentice, Director

Transport Institute, University of Manitoba

Welcome

Welcome to the Third Annual Fields on Wheels Conference and the Semi-Annual Meeting of the Canadian Transportation Research Forum (CTRF). The Transport Institute and the Faculty of Agricultural and Food Sciences at the University of Manitoba, of which the Transport Institute is a part, have formed a strategic alliance with the Canadian Transportation Research Forum and, thanks to the support of Graham Parsons, the Organization for Western Economic Cooperation. I would also like to acknowledge the sponsors of this conference, the Canadian National and Canadian Pacific Railways, the Canadian Wheat Board, Yanke Transport, the Railway Association of Canada and the Pan Am Games Committee.

For those of you who are not CTRF members, we would like to take this opportunity to introduce you to an organization of which we are very proud. As part of your registration package, you have all received a copy of the Proceedings of the 1997 CTRF Conference, a call for papers and you will receive a half-year membership and notification of the next Annual Meeting of the CTRF to be held May 16 to 19, 1999 in Montreal.

One of our goals for the Second Annual Fields on Wheels Conference in 1997 was to raise funds for an award in the name of Vic Stechishyn. We raised $2,300, an amount we hope to meet or exceed this year. Inside this year’s package we have provided a short write up on Vic Stechishyn and the award.

I now have the honour to introduce our first chair Janet Weiss, the President of the Canadian Transportation Research Forum and the Director of Asset Management for the Canadian Pacific Railway, based in Mississauga, Ontario. Since 1988, Janet has held progressively challenging positions in the CPR, as marketing representative, export grain manager, chemical and growth accounts manager, senior manager of strategy development, and director of intermodal automotive assets. Janet holds an MBA with honours in agri-business from the University of Santa Clara in California and a BSA in Agricultural Economics from the University of Manitoba. In addition, she has served on the board of the CTRF since 1995.
Good morning ladies and gentlemen, welcome to Session I entitled “Grain Trucking, Roads and Vehicles”. This morning our two esteemed presenters will discuss the impact and implications of trucking on the prairies.

It gives me great pleasure to introduce our first presenter this morning, Dr. Graham Parsons. Dr. Parsons’ paper is entitled “Have Truck Will Travel: Some effects of trucking on railway and elevator competition”. Dr. Parsons is a professional economist with a Doctorate from the University of London, U.K. He has worked on all aspects of western Canadian economic and international development. He was a transportation consultant, Director General with the Government of Canada and Deputy Minister and Chief Economist with the Province of Saskatchewan. In 1994, Dr. Parsons founded the Organization for Western Economic Cooperation, set up to provide economic information and to facilitate cooperation between economic stakeholders in Western Canada. Since the 1970’s Dr. Parsons has been at the centre of economic policy initiatives including federal and provincial economic development projects, international trade agreements with China and India, urban re-development, privatization, community economic development and community bonds. His publications analyze issues related to western development, new technologies and prairie labour markets, grain transportation, railway taxation, railcar ownership, community development and financing, public ownership, western economic cooperation and the management of public debt. Most recently Graham has completed work on Canada’s internal trade agreement, Canada’s grain handling transportation system, the effect of provincial railway taxes on Western economic growth and managing rural communities in the new global economy.
Dr. Graham Parsons, President
Organization for Western Economic Cooperation

Have Truck, Will Travel - Some Effects of Trucking on Railway
And Elevator Competition

The key issue associated with the reform of western Canada’s grain handling and transportation system is clearly the level of competition that exists in the system. The regulation of grain companies and railways has been based on the concept that in the absence of competition the state must intervene to protect against the effects of monopoly power. Developments in trucking and in the western agricultural economy affect the competitive environment in which both grain companies and railways handle grain. Developing the competitive environment could facilitate full regulatory change in the system.

Many delivery points, a few major grain companies, two major railways and short trucking distances to local elevators characterize the existing grain handling and transportation system. By the standards of other industries and of the U.S. grain handling system, the Canadian regulatory structure is overly complex and restrictive. It results in a fully administered grain handling market. When a state regulates commercial markets it creates conditions whereby new administrative controls must be introduced to allocate resources. In Western export grains these administrative interventions were made by the Federal Government in successive transportation acts, including the Western Grain Transportation Act (WGTA) and the Canadian Wheat Board (CWB). The regulation of export grain movements is designed to control both the prices and the physical allocation of key resources within the system. It is an administered market in many respects that extends the Canadian Wheat Board market monopoly across the handling and transportation system itself. These interventions replace the price signals that allocate resources in other transportation markets in Canada and around the world.

The regulations were initially put in place to protect farmers from the commercial excesses of large grain companies and from big railways with local monopolies. They were seen as necessary in an era of insufficient market competition. Today the question remains, is there sufficient competition in the grain handling and transportation system to allow for the removal of the regulatory controls? Since the introduction of those regulations, grain companies have broken out of their old provincial markets and, because they compete regionally, have become more competitive. On the prairies farmers are producing new products. Processing and feed
markets are growing. Trucking has the potential to introduce increased competition to both grain handling and to the railways.

The prairies are undergoing a paradigm shift that many are unwilling to accept. The traditional country elevator used to be a symbol of community. It was a co-operative that demonstrated the power of farmer ownership. Country elevators have been replaced with inland terminals that are already a central economic feature in many prairie towns. The concrete terminals operate over much larger hinterlands. The greater distances have resulted in increased competition for grain companies and railways. The new, highly rationalized system consisting of the very largest new and proposed facilities creates much more competition than did the previous structure. Many believe that the monopoly structure that initially warranted close regulation and the creation of an administrative market remains. Grain handling is still dominated by just a few companies. The fact that there are only two class I railways alone, people think, justifies close government regulation and control. While it is true that there are high levels of market concentration in parts of the industry, there are nonetheless new competitive pressures that allow for the removal of the intensive regulations of the past. Grain handling markets can and will work because trucking is at the centre of the industry.

The three largest grain companies dominate prairie grain handling capacity. The Saskatchewan Wheat Pool, AgriCore—the newly merged Alberta and Manitoba Pools—and United Grain Growers account for about seventy percent of prairie storage capacity. Within individual provinces a single company's market share can exceed fifty percent. Corporate concentration can be shown across industries of market concentration (figure 1). The axis on the left shows the Herfendal-Hirschman index, an index the U.S. National Association of Attorneys General uses to decide whether the levels of market concentration warrant government investigation. The chart that shows the index levels for the Canadian prairies—Manitoba, Saskatchewan and Alberta, North Dakota and Montana and, separately the Canadian Wheat Board delivery blocks. The levels of concentration are higher in Canada than in the United States and very, very high in the old Canadian Wheat Board delivery blocks.
Increased trucking however changes the competitive environment. The old concentrated framework for grain handling and transportation is rapidly disappearing. The major grain handling companies have broken out of their provincial cages. Corporate mergers in Canada and major U.S. investments are rapidly restructuring the industry. The largest grain companies now compete in each other's backyards, are making new competitive investments and plan to close hundreds of old, small and inefficient elevators. Major U.S. food companies are buying directly from Canadian farmers. ConAgra, ADM, Louis Dreyfus and Cargill have been present for years but new farmer-owned co-ops and joint ventures have also entered into the market. CN has been privatized and with the take-over of Illinois Central in the U.S., has become a major continental presence. Ports are being privatized. Huge investments in food processing are creating new domestic and international markets for grains in such areas as canola crushing, hog processing, and sunflower seeds. The new forms of competition that have been introduced into the system with the new processes include inter-market, intermodal and inter-product competition often carried by trucks. The development of trucking is having a direct effect on the competitive structure throughout the system.
Farmers are trucking longer distances now because, in the new competitive environment, it pays them to do so. Given the tariff schedule for commercial trucking and rail, trucks deliver grain locally and then it is transferred to rail for the longer hauls. Ideally, the farmer keeps the trucking distance short so that he can maximize returns from the economy of long distance rail movement. This is shown in the diagram by the two rate schedules by truck by the thin line and for rail by the thick line.

At the same time, however, the new inland terminals must obtain large volumes of grain to get a return on their investments. In order to secure the volumes they need, grain companies offer farmers trucking premiums of $2, $3 or more per tonne. Trucking sometimes also provides grading and cleaning benefits, as can be seen on the diagram by the dotted thick line below the trucking schedule. When the line drops the distance that can be trucked increases.

Farmers who truck farther have access to more grain companies. Therefore trucking longer distances increases competition, even in the new highly rationalized system with far fewer grain elevators and delivery points. This chart (figure 3) shows the share of prairie locations accessible to one, two and three or more companies by different trucking distances. The monopoly and duopoly locations decline with increased trucking. The farther the farmer trucks, the more the level of competition increases, sometimes dramatically. Especially significant is the drop in the number of farmers truly captive to a single company. This chart masks the number of locations like Killarney, Manitoba, Tisdale, Saskatchewan and Vulcan, Alberta where
grain companies encourage trucking in order to compete for their share of the most productive growing regions. For many years the Weyburn Inland Terminal has had access to grain coming east from across the Manitoba border and north from Regina. These larger hinterlands increase competition across the system.

Figure 3.

Increased trucking increases railway competition because most prairie farmers are within reasonable access to railways. As table 1 shows, most locations are within 100 kilometers driving distance of one or two railways. Locations within 60 kilometers are shown at the bottom. At a hundred kilometers driving distance only Alberta has large areas that might be described as captive shipper locations. The most productive grain producing areas are within access of two Canadian railways.
The introduction of truck access to the U.S. Burlington Santa Fe Railroad running just south of the border further reduces the number of captive shipper locations. Railway access is clearly shown on the two maps. This first map shows the many southern prairie locations that are within relatively close trucking distance of the U.S. Burlington Santa Fe Railroad running south. The lightly shaded areas extending into the United States are within 60 kilometers of a railroad. The black area shows a margin of 100 kilometers. It can be seen that many of the southern prairie border areas have access.
For farmers living in the southern border regions, access to U.S. railroads would provide more competitive choices. Currently however, this option is not open to them because of Canadian Wheat Board rules. Furthermore, the current exchange rate would probably undermine the cost advantages to be gained from such competition. Nonetheless, before the current Canadian export grain handling structure was put into place, Canada and the United States had a long history of using each other’s systems. In the inter-war period, sixty percent of Canadian grain moved through U.S. ports and forty percent of U.S. grain exports were moved through the Canadian system.
Considering producers’ potential access to Canadian and U.S. railways provides further insight into the situation of captive shippers. Map 2 shows the areas with access to the three major railroads as well as OmniTRAX up to Churchill. The white areas are within 60 kilometers trucking distance, the black zone, 100 kilometers. Note that most of the productive areas of the prairies are within the black zone. In fact, the regions in southwest Saskatchewan and southeast Alberta include the federal grasslands and the Cypress Hills Provincial Park, areas that are not really agricultural. Those areas have traditionally suffered from low rainfall, low yields and limited crop insurance coverage.

Southern Alberta is an interesting case because while it shows up on the map as a captive shipper area, it includes a diversified and irrigated area of southern Alberta in which railway competition comes not from another railway but from other products and from trucking. The more diversified agriculture of southern Alberta, from food processing to feed markets, has effectively introduced modal product competition, a form of market competition that can increase value for farmers. New investments in crop diversification, canola crushing and pasture plants, hog barns and feed lots followed the end of the Crow subsidy and the introduction of federal and provincial government economic development policies. Last month Agriculture Canada reported the prairie food sector investments were nearly two billion dollars for the year running up to May 1998.

Trucking by grain companies also introduces the potential for countervailing, competitive pressure on railways by both grain companies and the Board. Map 3 shows the competitive access areas in which grain companies can switch traffic between each major railway by trucking up to 100 kilometers or just 62 miles. The area includes nearly eighty percent of prairie storage capacity and could amount to a significant share of the total crop over the course of the crop year. The potential of this form of competition to develop is limited by the existing statutory, regulatory and administered structure of grain handling. For example, statutory freight rates based on distance and performance standards set in industry committees like the Car Allocation Policy Group (CAPG) restrict railway competition in both price and service.
Farmer trucking is central to at least seven competitive elements in the grain handling and transportation system. These are:

1. Grain company trucking premiums.
2. Access to more grain companies at delivery destinations.
3. Access to more railways by farmers and grain companies.
5. Access to U.S. railway and grain companies by cross border deliveries.
6. Grain company switching between railways.
7. Trucking export grains for other uses.

These are all forms of intermodal, inter-market, and inter-product competition that form the basis for the modern standard of competitive regulation through most of the developed world including the transport commodities in Canada, and for grain in the United States. They can unleash great powerful competitive forces whose absence in the past was the prime rationale for
Canada's detailed and controlling regulation. In fact, these competitive principles are already contained in the National Transportation Policy of the Canadian Transportation Act.

Competition brings with it service and price effects that can directly affect farm incomes. In a recent study, Agriculture Canada suggested that trucking premiums and inland cleaning services could be worth at least $50 a tonne. Service competition between railways is also important. In the U.S. premium railway services, offered to meet premium market prices, have yielded much higher returns to U.S. farmers. These and other competitive effects, such as port fobbing fees, country and terminal handling and storage charges and terminal cleaning, provide substantial income benefits for farmers.

Can existing regulatory structures allow for market competition? The existing regulatory structure limits competition because it retains the old local delivery network. The historical equity-based objectives were reflected in price and branch line controls on the railways, in administrative controls such as those delineated in Part 2 of the Canadian Wheat Board Act and an industry allocation processes for railcars like CAPG (Car Allocation Policy Group). Regulation constrains the competitive pressures that are currently being introduced into the system by increased trucking and the far more competitive grain company market. In regulating prairie grain to one export marketing and one transport option, the regulations limit the competitive benefits that emerge from the appearance of other alternatives.

In conclusion, the developments in trucking and elsewhere across the system have the potential to restore competitive pressures by reducing the number of captive shipper locations and by putting new competitive pressures on grain companies and railways. Competition also leads to the introduction of new crops and new market options into the system. Whether these important competitive pressures can develop will depend in a large part on changing industry practices. Especially crucial is the need to change the existing regulatory structure for western export grains, the CTA and the Wheat Board Act. Grain handling and transportation reform is in the farmer's best interest. Last year, prairie farmers were surveyed. Seventy-eight percent believed that increased competition is the best protection against rising freight rates. Increased trucking is a part of any competitive solution and grain handling is not simply a matter of roads and trucks. In the early 1960's, the McPherson Royal Commission concluded that the railways were exposed to a pervasive truck competition. It is unfortunate that it has taken so long to get the benefits of it.
Before opening up the floor to others, I would like to ask the first question. In your presentation, Graham, you noted that elevator consolidation and grain company restructuring had promoted increased competition. Have there been any changes within the trucking industry itself that benefit the farmer, such as new services or improved rates?

DR. GRAHAM PARSONS:
There have been some major developments in trucking competition. In Canada, the number of trucks on the road has increased, trucks are newer and they are driven and run now by different people. The old farmer’s truck is far less evident and, no doubt, this will soon be reflected in the statistics. The grain companies themselves are now trucking a lot more. Some of the biggest and most road sensitive trucks, for example, are run by the Saskatchewan Wheat Pool. These trucks are very, very large and sophisticated. They can change air and tire pressure, they can change the load’s effect on the road and they have the capacity to carry huge volumes that would require a much greater number of smaller trucks. Grain companies have responded to the competitive environment by making investments in trucking and providing their own transport services. Even farmers are starting to use larger trucks. I think that this competitive environment has opened up a whole New World for trucking, the old slogan that “farmers truck their own grain to the local elevator” no longer holds.

QUESTION FROM THE FLOOR:
Have you considered the costs of trucking and the road system, costs that are generally shouldered by the farmer in the form of municipal taxes? What about the cost of the big concrete elevators also paid for by the farmer?
DR. GRAHAM PARSONS:
The work I have done on the question of the roads and road funding suggests that the money raised to pay for roads is not spent on roads. The cost of roads is carried by the farm community as a whole and not by farmers per se because not all road traffic is grain traffic. Roads are in the jurisdiction of provincial governments that try to enact policies that promote economic development. For example, they encourage crushing plants for canola. In order to get the canola to the plant it has to be trucked. The provincial government will not invest 2 billion dollars in a crushing plant in the prairies unless it has revenue to pay for the roads. Unfortunately, spending on roads in Saskatchewan peaked in the late 1980’s. Roads are degrading now because they have not been maintained. Yet, economic development increases the number of trucks on the roads that, in turn, increase the demand for road maintenance. This question involves not just grain, but also forestry products, oil and food processing, activities that add value to our products. Economic development policies cannot be properly implemented unless money is spent on roads.

On your second question on the extent to which farmers pay for the elevators: Despite the amalgamation of companies, some very important competitive factors have emerged. Companies are now at each other’s back door and trucking premiums have gone down considerably. Nonetheless, there is still not enough competition in the system to draw out all of the benefits. For example, does the farmer benefit from railway incentives? The benefits are supposedly being captured simply because they are offered. If one hundred cars are loaded at once the saving will be $3/tonne, loading 25 brings results in a smaller saving, so the farmer is not necessarily benefiting from the incentive. The farmer will only benefit from the introduction of big inland terminals when the framework is competitive enough to force the savings back to him. The bottom line is this: A farmer does not care whether his grain goes to Vancouver on the biggest single unit train in the world or on 8 million donkeys. He is really interested in the cost of transportation, because the cost of shipping will affect the amount of money left at the farm. In a competitive system, farmers can keep a lot more money on the farm.

QUESTION FROM THE FLOOR:
You had a diagram on the overhead showing that a trucker’s gain and distance factor is affected when he lowers his price line. You have only talked about trucking, but I want to ask you about some other scenarios. First, what do you think would happen if the CN and Illinois Central railways were able to get more economies of scale? Second, if intermodal competition reduced
the railways’ captive markets, would the rail price line you have calculated not drop in a manner similar to what you have shown as the distance factor advantage of trucking?

DR. GRAHAM PARSONS:
To answer your question, I will use the U.S. experience as an example. As many of you know, the U.S. rail system was deregulated with the Staggers Act in 1981. By 1981, the railways had lost a lot of traffic to trucking. The rail system became more competitive with deregulation and the railways recaptured a huge amount of business as the system became more efficient. If we had a truly efficient and competitive system of information flows on which farmers could make decisions, we would have a much more efficient transportation system. In the United States real rail rates have dropped and the real returns to farmers there have increased quite dramatically. Of course, besides the reform of the transportation system a number of other factors have contributed to the change. The real question at the moment is that under a distance related regulatory freight rate; railways in Canada cannot compete. Where for example, is the competitive factor, is it just distance? How do you really introduce service competition?

QUESTION FROM THE FLOOR:
Perhaps you recall that last winter, the USDA held listing sessions because of problems in rail transportation. I attended the session in Fargo and it was quite clear that both the shippers and the farmers were very unsatisfied with the deregulated system and were calling for some regulation. We do not seem to know which system farmers and shippers really prefer.

DR. GRAHAM PARSONS:
I watched the USDA sessions very closely and will make two comments on your point. First, I believe that the competitive system in the United States offers major benefits. There is no doubt that in the past few years in the U.S., the merger mania that has affected the railroads created enormous administrative and logistics problems. However, these were adjustment problems caused by the amalgamation of huge organizations rather than by the regulatory structure. In response to the problem of grain being left on the ground, Burlington Northern purchased new cars. In Canada, the Wheat Board went to the CTA to deal with CN. We do not know the outcome of the complaint. CP lost, but the decision is an odd one. There has not yet been any financial penalty and given the regulatory structure in Canada, if there is going to be one it will take a long time before it is paid out. In the U.S. on the other hand, the investment response occurred very quickly. A competitive system is much better than a regulatory one. The CTA is
a powerful tool for people who want to use it to protect their interests. I think, though that competition will, in the long run yield more income benefits for farmers.

Ms. Janet Weiss, President
Canadian Transportation Research Forum
Morning Chair - Session I

Alan Clayton's presentation is entitled "Truck Traffic on Prairie Roads". Mr. Clayton is a Professor in Civil Engineering at the University of Manitoba. He graduated from the University of Saskatchewan with a bachelor's degree in engineering and a master's in science. Alan's principal interests are in freight transportation, trucking safety, trucking traffic and transportation data systems. In the course of his thirty-year professional career Alan has worked as an academic, a consultant, a researcher, a regulator, and an engineer. He has worked in the transportation field throughout Canada and in the United States and oversees in Sweden, Ghana, Thailand and Great Britain. Alan's work deals with weight and dimension regulation, truck safety enforcement, energy and freight transport, geographical information system applications, traffic and transportation data systems, truck licensing and permitting, the economic regulation of trucking, truck cost and rates, truck operations, trucking containers and intelligent transportation systems applications, especially in commercial vehicle operations. Professor Clayton's work has been supported by Transport Canada, the Natural Sciences and Engineering Research Council of Canada, Environment Canada, the Canadian Conference of Motor Transport Authority, the U.S. Federal Highway Administration, Provincial, State and Urban Government Transportation Departments and Regulatory Boards, the Swedish Transportation Research Commission, the Canadian International Development Agency, the Canadian National Railway, the Canadian Trucking Research Institute.
Trucking on the prairies has changed considerably over the years. Many of the private and public policy issues facing us today have a direct linkage to trucking issues. Policy makers have to make decisions about road investments, financing, regulation and enforcement, technology and about people. To make informed decisions on issues related to trucking in Canada the data and information will have to be understood, sorted and tested. A recent publication by The Bureau of Transportation Statistics says that informed decisions require the continual updating of our understanding of the transport system, how it is used, what it contributes and what it affects.

The truck and grain transportation systems are currently undergoing significant change. Thirty years ago, here on the prairies and basically across Canada, governments had a hand in every aspect of transportation. They controlled, regulated and subsidized transportation operations. Today, governments are not involved in truck transportation. They do not economically regulate trucking, but are involved in important policy and investment decisions on the highways.

We have created a market that is driven first, by technology and second, by safety regulations. The United States has developed much clearer goals than Canada on safety regulation. Of course, recent changes also reflect the development of global trade, technological change, new priorities, new financial resources and the deterioration of the infrastructure. I am going to talk about the volume, characteristics and performance of trucking and will compare the relative cost of trucking today with its cost in the past. I will look at safety, Geographical Information Systems (GIS), and truck flows both in the present and future.

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1 I would like to acknowledge the contribution of all of my colleagues, students and professional associates at Civil Engineering, Mr. Kai Haughn, Mohammad Allen, a Ph.D. student, Louis Escober who runs the Manitoba Traffic Information System, Genette Montifair, Ken Lou, Errol Tan and Cara Marus, graduate students now in Columbus, Ohio working on a project with Federal Highways, and Marina Malkorie who just returned from a conference in Dallas in GIS and GPS applications in the highway sector.
The Department of Civil Engineering at the University of Manitoba has done a lot of work on truck sizes and weights for the U.S. Federal Highways Department. We developed a truck flow map that covers the entire territory of the United States. It enables us to use geographical coding to link truck traffic flows in the U.S. with flows throughout Canada. The map was developed for Transport Canada as part of a trade study on the prairie region. Eastern, southern and California highways have trucking volumes of 5,000 to 40,000 trucks per day on any given road section. The highest volumes ever experienced in western Canada occur between Edmonton and Calgary and involve at most 5,000 trucks/day with an average of about 3,000 to 4,000/day. While U.S. roads are swamped with trucks our traffic volume is pretty low. Even the Edmonton-Calgary routes that experience the heaviest traffic in the prairies are nothing in comparison.

Minnesota encounters a fairly high volume of traffic, about 10,000 trucks a day, while Manitoba experiences very low volumes of truck traffic of roughly 2,000-3,000/day. We have a few key routes (the Trans Canada and Highway 75) that both have more than 1,000 trucks a day, marked in heavy lines on the map. The light lines represent from 150 to 400 trucks/day and the dotted lines all represent 150 trucks/day or less, sometime as few as 50 or 25. The latter are provincial highways, not the municipal roads. Truck volumes in nearly half of all highways in the prairie region operate at a range of less than 150 trucks/day. Considering truck traffic on municipal roads, it is clear that the greater part of traffic on the prairies involves very, very low truck volumes.

About 2,500 southbound trucks a day cross into the U.S. from Canada at prairie border crossings. The three main crossings are Sweet Grass Couls, North Portal and Pembina/Emerson. Sweet Grass crossing averages about 300 trucks/day, Portal about 200 and Pembina just over 400. In addition there are about 200 trucks a day crossing into North Dakota through Sprague, Manitoba. Northbound truck traffic volume is double that of southbound traffic.

About 500 trucks a day cross the Ontario-Manitoba border. There has been no change or growth in traffic volumes through this crossing for quite some time. About 1,200 trucks a day run through the Saskatchewan - Manitoba border, 1,300 trucks/day run through the Saskatchewan - Alberta border and about 1,000 trucks/day go through the Alberta-B.C. border. Couls has about 600, Portal has 400 and Emerson has about 850 or so a day. About 200 trucks/day cross through Sprague and then go through Sault Sainte Marie into southern Ontario. Everyday, the volume of truck traffic crossing through Blaine, a single crossing between B.C. and Washington, is greater
than the volume that crosses border crossings throughout the entire prairie region. U.S. trucking through all Manitoba border crossings has grown at a rate of about 9-10 percent a year, while the growth to Ontario has been zero. The rate of growth across the prairies has been O.K. but it certainly is not 9-10 percent/year. Grain trucks represent approximately 5-7 percent of total trucking activity. Thus, while grain is important, especially on certain roads, it certainly isn't the single most important product—decisions related to highway or trucking do not have to be based on any particular consideration for the grain trade.

The types of trucks on the road have changed considerably over the years. In the old days, in Saskatchewan, a farmer would own a two-axle farm truck, a half-ton truck for going to church and perhaps a snowmobile. Now he has to own an eight-axle 'B' train, the heaviest truck allowed on Canadian roads. In the early 1970's, the trucks operating in the prairie region were straight two and three axle trucks. The biggest truck was a five-axle tractor semi-trailer that operated at a rather low weight, 74,000 pounds. The Western Economics Opportunities Conference in 1974 set in motion an important technological change that transformed the transport sector and led to the use of bigger trucks. The second factor in the shift was that the regulations governing the weights of trucks were relaxed. From about 1975 trucking was deregulated. By 1990 economic regulation was almost a thing of the past and the system was completely driven by technology.

Trucking has changed more here in Canada than anywhere else. In 1974 the trucks on the road were two or three axle trucks or 32's. Hardly any of those 32's or five axle tractor semis trucked grain. Grain was shipped in small trucks that today represent no more than about ten percent of the trucks on the road. Now, depending on the highway and season, the five axle tractor semis represent about fifty-five to sixty percent of road traffic. The 32's, the six-axle tractor semi trailers belonging to the tridem axle group developed in the late 1980's, now account for about fifteen percent of the total fleet in the prairie region, depending on the highway. The 'B' trains, the very large units, the most productive and the most pavement loading trucks are about ten or fifteen percent on some roads some of the time, and up to thirty percent at others.

Besides regular trucks, including the eight-axle 'B' trains there are the very large, long combination vehicles, the specially permitted trucks increasingly allowed on certain roads in western Canada, some at very high weights. A new permit program in Saskatchewan allows trucks called 'turnpike doubles'. They are not used much in the grain trade, especially the ones
with triple trailers but the unit is extremely productive and is used more and more frequently to ship lighter freight. The turn-pike doubles are used mainly in the prairie region but can also been on roads throughout the United States, since they are allowed to operate on many highways, including the New York throughway. These units are productive enough to be a threat to the railways.

Of the total fleet of trucks weighing more than 4,500 kilograms registered in the prairie region, Manitoba has about fourteen percent, Saskatchewan about thirty-three percent and Alberta about fifty-three percent. Large trucks, those weighing more than 15,000 kilograms, including tractors and semis make up about one third of the fleet. Of course, it is important to note that half of the registered fleet on the prairies includes farm trucks or vehicles with some sort of farm status.

We have studied freight flows by truck using various databases. For the United States, we looked at the Trans Border Surface Rate Database and for our truck survey we consulted the CCMDA Roadside Survey Database. At the University of Manitoba, we conducted a major survey of the three main prairie border crossings. The Cross-Border Freight Survey is one of the most extensive surveys done on trucks crossing those borders. In Alberta there is heavy trucking, traffic is lighter in Saskatchewan and Manitoba’s traffic is even lighter. We used Statistics Canada’s For-Hire Truck Survey that only considers large for-hire carriers and plotted all the traffic moving within a province. There are indications that big changes are currently taking place in intra-provincial trucking activity. According to the For-Hire survey, about 2,500 for-hire trucks a day are currently moving in Alberta, about 640 in Saskatchewan and about 400 in Manitoba.

We have met with the industry, including many of the top carriers in the prairie regions, some of the major shippers, and representatives of both the Canadian National and Canadian Pacific railways. Increases in manufacturing and grain processing have increased the need for direct, just-in-time deliveries. Trucks that used to go from Chicago to Toronto via a warehouse in Winnipeg are now leaving Chicago and delivering directly to the home depot store at the final destination. The system has changed dramatically and making overnight deliveries is critical. Deliveries are taking place at night and most are next day or sometimes, second day delivery. The emergence of super hubs like Minneapolis threatens prairie-based transportation businesses. Minneapolis is becoming a major warehousing gateway. Salt Lake City, another super hub, is especially vibrant now. In a single day, a truck can leave California, be unloaded in Salt Lake City
City, reloaded and return to California. The same process can occur between Salt Lake City and Calgary. Calgary is considered to be a mini super hub, Winnipeg is not. Consequently, warehousing and redistribution services are moving from Winnipeg to Calgary. Distribution patterns are constantly and unpredictably changing to the extent that several carriers have told us that freight is going everywhere now. The direction of freight traffic flows and origin and destination sites are also changing. Right now, east/west traffic is stagnant while north/south traffic is growing.

Trucks, of course, became heavier once the regulations governing the allowable weights were relaxed. Between 1974 and the early 1990's, the distribution on the five axle tractor semi trailer was increased in order to adapt it to progressively higher gross vehicle weights. Since the early 1990's the average weight of five axle tractor semi trailers has declined significantly because they have been replaced by the six axle tractor semi trailer and the eight axle 'b' train. Now, the five-axle unit is used more as a cube vehicle rather than as a weight-carrying vehicle. While the older trucks have been allowed to carry heavier loads, newer trucks with more axles to carry and distribute the extra weight more efficiently were also created. These newer vehicles have increased productivity while at the same time decreasing road impact.

In 1974 most of the units on the road were straight units and 3S2's, five axle trucks or semi trailers. Now there are a lot of 3S3's and 'b' trains. We used Lloyd Ash's Trimac Truck Operating Cost Truck Model to compare the cost structures, in cents per ton/kilometer, of different trucks. The cost structures were calculated for a two axle unit, a five to seven axle 'A' train (common since the mid-1980's), a six axle tractor semi trailer and the eight axle 'B' train. The 1974 information was factored into 1996 dollars. Assuming that the vehicles are loaded going in both directions, the cost, in cents per ton/kilometer, has been significantly reduced. With the shift from a two-axle truck to an eight-axle 'B' train, the cost has been cut by twenty-five percent. The move from the 3S to the eight-axle 'B' train has cut costs by fifty percent. Of course, even though these units result in tremendous gains in the cost advantage for the farmer, the total cost may not have changed accordingly because the unit has to travel longer distances at a lower cost. This represents the most significant technological impact on truck operating costs.

To evaluate a system, it is not enough to consider cost alone, the accident rate also needs to be taken into account. The Department of Civil Engineering has done more work than anyone else in Canada has on heavy truck accidents, especially in Manitoba and Saskatchewan. Manitoba
avers approximately two hundred heavy accidents a year on provincial highways. In Saskatchewan there are twice as many accidents as in Manitoba and the accident rate is about one and a half times greater in Saskatchewan.

We have developed the ability to platform information into a Geographic Information Systems environment (GIS). We have been able to assign by computer, the heavy truck accidents that occur on all the roads in Manitoba and Saskatchewan. The roads are then analyzed conditionally by volume or type of road. Using the maps, we have created a computerized transportation network that connects the U.S. network, the Canadian prairie region network and all Canadian highways.

In the United States any computerized geographical map is considered public property and can be accessed free of charge. Because the maps have to be bought in Canada, we decided to create our own and distribute them free of charge. Developed from surveyor's grids instead of air photos, ours are the highest quality maps available for the provincial highway system. We recently completed a computerized road and railroad map for the Regional Municipality of North Norfolk that is one of the most accurate and highest quality produced. The scale on our computerized map of North Norfolk lets us produce any point to within a radius of one hundred feet. We are working to develop computerized maps for the whole prairie region that will appreciably facilitate grain analysis. We are also creating a GIS map of the western Canadian railway system. The map contains all of the characteristics of the railroad, including siding lengths, all the major freight flows on the prairie region and grain density. It is the only map of its kind in Canada.

In order to adapt to the constantly changing nature of the economy as a whole and of the transportation sector in particular, we must continually update our understanding of the transport system, how it is used, what it contributes and what it attracts. Decisions related to trucking and grain involve decisions about investment, total volume, the difference between capital and maintenance, ownership standards, road abandonment, evaluation criteria and methods, financing decisions, methodology, regulation enforcement, safety, size, weight permits and technology. We lag behind the United States in the application of intelligent transport system technologies. Improving our use of intelligent transport technology is necessary to facilitate better government planning, management of road use and operator utilization. This technology lets us track trucks in real time. It indicates precisely where on the road a truck is at a given
time. In order to supply the transport sector with the qualified technical and professional personnel it needs however, we need to develop programs to train and educate people for employment in transport.

**QUESTION FROM THE FLOOR:**

My question is primarily addressed to Professor Clayton but Dr. Parsons might also like to comment. Could you elaborate on how the farmer owned and commercial 'B' trains fit into the overall supply chain? Dr. Parsons demonstrated how technological change at the receiving end of the high-through-put terminals affects the economy, especially the trucking industry. Professor Clayton gave an excellent run down of the economics of trucking, especially on the question of the relationship between the high annual utilization and the efficiency of the large configuration units. First, I would like to make the comment that one farmer does not have enough grain to keep that type of truck busy all the time. Second, what about loading on the farm? I believe that this is the weak link. The 'B' train does not translate into a low cents per ton mile cost because it takes four to six hours to load it. Perhaps there is some scope for innovation in loading technology.

**PROFESSOR ALAN CLAYTON**

The cost charts I showed are highly idealized. I assumed very high utilization, about 160,000 kilometres. In the grain trucking business a lot of those vehicles will not reach 160,000 kilometres and in such cases it is necessary to factor up cost. There is no doubt that in the grain transport business a lot of time is spent loading and unloading. Consequently, the efficiency at the reception point and the efficiency of the company loading trailers at the farm are very important. A lot of farmers are using the trailers for storage before they transport. Of course there are problems in the system. The number and capacity of the big 'B' trains and of the big grain elevators certainly exceeds the grain supply. The problem used to be that there were more rail-lines than were needed.

**DR. GRAHAM PARSONS:**

You have raised a very good question. The prairie economy undergoes continual innovation, farm machinery and rock pickers for example. But in grain transport we have worked for many years on a very narrow model from which we must break away in order to facilitate technological advances. The old archival footage taken before the system was constrained shows that there were a variety of different loading options. People built little ramps along the side of
the railroad. There was special equipment at the farm and there were different ways to stuff. Now, the newest developments are big trucks, augers and special processes for handling special crops. It is not unusual for example, for lentils to be picked up as they come off the field at two o'clock in the morning and taken straight to a processing plant a few hundred miles away. In less controlled markets, there is often no waiting. Many problems resulted from the fact that we regulated to only one option.

QUESTION FROM THE FLOOR:
Paul Earl, Canadian Wheat Growers Association - Alan I was struck by two of your figures, that the total volume of truck traffic involves hundreds or thousands of trucks per day while grain traffic represents only about six or seven percent of that total. This confirms the method I use to analyze grain traffic. I calculate on the basis of the largest conceivable inland terminal, a terminal that would have about forty trucks a day coming into it from four directions. That amounts to about ten trucks a day from each direction, a likely average for a provincial highway. In addition, approximately one or two trucks a day will come into the large terminal from rural feeder roads, a factor that is barely measurable statistically. The comment I would like to make is that the data discredits the conclusion people often come to that grain traffic is responsible for the destruction of prairie roads.

PROFESSOR ALAN CLAYTON:
The problem with your argument Paul is that you do not consider the fact that Canadian prairie roads were not designed for the weights they now carry. Roads are sensitive to both the number and type of loading. It is true that on the major highways, the problem is small and incremental. Nonetheless the problem is significant on the low volume, low standard highways. The thin pavings in Saskatchewan for example were laid simply to keep the dust down, not to keep the truck on the road. No one ever envisioned they would have to handle the axle weights they are expected to sustain today. They most certainly were never meant to carry the tridem axle trucks that did not yet exist but that now frequently travel these roads. The road is not breaking down vertically. The pavement is being shoved off of it. The roads running from east to west into Regina are like the roads I was driving on in Ghana, in 1980. This is a big problem that, even if not specifically caused by grain trucking, is certainly a big axle weight problem. We need to start designing roads to correspond to our use of them. Road use needs to be managed and needs to correspond to weights the roads were designed to take.
DR. GRAHAM PARSONS:
I disagree with you Al, Paul is absolutely right. This is a red hearing. The problem is that the roads in Saskatchewan are not maintained. If a road is not maintained, the type of axle, the weight or type of load it carries is irrelevant. Funding to rural municipalities has been drastically cut. In current dollars, the budget for provincial highways and rural roads is still below its 1989 level. In real dollars the level is ludicrous. I learned about road grading in Ghana when I did the feeder road system there. The roads turn to mud because there is no gravel put on them.

The second point I would like to make relates to the question of branch line abandonment. People claim that branch lines cannot be abandoned and inefficient elevators closed because of the extra grain traffic it would generate that the diverted traffic would put too much extra stress on the roads. Thirty percent of the branch lines targeted for abandonment are lines farmers have not delivered to for the last ten years. If you look at the past statistics on trucks and consider current changes in grain movements as well as developments in other rural sectors, you see that the relative volume of grain traffic is insignificant.

Blaming the deterioration of the roads on grain traffic diverts attention from the real issue of funding. Neither the federal nor the provincial governments will take responsibility for the roads. While these two levels of government bicker over which one of them should pay for the roads, the roads deteriorate. People used to blame road deterioration on the Crow, now they are blaming truck traffic. People do not seem to realize that economic development, such as occurs with food processing for example, requires that roads be used and properly maintained.

Road maintenance has to be properly funded in ways that are economically efficient. Roads are a crucial part of our economic infrastructure and until people realize that and start funding them, there will be no solution to the problem of rural roads.

QUESTION FROM THE FLOOR:
Allan Roberts, Private Engineering Consultant - I run a small engineering company that specializes in agri-industrial projects, including concrete elevators. In the past, we worked on grain transportation studies and I do not think that the issue Alan raises is a red herring. The municipalities, that is the farmers, are directly responsible for paying for rural roads. Federal and provincial roads have all received a reasonable level of design input. They have been finished sufficiently well to withstand the loads they are anticipated to carry. Municipal roads, on the
other hand, have received neither sufficient input nor the level of initial capital investment they require. As yet there is no way to forecast the impact of the heavier loads on either the maintenance or construction costs of rural roads. I would like to ask Professor Clayton if anyone is working to devise forecasting methods so that the municipalities can justify claims for increased maintenance costs?

DR. ALAN CLAYTON:
To the best of my knowledge we do not know how loading affects the deterioration of the pavement, even on our well-designed roads. Right now the highways department and other agencies are struggling with the problem. At any rate, if we cannot forecast the effects of heavy traffic on our well-engineered roads, then we cannot do it for rural roads that are not carefully planned and engineered.

Perhaps grain traffic is low on the roads. Nevertheless tridem axle trucks are being loaded up at the farm and are travelling on roads that were not designed to hold them. A tridem axle truck carries a very high, very concentrated load that will seriously damage rural road structures by breaking them down either vertically or horizontally, as it goes around a curve. Tridem axle trucks have done considerable damage to roads in the city of Winnipeg. I helped create those axles and I can tell you that they were designed for use on very select major highways. Yet, now they are travelling everywhere in the network. The tridem axles have been a positive development but we have to manage their use.

I do not think truckers are averse to being managed as long as we tell them where to go and how better to use the roads. Certainly nobody wants the rural roads to deteriorate but people are dreaming if they think that the big trucks are not doing any damage, whether or not the problem results from grain transportation. Grain transport is not solely responsible for road damage. Other commodities are shipped in the tridem axle trucks.

QUESTION FROM THE FLOOR:
Ron Glim, Saskatchewan farmer/rancher, also involved in municipal government. I cannot believe some of the things that I am hearing today. Ten years ago agricultural economists predicted that grain was going to be $10/bushel. That never happened. Today when I hear engineers and economists tell me that farmers are going to be better off in ten years because of the new technologies, I become suspicious. One of the assumptions made here today is that
farmers' trucking costs are going down. They are not. Alan Clayton said that farmers are buying 'B' trains. In fact, very few farmers are going to buy 'B' trains because they cost about $30,000 and require a $50,000 second hand truck to pull them. The farm economy is not paying farmers enough to support the buying of 'B' trains. Farmers did not start hauling to terminals because they wanted to. If farmers want to generate revenue in the context of de-marketing and incentive rates, they have no choice but to haul. Grain car allocation policy keeps all the branch lines plugged.

The future of competition is a problem. While today there are about eight major grain companies, there will probably be only three or four in the future. Consequently there will be very little competition. Competition is also limited in the rail industry. In western Canada there is the Canadian National, the Canadian Pacific and Burlington Northern. Burlington Northern charges $.30 a bushel more here than in the U.S. We do not need that kind of competition.

DR. GRAHAM PARSONS:
You are right to argue that economic and technological changes should benefit farmers. Competitive frameworks do offer benefits to farmers. The rail rates are not the most significant cost to farmers. The total cost of moving grain includes handling, cleaning, marketing, rail rates and port fobbing fees. The evidence suggests in fact, that farmers' returns are much higher in competitive systems than they are in highly regulated environments.

The road issue has to be addressed separately because it is not exclusively a question of grain transport. The provincial government should pay for the maintenance of rural roads because those roads are used by food processing plants, hog barns, oil and gas and, in Alberta and Saskatchewan, forestry products. These are sectors of the economy that have always been in the jurisdiction of the provincial government. The issue of rural roads therefore is not just a question of municipal funding, especially since the municipalities get most of the money for rural roads from transfers. Provincial governments have to start recognizing that, in the West, the countryside is an important component of the economic base. Roads are crucial to rural economic development. Consequently, the provinces should provide for their funding.
Sheldon Fulton, the President of Agralink Exchange Limited, Calgary, will speak on electronic markets for grain trucking. Agralink is a new Internet based trading system for feed grains in Western Canada. It combines state-of-the-art communication technology, especially information systems, with the structure and discipline of a formal commodity exchange. The Agralink trading system provides a cost effective, secure and open trading arena for western Canadian agricultural products. As President, Sheldon is responsible for all of Agralink's operations. Sheldon used to be with Natural Gas Exchange Incorporated of Calgary, an electronic forwards market for natural gas. He has been with Homestead Computer Services Limited and has been involved with the development and implementation of trading systems and exchanges in London, Sydney, New York and Winnipeg.

Mr. Sheldon Fulton, President
Agralink Exchange Limited
Electronic Markets for Grain Trucking

It is now possible to trade truck transportation electronically. I am going to talk about grain freight trading. The most significant advantage to be gained by trading freight is that it facilitates price discovery. Discovering the value of a product helps to balance supply and demand. In Western Canada, the removal of the Crow opened up the market place and created the conditions necessary for the electronic trading of grain. The grain handling system was rationalized and, all across Western Canada, truck and rail freight carriers started to compete with one another. Other factors that facilitated electronic freight trading include the introduction of value added processing and the development of the Internet's ability to let participants interact with the market place. The Internet levels the playing field by providing easy and low cost access to information.

Agralink started developing an electronic system in the latter part of 1996 and early 1997. Our first foray into the agricultural market of Western Canada was with the feed barley market, a market that now moves about seven and a half million tons from the producer to the end-user. Most of the barley comes from the surplus producing areas of Saskatchewan and Alberta. The
feed deficit regions are around the Lethbridge feed lot alley area and the hog producing areas of Edmonton and Winnipeg. Ideally, grain would move directly from the site of production to the site of consumption, from farm gate to feed lot. It should not end up on a railcar or in an elevator. Canada produces a lot more barley than the U.S., although lately some U.S. grain has been coming into Canada, an interesting phenomenon because it demonstrates how the market place has changed.

In order to develop an electronic system to serve the feed-barley industry, we had to be able to bring buyer and seller together and to facilitate their interaction with the market. Now we trade feed and hull-less barley, wheat, oats, feed and milling oats and feed peas. We have recently added a new commodity, Tri-plus Freight. Grain companies, end users, marketers and producers use our system. In addition to bringing together buyers and sellers, we actually clear the transactions. We can track a local commodity from delivery to completion. Financially, we make sure that buyers are invoiced and sellers are paid.

Like any good exchange we spin off information. On our web-site we have agra-quotes, also available on DTN. Agra-quotes put out the bids and offers available in the market place. People can interact either indirectly through agents or directly, by signing up on the Internet and actually becoming a trading entity. Most of the commodities we currently trade, barley and feed peas, like most other products on the market, move directly from the producer to the end user. When the commodity to be traded is transportation, the situation is different. Transportation is traded by arbitrage, meaning that the market arbitrates where a product goes. In fact transportation is the key component in an arbitraging market.

The problem with arbitrage markets is that the assumptions behind supply and demand are not the same. Freight suppliers do not think about their commodity in the same way as do freight buyers. A freight buyer thinks of transportation as something that goes from point A to point B, hauling his product. The freight seller does not care what the product is, where it is destined or what time it arrives at the destination point. Sellers consider themselves to be selling a container to move a product. In the transportation industry, the process of determining what to trade and what price signals to send off is much more complicated than it would be when trading barley or some other commodity. The situation is further complicated because the transportation industry thinks of transportation as a service and thus differentiates it. Providers of a service prefer to differentiate their product from other providers of the same service and then set prices. In
claiming the superiority of their service over that of their competitors, they justify charging a higher price. Thus providing a service is different from trading in commodities.

Price discovery in the context of trade in commodities involves establishing standards, discounts, rights and obligations. In order to put transportation services on the market as a means of capturing the benefits associated with trading commodities, transportation services must first be commoditized. Commoditizing them requires getting standard terms. Suppliers need to consider delivery, forward contracts, hedging, penalties, trading rules, rights and obligations. Because transportation buyers perceive the product differently than do transportation sellers, trading transportation involves a series of iterations.

Agralink Exchange Limited has spent the past eight months inventing a way to commoditize transport services. To establish a standard, we focused on the super ‘B’ train. We considered origin and destination points, markets and corridors and load and unload times. Because of the number of origin and destination points, we had to establish market centres; every farm essentially became an origin and every feed lot, a destination. There are thousands of possible combinations. As it is impossible to trade with thousands of permutations, we had to create a thirty or forty standards from which we tracked the variations. After establishing market centres, we considered the parties within or equivalent to the market centre and then we dealt with the increments beyond it. We considered contract performance and whether or not deliveries were evenly spread out. We sat down with freight providers, freight consumers, carriers and shippers. Calculating on the basis of no more than three loads a day and assuming that loads were scheduled a week in advance we determined how to transform freight into a commodity and we identified the potential participants in an electronic freight market exchange.

We also dealt with a number of other clearing trading issues. How would freight be cleared from the clearing area? Who would pay for the clearing and how could security postings be obtained? In the grain transport exchange, buyers and sellers are both required to post security.

We had to determine how we could post security when product quality involved performance. We had to develop rules and procedures, commodity contracts, defaults, penalties and most importantly, force majeure. We had to define what in fact, was being traded. We had to determine whether or not there were circumstances in which performance requirements did not have to be met. For example, what was to be the rule if a truck broke down on the way to the
feed lot? We decided that the rule should be that a load must be delivered, even if the truck breaks down. The grain must be delivered within a day or two of the specified delivery time and the transport provider would be obliged to notify the customer of problems. Contract requirements can include conditions that favour one side over the other but these conditions cannot be used to get out of a contract requirement. A commodity trading system has to be balanced when it is built, a difficult thing to do, particularly when people’s perceptions of the commodity itself differ. Freight is the toughest commodity we have ever set up to trade because buyer and seller will only participate if they both think they are trading on conditions of equality. If either thinks the process is skewed, he will refuse to participate and the trade will not take place.

Right now, out of Calgary, we have contracts to trade freight in the grain market, mostly spot forward and basis contracts. Spot transactions take place immediately while a forward is a transaction that takes place any time in the future. In the Winnipeg Commodity Exchange we do a basis contract against the futures contract. We trade barley, wheat, feed peas, milling oats, hull-less barley, feed oats, and we recently started to trade a new contract called Tri-plus Freight.

We trade, for the most part, across the prairies. In one particular case for example, milling oats were to be shipped with a company called South Bow Farming, just out of Calgary. He offered 80 tonnes at $130/tonne for delivery in the second half of November. He put a number of attributes in the order, including the percentage of hulled and hull-less wheat and the percentage of wild oats. He basically set out to enhance his ability to market and promote his product using our system. We also have orders for forward barley and basis barley contracts. For example, there might be three different contracts for barley, a thousand tonnes each, to be delivered in January, February and March. One contract might be offered into the Lethbridge market on a basis contract. Another contract could be offered on the basis of a flat price. Bids and offers come into the Agralink system continuously. The number of customers and the volume of activity on our system are growing. We allow basis trading, we have a futures contract with the Winnipeg Commodity Exchange and we can trade basis anywhere and at any time in Western Canada.

We have identified a series of regions across Western Canada; each region essentially represents a series of locations. Someone connected to our system would choose the location of the transaction and the product to be traded. For example, there might be three loads of freight
offered for December and January to Calgary from Winnipeg. Someone could either bid on the offer or could counter. For all the regions in Western Canada, we created a grid that includes the different markets and market centres in the Prairies. Offers and bids take place within the grid. When connected to our system, a grid location will be shown in one colour (blue, for example) to show that there is a bid while another colour (pink) will indicate that there is both a bid and an offer. If a user signs onto the system as a feed lot wanting to buy some barley out of Swift Current in December or January, he will want to book some freight from that origin. He might bid $18/tonne for six loads of freight coming out of the southwest region. In fact, he would bid it into every location. Someone else in the system might counter his bid at $20/tonne for the six loads coming out of Moose Jaw in December of January. If he considered that counter offer a good deal, he could simply go into that market and book the transaction. In effect, in a few minutes he has traded six loads of freight with somebody in Moose Jaw. He could also buy barley. He would stay on the system and make a bid in the Assiniboia/Shaunavon/Moose Jaw market place for 80 tonnes of barley at $105.80/tonne to be delivered in December or January. After buying both the freight and grain, he could set the delivery destination.

In order to trade transport, we established a standard. We have a ninety-minute, morning loading time and a sixty-minute evening unloading time. We do not allow any splitting of trailers. The price for the Tri-plus Freight is the price for trading a super ‘B’ train, with a minimum 40 tonne load, no road bans and for grain only. After setting the standard, we were able to adjust the criteria. We can include different trucks, a ‘B’ train or an ‘A’ train, a straight liner, nomadic tri-axles or convertibles. The volume can be changed or a percentage can be put in to adjust for road bans.

We developed a standard contract. Once the contract is traded, we use Agraload, a piece of software we created, and to make sure it gets performed. We also take care of the financial and contractual parts of the delivery performance. If a trade is in a forward position it gets offset and goes into spot at the end of the month prior to delivery. Then spot moves into a receipt call. The receipt call then becomes a load of grain. Every week we invoice the loads of grain delivered the week before and collect the money. Either the buyer or the seller can issue an electronic transfer of funds. Because we have an interactive system that goes back and forth, we can do load tracking. The system schedules and books the loads, determines load and unload weights, and goes into settlement. There is also an online mechanism for dispute resolution. A load might be put in dispute either because the delivery was late or because the grain turned out to be not what
the buyer thought it would be. Online, a load can be put in dispute by simply pushing a button. The response is usually quick.

The system shows receipt calls that display each trade indicate whether the trade was for a commodity or for freight, and whether the user was a buyer or seller. The user can access other details. For example, our load tracking system positions the loads. A symbol will show the load’s status, if it has been scheduled, booked, loaded (indicated by a happy face) and unloaded. A dollar sign indicates that the buyer has agreed to pay and the seller to accept the amount indicated. Once a load of grain is traded, it is scheduled. Dates for pick up and delivery are established. We use block scheduling that allows for the scheduling of ten or twelve loads at a time. Block scheduling generates a calendar. On the calendar, a buyer indicates when he wants the loads to arrive. The system sends that information to the seller who will then agree to it and book the loads. The loads are booked one at a time.

Since we trade freight, we also have a system to pick up, in load weights, not just the grain commodity but also loading times, unloading times, late arrivals and diversions. There are penalties associated with diversion or the failure to meet the targeted load, unload and/or arrival time. For each stage there is a four-hour window after which a penalty of $50/hour is paid to the party kept waiting. If a ninety-minute load time were contracted, there would be a $65/hour demurrage fee for every hour a truck has to wait. The same penalty applies for unloading late. Buyers and sellers negotiate these penalty rates in an effort to even out the playing field. A settlement is reached when a shipper agrees to the loading time offered by a carrier. In one particular case, the shipper claimed a $50 discount off the freight charge because the truck was one hour later than the window. The final statement always reflects the penalty charges, the net settlement. In the latter case the freight rate traded was $30/tonne, the traded price then was $1,265 minus the $50 penalty. If the shipper and carrier agree to the statement, they both check it off online. At that point participants can change discounts and premiums or put the trade into dispute. Once both parties have checked off the statement, the buyer is invoiced. Agralink then collects the money and pays the seller. Payment occurs no less than a week after buyer and sellers have checked of the statement.

The Agralink system facilitates a trade by bringing buyer and seller together. Agraload, the tracking software enables them to interact, facilitates the transaction and tracks the steps of the process. Agralink takes responsibility for security, financial clearing and risk monitoring. We
do a credit evaluation and establish a trading limit for every participant who signs onto the system, including producers, truckers and grain companies. Each is required to post security. The minimum security accepted is a $10,000 letter of credit. After establishing credit and security we evaluate the level of risk associated with a specific participant’s physical activity and then value the activity itself on the basis of our assessment of risk. For example, if the trade is for a thousand tonnes of barley to be delivered in January, we consider the current market price, price changes, the delivery destination and the liquidity of the position. We then value the risk against the posted security, making sure there is a balance between the two. For financial transactions we have our own multi-million dollar clearing facility backed by the Toronto Dominion Bank and by our investors.

Agralink is an exchange recognized by and operating in accordance with the regulations of the Alberta, Manitoba and Saskatchewan securities commissions. The Agralink system operates on the basis of a contract signed by everyone involved. The contract consists of three parts including a customer agreement that is legally binding. When you trade with Agralink Exchange Limited you trade with everybody else who has signed on with us, a practice common to many exchanges. The contract protects the interests of the exchange and its customers. It lays out the rules and procedures that delineate both how a trade proceeds and how it is actually transacted. For example, we have a set of rules dealing with how to probe a truck to obtain the right to reject a load. If the truck is not probed according to the procedures set out in the rules, the buyer maintains the right to a discount but does not have the right to reject the load. We also have rules governing liability, compliance and failure conditions. For the freight contract, we identified precisely what constituted a failure condition and, where responsibility would lay in the case of failure. These rules are embodied in a different contract for each commodity.

In February 1998 we started trading barley, feed wheat, peas and milling oats, in the first week of November 1998 we officially added freight, feed oats and hull-less barley and in December we hope to add a canola contract. The Tri-plus Freight contract is the brokerage arm of Trimac trucking in Calgary. Tri-plus, the broker for all the freight in our system, does not exclusively broker Trimac freight; it accepts offers from a number of independent truckers across Western Canada. However, with Tri-plus as a backup, we have been able to upgrade the quality of the freight we trade. For example, if a truck does not show up for delivery within twenty-four hours of the time scheduled, Tri-plus will send out a Trimac truck. This backup system ensures a higher level of performance, enabling both Agralink and Tri-plus to get into the freight market.
with a high degree of certainty that contract conditions will be met. The relationship also helps us develop a set of standards for trading grain freight. We anticipate it will take from a year to a year and a half to refine the system but by then we will know exactly what constitutes grain freight and what it should look like. On the Friday of our first week, we traded 3,000 tonnes of freight. The transaction involved a feed lot in Alberta that, having already bought the grain, wanted to lock in freight for delivery to them in January, February and March. This transaction involved seventy-five truckloads of grain over the three-month period.

Lately there has been a lot of discussion in the U.S. about letting the futures market go electronic and private. We have already done it! Agralink is an electronic and private futures exchange. Exchanging futures electronically facilitates objective, open and fair price discovery—a significant benefit for the marketplace. Trading freight electronically can bring new discipline and a new structure to the markets that currently exist. Electronic exchanges provide users with reliable access to new production and new markets. Agralink introduces discipline into trade because both the buyer and the seller are contractually obligated to fulfill the transaction in accordance with the terms initially set. Electronic exchanges, bringing buyers and sellers together are, once established, unbelievably inexpensive to operate. A participant simply hooks into the Internet to have access to trading all over the world. Trade takes place in a secure environment because after the initial contact, all communications are proprietal.

Our agreement with Tri-plus ensures that anyone buying freight from Agralink will get it on time. Similarly grain going through our exchange is going to be delivered because it is security posted. Because we require security posting and signed contracts, a producer looking to sell to a feed lot in Lethbridge has some certainty that the lot will not go broke before paying the bill. We have spent time establishing standards, rules and dispute resolution mechanisms. For all participants we provide financial assurances and access to spot, forward and basis markets. Consequently, we have taken the risk out of the freight market. The Winnipeg Commodity Exchange futures market for barley is a relatively liquid market for four or five months but it is not liquid for the following summer or fall. Without a forwards market, planning is extremely difficult. Our electronic exchange facilitates planning because our forwards market enables producers to determine if there is going to be a buyer for their crops three years in the future. They can plant something that will sell. A producer facing a lot of new competition wants to be able to determine what forward market can still be sold into. He wants to be able to lock in a
sale in that market. We hope that the Agralink system will facilitate that kind of rationalization of supply and demand.

**QUESTION FROM THE FLOOR:**
Is there any possibility that in the future, railcars will be traded as a commodity?

**MR. SHELDON FULTON:** Railcars are an eminently tradable commodity. The potential problems lie in the imbalance between buyers and sellers. Given that the key to selling any commodity is the existence of a balance between buyers and sellers, a single buyer or seller will dominate the market. Existing railcars could be made available to new sellers and exchanged on the market. Clearly there are enough buyers. The owners of all those concrete elevators would much rather buy a railcar as freight than as just a railcar. It would be a very interesting commodity. A lot of time would have to be spent balancing the perceptions of buyers and sellers in order to come up with a deal perceived to be fair by both, meaning that the trade would have to take place on the open market. The government would have to be kept out because regulations skew the trade in favour of one party. In addition, the risk would have to be quantifiable; otherwise the price will be skewed.

**Dr. Jim Elliot, Dean**  
*Agricultural and Food Sciences, University of Manitoba*  
Morning Chair - Session II

Our next speaker, Dr. Barry Prentice, Director of the University of Manitoba Transport Institute, holds a joint appointment between the department of Agricultural Economics and Farm Management and the Transport Institute. For many years he has been an active researcher in transport economics and sits on the boards of several associations affiliated with the transport industry.

**Dr. Barry Prentice, Director**  
*Transport Institute, University of Manitoba*  
Potential Electronic Market in Grain Hopper Cars

Developments in computer technology and the reduction in communication costs have created the conditions that make it possible to implement an electronic railcar market. The preconditions
for a functioning electronic exchange are a balance between the buyers and sellers, the enforcement of membership rules, a price generating mechanism, a quality checking system, the standardization of contracts, the commoditization of services and a system able to process transactions. Most of these preconditions can be met and the technology is available to make an electronic market for rail cars operationally feasible.

The current and future ownership of railcars, the allocation system and the distribution of market power are important factors to consider in the grain market. Today the ownership of railcars is split, between the federal and provincial governments, the Canadian Wheat Board and the railways. Recently the federal government attempted to liquidate its fleet, but encountered too much political resistance. Although the decision has been delayed, the policy of liquidating the railcar fleet has not been abandoned.

When the government disposes of its fleet, who will pay for and own the replacement cars, and how will market power be affected? If nothing is changed and the cars are simply used for twenty years until they wear out, the asset problem will be solved. This however is not likely the best solution. If the railways were to own all the railcars, would they acquire most of the market power? Wheeler and Gray, at the University of Saskatchewon, suggest that a railway that owns all the cars is in a position to collect a significant rent. The ownership of the cars, however, may not be as important as the question of access. Access to a railcar can be compared to shelf space on a supermarket. Whoever controls the shelf space gets to sell their product. Grain companies can only sell their grain if they can ship it. They cannot ship unless they have access to the railcars. Getting access to the cars is a key issue that affects the handler’s market share and revenues.

Access to cars has to be based on equity and fairness. The most efficient system is one where everybody has equal access to cars. The current system is an institutional system with a rather complex organization in which cars are allocated to various groups on the basis of previous use. Those who received cars in the past will receive them in the future. Obviously there is a question as to whether the system is fair to new entrants but the more important question relates to competition. The introduction of performance cars (by the Canadian Wheat Board) was an attempt to make the system more competitive and block shipping was established to improve efficiency. However, these attempts to create a better system of allocation by tinkering with the current system have not introduced any true competition because true competition is not possible
in a system that allocates cars on the basis of past performance. What will happen if the system is deregulated and privatized? How will the deregulation of the grain system affect access to railcars in the allocation system?

The method of railcar access affects distributional and pricing efficiency. The U.S. bid car experience demonstrates that a market based car allocation system can transport grain more efficiently. Twenty five to thirty percent of the railcars in the U.S. are allocated through the bid system. In addition, there is a secondary market that allocates cars seasonally. When the shipping season is at its peak, from August to February, cars are in high demand and price premiums must be paid for them. To encourage the use of the cars when demand subsides, discounts are offered. The bid system follows from the peak load-pricing model that states simply that if supply is fixed, allocation will be determined by price. During the peak demand period prices rise. In the non-peak periods prices fall. The peak load pricing of economic allocation provides distributional and price efficiency. Distributional efficiency corresponds to the value of a service across customers. A buyer who really wants a car will pay for it. Pricing efficiency occurs when carriers and shippers have accurate information to guide the provision and use of service. An efficient internet based market for railcars would be an open system where suppliers could add or remove cars from the basic fleet. Higher prices would encourage the purchase of more cars for the system.

The consolidation of the grain handling system combined with the increased trucking that has emerged to compete with rail, provide an opportunity for an electronic railcar market. The reduction in elevator points makes railcar allocation much easier, while the existence of the government fleet provides for a starting pool that could form the basis of the market. The railways would not have to put their cars into this fleet. If they had buyers with whom they wanted to provide dedicated cars, they could allocate their cars separately.

An electronic railcar access system would increase competition both within the rail industry and between grain handlers. Grain would be moved to the elevators that had cars available and to the rail line with the most competitive service and rates. In a market system, the pricing of transportation services would be transparent and available on a daily basis. An index could be generated and because of the system's improved efficiency and accountability, it is possible to envision the emergence of a futures market that would allow the hedging of transportation services.
The electronic railcar market would limit the market power of individual participants. By dispersing car ownership over various shippers and the railways, price discrimination would be more difficult. For example, the railways would not be able to extract premiums for higher value commodities because the buyer would not be required to declare his product until after the car was obtained.

Finally, the creation of an electronic market for railcars and their privatization, would be a feasible means by which to deregulate the grain industry. It could provide an alternative and politically acceptable way to move forward.

QUESTION FROM THE FLOOR:
Barry, you spoke about perfect competition as well as equity/fairness. My question is are the two concepts based on the assumption that there must be a number of partners of essentially equal strength? What do you do when one or two players dominate the market? How does that affect the issue of perfect competition and equity/fairness?

DR. BARRY PRENTICE:
Perfect competition is always the goal but it will never be achieved. An electronic market would get us closer to the goal. Rules that prevented one party from monopolizing the situation or cornering a market would be necessary. Limit could be set on the number of cars any company could own or control in a market at any given time. The system would still be governed by rules that would determine access to and payment for the cars.

There are two types of equity: horizontal and vertical. Horizontal equity occurs when everybody is treated the same, regardless of who they are or what their needs are. In the market place we more often encounter vertical equity where those with the power to pay for something can put in the first call to buy. In other words, vertical equity occurs when the seller of the most valuable grain, provided he is able to make his margin, is given the right to bid to get the resources to move his grain forward. The economy becomes more efficient with vertical equity because it enables the seller that is most likely to make more money to get his product on the market. An electronic grain car market would certainly provide vertical equity. It also has horizontal equity because it would give everybody equal access to the market, a situation that does not exist now.
QUESTION FROM THE FLOOR:
Who will own the cars? Whoever owns the cars would have a considerable proportion of the market power, depending on the procedure for bidding. In Saskatchewan quite a few of the branch lines are going to become economically viable. They are going to be able to compete with the terminals. The question is though; will opening up a market in railcars serve the interests of the farmer, the one who will end up paying the costs? The branch-line farmers might be at a disadvantage if they have to bid against a major grain company on the main line. The major grain companies could use their market power to drive up the price of those cars to the point that the branch-line farmers could not compete. Are the farmer’s tax dollars going to be paying for his ultimate demise? Where would the institution of an electronic exchange leave those farmers?

DR. BARRY PRENTICE:
I will respond to your question by asking a question. Will a more competitive system yield a more efficient allocation at a lower cost? The branch line and smaller elevator point do not necessarily guarantee the farmer the lowest total cost. The site might only be getting cars because it did so in the past. Its allocation might be determined historically and institutionally rather than economically. If a more competitive system will drive the farmer’s total costs down to the lowest point, then a more competitive system is in the farmer’s best interest. The railcars may have to move to larger elevator sites and trucking costs might be proportionately higher because the grain might have to be trucked farther, but the total costs are likely to be lower because farmers will have more alternatives from which to choose. If farmers have more alternatives the bidding prices are going to go down. If keeping a branch line is better, it should be able to stand on its own. If it cannot compete how is it better than the alternatives?

QUESTION FROM THE FLOOR:
I agree that with an electronic market, railcar rates will start to compete with trucking rates and the handling costs at the terminals will probably become half of what they are now. I think that the branch lines can compete but to do so they need a level playing field. Just as the railroad pays for main line maintenance, someone has to pay for the roads. If we let the market allocate cars even on the branch lines, the grain companies might dominate. We do not know what the future holds. A road tax could be levied on the main line terminals. Then the branch lines would become very competitive. I think that until we know what the rules are going to be, we cannot predict how changes will affect farmers.
DR. BARRY PRENTICE:
Yes, a lot more research needs to be done. An electronic railcar market is technically possible but whether or not it is the best idea depends on other factors. If the freight rates in the system are capped the effects will be different from what they would be if the freight rates were allowed to fluctuate. On your question about the ownership of the cars: I think that the more widely dispersed the ownership, the more competitive the market will be. I think the establishment of an electronic market would encourage broader ownership because it would open up access.

QUESTION FROM THE FLOOR:
Sheldon could you please elaborate on Agralink’s dispute settlement mechanism. How does the process unfold?

MR. SHELDON FULTON:
A dispute occurs any time a buyer and seller disagree over whether the completed transaction fulfilled the terms of the contract, as each understood it. Either the buyer or seller can initiate a dispute. Agralink operates as a mediator to help resolve it. Disputes over trucking services usually revolve around a truck not showing up as scheduled. Sometimes the truck is the wrong type or it is not hauling the right volume of product. Ninety-five percent of disputes over grain deal with its quality or specifications. We have a specific procedure for resolving disputes over grain. The buyer is expected to take a sample of the grain from the truck when it is loaded, the seller takes a sample when it is unloaded. If there is a dispute, each sends his sample to the Canadian Grain Commission that then makes the decision. The party that was deemed not to have complied with the terms of the agreement would have to pay for the cost of the procedure. One of the reasons we went with Tri-plus trucking was to avoid disputes over non-delivery. Obviously it is in our interest to resolve disputes as quickly as possible because otherwise we run the risk of losing customers.

QUESTION FROM MR. SHELDON FULTON:
I would like to make a comment on the question of railcar allocation. It is important to remember that the benefit of an open market is that it lets buyers and sellers transact in a manner that facilitates price discovery. Markets send off very clear price signals, enabling shippers to accurately determine the value of a given mode of transportation. It then becomes much easier to calculate which mode is the most competitive. Choosing whether rail or truck is the most
cost-effective means of transport also becomes easier. We should not forget that the purpose of
an open market is price discovery.

I would now like to pose a question to Barry. When a shipper buys freight he is not just buying a
railcar; he is also buying the movement of that railcar from origin to destination. You said that
the more widely dispersed the ownership of railcars, the more buyers and sellers there will be in
the market. At this point in time, there are only two sellers of the actual hauling of the freight
from origin to destination. If I have $100,000 to spend, I can buy a railcar. The problem is that I
cannot do anything with it without access to the rails. Therefore competition will be imperfect.
Can you comment on these points Barry?

DR. BARRY PRENTICE:
We could, at the simplest level, keep the rail system exactly the same as it is now except that
instead of allocating cars institutionally we would have a market system that allocated them on
the basis of an electronic bidding forward process. The market would determine who would get
a railcar. This would essentially be an option market. Allocating cars on the basis of a more
open market system could open up the possibility that the railways’ prices and service would
fluctuate. Then it would become possible to separate the car from the actual haulage. The
shipper could negotiate with the railway for different service levels and prices even without
having access to the cars precisely when he wants them. He might get access to the cars through
the open market. Indeed, the railway might operate outside the system with some kind of
guarantee. There are a lot of different ways to consider the effects of a market based allocation
system but the simplest thing to do is to create the system and see what happens.

QUESTION FROM THE FLOOR:
Barry, you said several times that the current system of car allocation is historical or institutional,
suggesting that the system is divorced from the market. However, for the Wheat Board at least,
the basis of the current car allocation system is market competition between grain companies.
The company that gets the most grain from farmers gets the most cars. Consequently car
allocation is directly related to a company’s ability to compete for the grain business. The
systems in the United States, the COT System for example, is a bidding system like the one you
are proposing. There has to be other mechanisms for car allocation, either a first come first serve
or a lottery type system.
On the question of distributional efficiency, in a recent report prepared for the U.S. House of Representatives on Agriculture, elevator managers reported that they were waiting ninety days without receiving one car from a six hundred-car order. In Canada we have an even tighter transportation handling system. If we were to encounter such delays, what impact would they have on distributional efficiency?

DR. BARRY PRENTICE:
I realize that an incentive program has been introduced that encourages grain companies to compete for grain and that the allocation system has been adjusted. Nevertheless, even if the incentives are in place, is a grain company going to buy a load of grain and put it in an elevator if it has no access to cars? A grain company has to have cars. Currently there is no competitive system of allocating cars. You seem to be suggesting that a grain company could buy all the wheat and that a single grain company would then have access to all the cars.

QUESTION FROM THE FLOOR:
First of all, if one grain company out competed another, it would not be able to bring the grain to the elevator unless, in order to make a sale, there was a call for that grain. So the allocation of cars is not divorced from the market. It is not as though a company can go out, take an entire year's supply in one month and then demand all the cars. The allocation of cars is directly related to the call for grain required for sales. The second point is that if a company competitively provides service to a grain farmer, then yes, they will get more cars than a company that is not as competitive. The allocation of cars is thus directly related to a grain company's ability to service farmers and its ability to meet the required sales.

Luncheon Chair - Mr. Peter Wallis, President and CEO
Van Horne Institute

It is my pleasure to introduce today's luncheon speaker, the Honourable Otto Lang. I have known Otto for many years and am sure his presentation will inform, intrigue and delight. He is also certain to generate controversy.
Honourable Otto Lang, CEO
Centra Gas Limited
Everything That Should Be Done...

Many years ago I spoke about Third World development and the need to divert defense spending into more productive investment. At the time, we were in the midst of the Cold War. At the Canadian Grains Council meeting in 1974, when I was the Minister responsible for the Canadian Wheat Board, I was the first politician to talk about how the Crow rate was a millstone around our necks, that it hindered prairie economic development. In the business world a solution to a problem is applied as soon as it is discovered. In politics on the other hand, as Mackenzie King used to say, a politician might be aware of a problem before anyone else even knows it exists, but he must not apply the solution until everyone is aware of the problem. Any solution to a problem will inevitably give rise to new problems and whoever tries to solve a problem will thus inevitably be held responsible for the new problems that arise from the solution to the initial problem. The new problems will inevitably be seen to outweigh a problem that was never recognized in the first place.

Because the idea was ahead of its time, advocating the termination of the Crow turned me into a bit of a pariah. I scarcely had any friends left on the prairies. It was unfortunate that we could not proceed because, at the time, in a cabinet paper that would have led to the termination of the Crow. I had the support of the Minister of Finance and the President of the Treasury Board. I had persuaded them both of the economic merit of terminating the Crow. They were offering money amounting to three times the total granted a decade later to put an end to the Crow. The termination of the Crow would have affected land values and the extra money would have provided farmers with some compensation for the adjustment.

I am going to discuss the relationship between meat and grain. It is folly to ship bulk grain if it can be fed and shipped as meat. When we introduced the Western Stabilization Program we considered the needs of the grain and beef industries separately. We designed the program to offer rewards in accordance with performance on the market. The introduction of a similar program now could have significant benefits for prairie agriculture. The Western Stabilization Program was funded in part with federal money and some might think that in a free market economy there is no justification for funding such a program. Nonetheless, I think the particular nature of grain as a product and of the grain market itself justifies the use of public money. We
do not want to run the risk of running out of grain. Our capacity to feed ourselves is too important. Grain is thus a politically sensitive product. You need to have some grain in reserve but at the same time, you do not want a surplus. A reserve, though necessary, should be kept only until the harvesting of the next crop. A surplus is deadly because it affects the market and depresses prices. Nonetheless, given the need to be able to hold some grain in reserve, there is a place for public money in the industry, because reserved grain represents dollars the farmer cannot extract from the market place.

Food security is, in fact, a key advantage resulting when we feed grain to animals to produce meat. If it becomes necessary, the switch back from meat to grain is relatively simple. Animals can be fed less grain so that more of it becomes available for people to eat. A system in which people live on a combination of grain and meat supports more people than one where people eat only meat. This concept of food security is very important and has some relevance to the transportation system. In 1974, I said that the Crow should go because terminating it would provide an incentive for farmers to feed grain to cattle that could be shipped as meat. However, if a food shortage developed, grain would become more important than meat as a food product, because you can feed more people. A serious food shortage of course potentially costs human lives. Thus, in the context of food shortages, grain stabilization programs are important.

The relationship between meat and grain becomes very interesting when there is a shortage. When grain is in short supply, prices go up. It becomes more expensive to feed the grain to animals and eventually, not viable to do so. The value of the grain that is put into the production of the meat product takes the producer out of the available market for meat. At that point in time meat production slows down because although meat prices may have risen, they probably have not risen to a point that compensate for the cost of the grain. The market thus automatically adjusts the relationship between the two products in favour of making food available to people. When grain prices go up people eat more grain and less meat. More grain is thus transported than meat. However, at this point in the process of adjustment a destabilizing factor is introduced. In addition to the extra grain moving through the transportation system, there is more meat because herds get broken up and culled because farmers have started to downsize their herds. That meat flows into the market because cattle farmers are not going to keep animals that are too expensive to feed. The influx of meat to the market further depresses its price and intensifies the movement of agricultural product in the form of grain rather than meat.

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Of course, the reverse happens when the grain supply recovers and prices start to go down. Farmers start building up their herds again. The price of meat continues to rise because initially fewer animals are hitting the market. They are being held back in order to build up the herds.

Farmers can never be certain of where they are in the cycle. There are a number of factors we need to think about when we plan our future transportation system. When I advocated the termination of the Crow at the Canada Grains Council in 1974, I was advocating the production of more meat, especially cattle and hogs. Some people asked me where the market was for all that meat. Their assumption was that you have to have a market before you produce anything. In fact it is only when you have the goods to sell that you can prove that there is a market.

I am a great believer in consumption taxes. We should discourage consumption in favour of investment. We need to go beyond just sales taxes. I consider sales taxes to be just a down payment on a full-fledged consumption tax. We should tax on the basis of an annual net worth analysis. The amount a given household consumes in a year should be considered on the basis of income minus savings. The household's consumption should be taxed. Taxing consumption rather than earnings would discourage consumption while encouraging saving. It would be a progressive tax. The beauty of a consumption tax is that it would not be necessary to stop at one hundred percent. Theoretically, in the case of conspicuous or luxury consumption, three dollars could be charged for every dollar consumed. For example, taxes could be levied against somebody owning three yachts or four condominiums in Florida. Consumption leaves nothing behind for future generations while investment leaves behind goods for future generations and helps develop a nation's productivity and overall wealth.

Promoting saving in the industrialized world would also inevitably promote investment in the Third World. You might, in fact, want to bias it that way, though for now I will just say that the more investment is encouraged, the more it will look for places to go. Investors would seek opportunities in areas with low cost labour, in the areas that the need to develop. We would not need a foreign aid program. Third World development would be entrepreneurial and market driven. People with money would invest in places where it would do some good. Of course some people say that encouraging more food production in the Third World would negatively affect agriculture in the industrialized countries. This is not necessarily true. If the standard of living in the Third World was raised, people would start earning more and would then consume more food. In fact, the consumption of food would follow the cycle I discussed earlier. People
would initially eat more grain but once their earnings rose enough they would start consuming more meat. People in the Third World would become a market for our meat and we would be able to feed a lot more of our grain to animals that would then be shipped as meat. Third World development would facilitate our food security.

How do we deal with fluctuations in grain prices? The question of surpluses and reserves will always be a problem for farmers who produce grain. The issue of surpluses and reserves is also related to transportation because it raises the question what kind of system and what transportation capacity should we have in the future? Who should pay for the transportation system? Should it be subject only to the market or should the state intervene. The question I am trying to raise here is: if we produce a lot of the world’s meat supply, what will we do if there is a food shortage and we have to shift from meat to grain production? Our transportation system would require a greater capacity to move the grain than it did the meat. A transportation system that was adequate for the movement of meat would not be sufficient to ship the grain. We need to plan a transportation system that can adapt to such changes.

How do we ensure a fair freight rate? There is some validity to the Saskatchewan farmer’s suspicion that he should not trust the railways to set the right rates. Farmers and key farm organizations should be able to provide input on the question of freight rates. Farmers do not want to have to pay more than any one else pays to move a loaded car of product a certain distance. However, someone moving a carload of marginal product is, in the short term, helping the railway and making some contribution towards its overall operations. That price cannot be extended to all the movements that occur because overall haulage has to cover overhead and provide an appropriate return on the railway’s investment. Consequently some users might have to pay a higher price.

Farmers tend to expect the railways to be able to haul any volume of product at any given time but they do not consider the cost of the unused capacity in slow periods. Farmers might expect the railway to provide the capacity to haul 200 million bushels more one year than the previous. They do not consider that the railway has to pay for all that stand-by capacity. Farmer’s organizations need to sort these questions out and try to grasp the economics of the issue. The railways have a quasi monopoly even if they do not work together. Right now they have significant power to determine rates. If freed from regulation, the railways might charge more than they should, more than their overhead plus a fair return on investment. To prevent railway
overcharging, some regulation might be necessary. I would strongly recommend to the railways that they help to think through how the shipper might be protected against them, and come up with a fair proposal before a solution is imposed upon them.

The market alone may not be the right mechanism to determine if farm incomes from grain are adequate. The market may or may not correctly indicate if the transportation system is sufficient for an emergency situation that requires the grain to be shipped to the farm markets. The market may not ensure that some of the grain is fed to the animals in those farm markets. There are important policy reasons why the grain system should be able to move animal feed when grain prices are low and grain for human beings when there is a shortage.

**Luncheon Chair - Mr. Peter Wallis, President and CEO**
*Van Horne Institute*

Well Otto, once again you have given us a thoughtful presentation. Otto has a unique ability to identify the big issues, to take those issues, to discuss them and to draw them into logical coherent arguments.

**Afternoon Chair - Session 3 - Canadian and U.S. Grain Handling Systems**
*Mr. Douglas Duncan, Past President,*
*Canadian Transportation Research Forum*

Our first presenter this afternoon is David Colledge from the *Western Transportation Advisory Council* (WESTAC). David has worked in multi-modal freight and passenger transportation since 1982 when he spent the summer with Transport Canada as an airport service officer. He later worked with CP Rail in the cost and business analysis unit in Montreal and with Via Rail Canada as a senior cost analyst. As a senior consultant with Transmode and Delcan Corporation he has been involved in numerous studies of all modes of transportation. He was also director of market development with an on-board computer manufacturer for the transportation industry. David has a wide range of experience in the analysis of competition in rail, truck and marine transportation systems. He has done economic impact assessments of transport policy reform. He has been involved in grain transportation since 1983 when he helped prepare the CP Rail cost submissions to the federal government on statutory grain movements and branch line subsidy claims. Currently he is responsible for developing WESTAC’s program of activities and outputs.
to members. He recently coordinated WESTAC’s grain logistics project, a project that resulted in two submissions to Justice Estey’s grain review.

Mr. David Colledge,  
*Director, Projects & Program Development Western Transportation Advisory Council (WESTAC)*  
*Western Grain Handling System*

To begin my discussion of the Canadian grain handling system I would like to quote from a Japanese trade newsletter. “Future grain sales to China have been jeopardized by our inability to deliver on time.” In May 1978, the United States Department of Agriculture forecasted that U.S. wheat sales would improve because of Canadian transportation difficulties. The grain supply chain was complex twenty years ago and remains so today. Along its length it is susceptible to many disruptions and despite improvements, much remains to be done to achieve the best system. The realization that we had to improve our supply chain in order for our farmers to be successful in world markets led to the appointment of the *Estey Grain Review*, due to report by the year’s end. We now have an unparalleled opportunity to do something worthwhile to improve the system. In this presentation I will highlight four themes in grain logistics: the key features of the Canadian system, the transition that is already underway, key considerations, and options for improvement.

This year WESTAC completed a grain logistics project for the SCO group. This project generated industry input for Mr. Estey’s grain review. We met with forty stakeholder organizations and farm groups to identify issues. We held three one-day workshops involving about one hundred people including producers, local interests groups, system managers, executives and government, in order to get their views. WESTAC’s mandate is to be neutral and balanced, in presenting the diverse views of different stakeholders. We were asked to draw a range of options from industry that could be considered by Mr. Estey. The Western Canadian logistics system ties together over 110,000 grain farmers to customers in a hundred countries on every continent. The system generates about eleven billion dollars for the Canadian economy each year.
The supply chain has two major replenishment cycles, from farm to prairie elevator and from prairie elevator to port terminal. There are three distinct processes.

1. Calling grain into the commercial system when the farmer actually delivers to the prairie elevator.

2. Moving it from the elevator to port or directly to North American destinations.

3. Coordinating movement at and clearing grain from port.

The whole logistics process is geared to meeting the vessel’s scheduled arrival date. Ideally only the grain needed to meet specific sales would be in the supply chain and all inventory replenishment would be tightly linked to meeting the vessel’s arrival. In reality, grain spends a considerable time in the logistics pipeline, from the time it is delivered to prairie elevators until it is loaded onto ships, an average of about sixty-eight days. This long lead-time means that grain has left the farm and is in the commercial system before a vessel has even begun its journey to Canada for holding. The lead-time is also highly variable, particularly the time between ordering railcars for loading and having them unloaded at port.

Like other countries we meet our own needs first. However, we are unique in that we export a large proportion, about two-thirds of the annual harvest. We do this with a relatively small commercial storage capacity. Most Canadian grain is stored on farms. The storage capacity on Canadian farms is equivalent to about seven times the combined storage capacity of prairie and terminal elevators. Canada’s relatively small commercial storage makes it vital that grain is drawn off farms and into the commercial system in a highly efficient manner. The rate of turnover also critically affects elevator operating economics.

The large number of narrowly defined classes and grades of grains have only added to this challenge. In 1985 there were twelve segregations of wheat alone, by 1995 the number of segregations had climbed to sixty-eight. I have been told that in Vancouver, at any one time, there may be one hundred different products in storage. The number of segregations gives Canada certain market advantages, but it also places considerable demands on the system, because it introduces the need to keep different types and quantities of grain separated during handling and transport. In order to meet sales and capitalize on seasonal price opportunities, the system must also have the flexibility to respond to surges in demand.

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In Canada, rail is the only viable mode of transportation for delivering grain to ports. Most farms are 1,000 miles or more from export points, they are often geographically dispersed and remotely located. Because only three percent of prairie elevator delivery points are served by more than one railway, farmers have limited options. At the same time ninety percent of the grain we ship originates within sixty miles of two railways. From a policy standpoint, grain transportation poses a special problem, because grain producers, unlike the producers of most other bulk products, have very limited bargaining power. Centrally marketed Canadian Wheat Board grain, accounting for over sixty percent of the grain shipped, heavily influences the system. The Canadian Wheat Board does not own elevators rather it uses the facilities of grain companies and pools. A long history of equity has shaped our system. Our lengthy replenishment cycle and complex car allocation scheme result from the long-standing practice of balancing deliveries across the country. Another example is regulated rail rates that provide an equal rate for equal distance, regardless of whether a particular delivery point is located on a high or low cost line.

Right now we are going through a period of transition. Changes are underway on several fronts. Our customers are changing, there are more of them, they are buying in smaller amounts, and they are seeking more narrowly defined grain products. There are new value chain opportunities. In the Warburton’s example, a British bakery set strict product guidelines and pays price premiums to those who comply, which are then passed on to growers at a reported $20/tonne. We need a logistics system able to respond to and meet the needs of these more demanding customers. We should not forget that, although Board grains account for seventy-five percent of the seeded acreage, we must be ready to meet the demand for other value-added products.

The physical system is in the process of being consolidated through elevator closures and rail line abandonments or transfers. Surviving elevator facilities will be larger and will draw grain from wider areas than in the past. Less storage space will be available, and commercial pressures and the financial risks associated with investment will make asset control very important. Producers and rural communities face many uncertainties. Given the considerable challenges facing producers, they may be less willing to grow grain for export, particularly when producers feel accountable by default for the lack of either the performance, efficiency, or the reliability of others in the supply chain.
In grain logistics, problems stem from two fundamental issues: accountability and efficiency. Even the problem of disconnects is really symptomatic of one or the other of these two issues. When we held our workshops, it was universally agreed that the lack of accountability is perhaps the major problem. This is really a system management issue. At its core there is a need to better define roles and responsibilities, in order to promote efficiencies and to institute a low cost system. The second problem is a policy issue reflecting the tension between the objectives of efficiency and equity. The rail freight rate structure is a prime example, because it serves the equity objective but it does not encourage economic efficiency. Other issues closely linked to these two broader issues include the Canadian Wheat Board’s role in logistics, the rate cap, market power and competition, and car supply and allocation. I think that if the two major issues were solved, these secondary problems would resolve by themselves. For example, a workable system of contracts between industry participants could lead to improved railcar allocation and could ultimately address the question of car ownership and replacement.

Finally, I would like to discuss the two basic options for grain logistics: The commercial or regulated system. Although both could foster greater contract use, the commercial model typically advocates market-based rail rates, shipper/Carrier negotiations for all cars and the decentralization of logistics for Canadian Wheat Board grain. That is quite a contrast to the regulated system.

At our workshops, we found considerable support for market solutions over regulated ones. What holds people back from embracing the commercial model is the perception of limited competition in rail, some concern about competition in grain handling as well. Other options were raised that were aimed at increasing efficiency and competition, improving logistics management and determining the role for the Canadian Wheat Board in logistics. Opinion at our workshops tended to side in favour of keeping the rate cap until effective competition is demonstrated to exist. If competition is found to be lacking, an option is to amend the Canadian Transportation Act (CTA). Given the nature of grain, this option is questionable. It is not clear that direct (intra-modal) rail competition is even possible.

Opinion is very divided on the question of logistics management. There was little support for a centrally controlled agency. A regime of industry cooperation (similar to today’s) could be continued, perhaps by using contracts to tighten up certain areas. The Canadian Wheat Board’s role in logistics could either be centralized or decentralized. Some people say that recent
changes such as the move to a zone allocation system are a move in the right direction, others think change is not occurring fast or far enough. Nonetheless, it should be pointed out that implementing a contractual system does not necessarily force the Canadian Wheat Board out of the country. The two concepts are not mutually exclusive.

WESTAC has identified four areas for priority attention. Policy makers must:
1. Determine whether efficiency or fairness is the goal, and then set the appropriate policy.
2. During the course of the statutory review of the CTA, examine the need for any changes to enhance competition among railways.
3. Review the appropriate logistics role for the Canadian Wheat Board. Whatever direction is taken, the impact on the Canadian Wheat Board’s long term marketing effectiveness must be considered.
4. Determine the role for commercial contracts. Regardless of the changes to be instituted, people must always remember that the grain logistics system exists to:
   a) meet customer needs and
   b) serve the farmers.

To conclude, there has been talk about the possibility of appointing some sort of a task force to review Mr. Estey’s recommendations. I would submit that there is very little appetite for extending the process. Clear directions are needed. Our competitors are not willing to wait. Why should we?

Mr. Douglas Duncan, Past President,
Canadian Transportation Research Forum

Our second presenter is Dr. William Wilson from North Dakota State University speaking on the dynamic changes that have occurred recently in U.S. grain handling. Bill is a Professor in Agricultural Economics, specializing in grain marketing and strategy. His university research and consulting activities in the area of grain marketing and logistics has given him broad exposure to many of the issues. He has been asked to lead several major projects in both the United States and in other countries, including Canada. Bill has published extensively in the area of grain marketing and strategy and on issues related to the North American grain trade. Since 1991, he has served as a member on the Board of Directors of the Minneapolis Grain Exchange. He was a member of the advisory committee of the Federal Grain Inspection Service from 1987 to 1991. Bill’s current university research program focuses heavily on issues related to grain marketing, transportation and logistics. He has supervised two recently completed and is
supervising three current masters’ theses on railcar allocation and logistics strategies. Bill has been a consultant to the United States government and foreign governments and agencies on many strategic aspects of grain marketing functions. In Canada he was one of the consultants to the Western Grain Marketing Panel and an expert for the Canadian Competition Bureau on wheat flour milling.

Dr. William (Bill) Wilson, Professor
North Dakota State University
Dynamic Changes in U.S. Grain Handling

I have just finished two studies. One of them deals with the evolution of the grain marketing system in the United States over the past twenty years. The second looks at how, in the post-deregulation era, rates and service have changed. In the course of the last twenty years, many countries including South Africa, Canada, Russia and Australia have started to decentralize the grain marketing system and, in the context of decreasing levels of regulation, to coordinate grain marketing functions. The process of decentralization inevitably raises the problem of grain car allocation. One of the most important issues revolves around the control of railcars. The deregulation of the U.S. grain marketing system technically started before 1980 but it only really got going after that time. In this paper I am going to trace out the evolution of close to twenty years of deregulation.

No regulatory system, no matter how complex, is capable of producing the level of efficiency that occurs in a competitive market place. In the U.S. system price differentials function to allocate certain types of marketing functions, especially, but not exclusively, in the futures market. Price differentials are a pervasive influence throughout the system. Price signals have influenced grain storage decisions. Farm and off-farm storage facilities compete on the basis of price signals. Off-farm storage facilities also compete with one another through price differentials. More recently, the advent of the back standard known as shipping and service options elevators has provided shippers numerous options. Today, price signals alone drive a shipper’s decision. The point can not be emphasized too much because without price signals it is impossible to create commercial functions.
The Staggers Act, passed in 1980 and commonly known as the SRA has been particularly important in the deregulation of grain markets even though the system was not actually deregulated. A broad competitive framework was set up around the regulatory environment. Recently a number of cases have challenged the provisions, in the U.S. quite onerous provisions, on rate regulation and on the issue of captive shippers. The rail rate charges were liberalized. Prior to deregulation all increases or decreases in rail rates required ninety days notice. Rate hikes could be challenged by virtually anyone who designated himself a shipper. It could take anywhere from six to twelve months before a proposed announcement was implemented. Decisions will not be driven by price signals when a rate adjustment involves that sort of time lag. Now rate increases require twenty days notice, decreases require a one-day notice. This change in regulatory provisions significantly influences the integration of grain merchandising and logistics decisions. In the early 1980s, the United States used a specific type of contract, especially on raw grains in origin territories. These contracts have since been abandoned and replaced by other mechanisms. In the U.S. the provisions for branch line abandonment were, to some extent, liberalized. In Region Three, twenty percent of the branch lines were abandoned. In Montana, twenty-nine percent of rail lines and in North Dakota thirteen percent were abandoned. In North Dakota branch line abandonment has not been as extensive as some Canadians seem to think, partly because of the advent of short line railroads.

During the past eighteen years of deregulation, we have introduced numerous forms of rail incentive mechanisms. The first type, the origin efficiency incentives are conceptually similar to incentives in the Canadian system. We started out using multiple origin unit-train rates. Rate discounts were offered to those shipping large volumes originating from multiple elevators but rail operators quickly figured out that the multiple origin unit-train system was not very efficient. The system was, for the most part, replaced with single origin unit-train rates. Right now, in North Dakota, we have unit-train rates on one, three, five, ten, twenty-six, fifty-two, seventy-five, one hundred and four and one hundred and ten car shipments. The rate discounts or spreads shown are for transport from various points in North Dakota to Minneapolis and Duluth. I have included the Burlington Northern and Canadian Pacific rates. The amounts translate into the equivalent of about $5.70 Canadian per metric tonne. These represent significant incentives that induce positive and desirable economic activity. The incentives are significant because the base rate, based on single car movements, is relatively high. Please note however that these are the rate discounts for the portion of the movement to Minneapolis only. There are additional discounts, in selected cases, for efficient movements that go beyond Minneapolis.
We spend a lot of time analyzing rail cost. From a rail operating perspective, these rate differentials are approximately equal to the cost differential. The second scheme of rates includes the cycles, shuttles and ODE’s—all types of movements designed to enhance terminating efficiency. The advantages of efficient origination will dissipate if the load does not terminate efficiently. The *Origination, Destination Efficiency* (ODE) program, introduced in August 1993, involved large-scale movement. In ODE the train stays together with the power from the origin to the destination. It originates and terminates in less than sixteen hours, requires guaranteed freight, allows only selected movements and applies a discount. Cycles, shuttles and ODE’s all enhance railroad efficiency by introducing direct origin to direct destination transport of a single commodity. One of the railroads has indicated that coal cars should take 5.3 days and grain cars, 19 days.

In the U.S., two other features have been introduced to enhance railroad and grain transportation efficiency. The first, *per car rates*, a thorny issue, involves rates assessed on a per car basis. The introduction of per car rates forced shippers to fill each car up before letting it leave their sidings. The second factor increasing efficiency was the adoption one hundred and eleven-ton cars. Virtually all of the new cars are high cube cars that enhance capacity by about eleven percent.

Our railcar allocation system has evolved from a system in which car ordering and allocation was not very well defined. Initially cars were allocated on a first ordered, first served basis. There were no penalties for over-ordering and no penalties for canceling orders. The system also experienced a phenomenon we called phantom orders. Large shippers anticipating a potential export sale would inflate their orders because they knew they could cancel them without penalty. For example, for the month of April 1988, one railroad had a total of 88,000 outstanding car orders. Within a period of four days, two companies canceled about eighty percent of their orders. Phantom ordering was a problem experienced by every railroad in the United States.

In order to eliminate phantom ordering, BNSF took the initiative and started to create a system that most other North American railroads are now trying to emulate. BNSF’s system is very conceptually appealing. It incorporates three different categories or methods of car procurement, general turf allocation, cots and swaps. Each category receives about thirty to forty percent of the fleet. The strategic variable is that allocation varies over time. How are cars allocated to
individual shippers? In accordance with its common carriage obligations under general tariff, BNSF's system assures that every unit train origin gets one unit train per month. The only requirement is that the train has to be ordered one month in advance. This is not unreasonable. Allocation by lottery was used only if there were not enough cars. The allocation of spots occurs by bidding and negotiation. BNSF has different windows of delivery that range from thirty to fifteen days. The goal for the future is to reduce delivery windows to ten, five or even fewer days.

The railroad guarantees shippers about $400/car. Railroads and shippers are accountable to one another. If a shipper cancels a car, regardless of the reason, he is penalized by the railroad. In all cases guarantees are transferable. Long term movements or swaps, sometimes called guarantees, are effectively a mechanism by which the shipper and the railroad share the risks of car ownership and its associated obligations. Railroads are obligated to and do pay out penalties, large amounts of money that are paid out for lateness. Guarantees gain value because they effectively establish a priority allocation scheme. Because of the rank order of the penalties that they must pay if they are late, railroads allocate shuttles first, cot swaps second and then general tariff cars.

The railcar market from 1992 to the present, the primary market, seasonally allocates grain movements. Since the inception of the railcar market, an average of about 1.8 percent of all movements have been seasonal and frequently discounted. The tradability of grain movements has given rise to the development of a secondary market. The introduction of shipper/carrier contracts inevitably raises the issue of tradability or transferability. The value of the freight is seasonal; with widely diverging values over time. Although the secondary grain trade market is similar to the futures market in some respects, it differs from it in others. The secondary market induces a more even flow of grain throughout the marketing year. It also ensures that those who demand peak movements pay for that peak marginal capacity. The system sends a signal to the railroads about the value of forward freight in enough time to facilitate the coordination of their investment and expansion capacity.

Shippers need to properly coordinate the logistics of the system. Merchandising is critical and essential. Generally the firms that have an advantage in this type of system are the ones that own the assets and can reduce the uncertainty of demand for their grain. Reducing the uncertainty of demand is a factor that contributes to the vertical integration presently occurring in the United
States. Information transmitted throughout the system electronically or in any other form is crucial. Decision-makers become well informed about the market place in which they are involved. The mechanisms are highly transparent to everyone, including large and small farmers and elevators. Before the introduction of the new allocation systems it did not matter who was the shipper, the originator, the receiver, or the intermediary. Now the shipper is accountable. Technically, these are commercial contracts, public contracts as they are called in U.S. legislation. All shippers have equal access to the contracts and to the terms within them.

The model of rationalization introduced in the United States was not centrally planned or implemented. The system was deregulated before the effects of it were known because of pressure from the railroads that wanted to become more efficient and more profitable. In the grain industry, first mover advantage is very important. In North Dakota, there are about five hundred elevators owned by two hundred and sixty different firms. Each one of those two hundred and sixty firms is trying to put itself in a position of advantage over its competitors, to do something before its competitor. A number of external forces, ARP and CRP, among others have significantly affected the pace of the process of rationalization. The number of elevators has been reduced, storage and load-on capacity have increased and a satellite system has developed. This year, after eighteen years of deregulation thirty-eight new high throughput elevators were built in the state of North Dakota. These changes have reduced costs. Since deregulation, U.S. grain handling rates, at $0.08 a bushel or less than $3/ton Canadian have fallen drastically. Increases in turnover and escalation in shipping, the sophistication of logistics and economies of size, scale and movement are the factors that have produced these cost reductions.

Cliff Winston at the Brookings Institute has studied the effects of deregulation in different industries in the United States including airlines, motor carriers, railroads, banking and natural gas. In a recent article in the *Journal of Economic Perspective* Winston reminds us that "Deregulation is not unique to Western Canadian Grains. In the past decade, all of these industries in the United States have gone through deregulation in many forms, many of which incidentally take the form of auctions." According to him deregulation has resulted in improvements in industry efficiencies and cost reductions. Railroad rates and prices have declined. In real terms, average rates per ton-mile have declined more than fifty percent. Comparing industries he concluded that, in adjusting to deregulation, different industries behave quite similarly. The adjustment, while time consuming, initially raises consumer welfare significantly and raises it increasingly over time.
Waybill analysis confirms that between 1972 and 1993 U.S. grain freight rates, in dollars per ton-mile, decreased significantly, especially since deregulation. Prior to 1980, rates in real terms were generally flat, maybe even increasing but after 1980 there was a drastic reduction. Rates are continuing to decline but at a slower pace. Despite the fact that only one railroad operates in Montana, rates have declined there by twenty-eight percent in real terms. In North Dakota rates have declined by thirty-three percent since deregulation. Following deregulation in these regions and states, the railroads' operating characteristics show a substantial increase in the average length of haul for every commodity. The increase was particularly significant for grain. This is important because railroads obtain huge gains in efficiency once the grain is loaded into the cars. All types of grain have been shipped longer distances. In all cases, particularly after the introduction of per car rates, the average load in tons per mile increased.

In our analysis, we tried to separate out the effects of the commodity market in relation to costs and rail freight demand. We used sophisticated econometric techniques to analyze those variables and trace out the effects of deregulation. First of all commodity prices in the United States have a very important impact on rail rates because U.S. rates are demand driven. When commodity prices go up there is pressure to raise the rail rates. Similarly when commodity prices fall there is pressure to move the rates down. The second variable, a crucial one, is the average length of haul. For all commodities the average length of haul has increased, resulting in about a thirty-eight percent reduction in barley rates, a ten-percent reduction in rail rates and a thirty-one percent reduction in wheat rates. Thus, in the first years following deregulation there were significant decreases in rail rates. The reason for the decreases was that, almost instantaneously deregulation triggered the introduction of procedures that induced efficiency. The negative effects of deregulation, the lower rates, are beginning to dissipate. Prior to 1980 there were no statistically significant effects but after 1980 it is apparent that the effects of deregulation are time dependent. By 1995, in real terms, because of deregulation rail rates alone decreased in the area of forty-two to fifty-six percent depending upon the commodity involved.

Liberalization has induced a long list of efficiency inducing mechanisms into U.S. grain marketing systems. Furthermore, the effects of deregulation have not been single shot incentive rates of origin. The decreases in rail rates occurred as an accumulation of events that continue to unfold over time. We have evolved from developing origin efficiencies, to developing destination efficiencies and from destination efficiencies to even more efficient allocational
mechanisms. In the future, additional steps will be taken to make railroads more efficient and because of competitive pressures the cost reductions that result from increased efficiencies will be passed on as rate reductions.

What are some of the implications for Canada? The question of branch-line abandonment is an old one. The original proposal was made in 1957 and I remember doing a Ph.D. thesis on it in 1976. Rate flexibility is critical. In Canada, although many grain handling firms are already vertically integrated, they have not been able to fully exploit the efficiencies associated with it. In the United States we have been able to take advantage of efficiencies associated with vertical integration and that has ultimately benefited our farmers because it has reduced costs and transportation rates. Throughout our system, we have experienced a tremendous expansion of capacity that has provided tremendous advantages for growers and farmers. The expansion has enabled them to sell their grain virtually whenever they want. In North Dakota we can ship the entire crop in four or five months. That is very advantageous to growers because it allows them to sell in markets where their grain can sell. We have enough capacity now to ship not only North Dakota grain, but Canadian grain as well.

QUESTION FROM THE FLOOR:
I am assuming that you were at the USDA hearings in Fargo last winter. Would you agree that the hearings were driven by a political agenda? Virtually all the shippers and producers at the USDA hearings claimed that deregulation did not lead to the kinds of benefits you have outlined here, increased competition and the increased availability of cars. Do you think there is a middle road to be taken between deregulation and regulation? Why are shippers and producers convinced that deregulation is not in their best interests?

DR. WILLIAM WILSON:
The Surface Transportation Board (STB) held those hearings in the fall of 1996 in response to pressure from growers and small shipper groups. My impression of the hearings is that the concerns that were addressed were really those of only a small sector of the community, a sector that exaggerated the problems that had resulted from deregulation. After those hearings, the STB, for the first time in the history of the United States, intervened in a service obligation case. It required and mandated the right of any shipper who had grain piled on the ground to ship immediately. Government in the U.S. does not often intervene to circumvent the railroads' priority schemes to move certain grain and in response one of the railroads surveyed 1,800
elevators to find out who could not move the grain they wanted to move. Out of the 1,800, only one elevator in Texas was unable to move grain when it wanted to. The ones complaining about not receiving cars were the ones who had not ordered cars through the proper mechanisms. The statistics that came out of the USDA hearings indicated that there was a problem with the allocation of tariff cars. There were in fact, a negative number of tariff cars because all of the tariff cars were in other categories. The rates were going up but cars were not becoming any more available.

DR. WILLIAM WILSON:
Yes, initially the railroads allocated too many cars to other categories. In fact, they had to pay out fairly large amounts of cash as a result.

QUESTION FROM THE FLOOR:
How much above variable costs are the rates in Great Falls, Montana compared to the rates and costs at a competitive point such as Kansas City? In other words what is the contribution of fixed costs?

DR. WILLIAM WILSON:
I am not familiar with the rates in Kansas City. The Montana rates are high because of the high specifications of operating and because there is only one railroad. The STB has indicated that on a stand alone cost basis, the rates were not excessive but the question is debatable.

QUESTION FROM THE FLOOR:
On the phenomenon of phantom cars: In the past, in Canada, there were four or five shipping orders placed for every car in the system. The Wheat Board regularly issued press releases saying that while 10,000,000 cars were ordered, only 400,000 were moved. Another factor contributing to the problem of phantom cars was that grain companies had to order cars not owned by the Canadian Wheat Board, through the Board. Because the monitoring system was not very sophisticated, the grain companies regularly asked for two or three times as much canola as they needed.

Here in Western Canada, people worry that deregulation will lead to a rate structure similar to that in Montana. You said that, in real terms, rates in Montana did actually drop. Were the captive rate provisions that you alluded to operative in Montana? If so, were they effective?
Given the lack of competition, how do you account for the drop in real rates in Montana? Do you think the western Canadian fear of a replication of the Montana situation is justified?

DR. WILLIAM WILSON:
The transportation industry involves an intermodal network. There is competition between geographic regions, transport modes and products. Montana's monopoly railroad competes with wheat going to the P & W and with grain going to Japan via the U.S. gulf. So even though there is no direct competition between railroads, there is indirect competition. The Montana railroad competes with the barges that go down the Mississippi River. Montana farmers have, over time, gotten the benefits of deregulation in the form of lower rates because of geographic competition going through the Mississippi River and product competition in the form of processing and feeding in Montana.

Whether or not Western Canada faces a situation similar to Montana, I do not know. In Montana, with only one railroad, the average distance from production shipping points to a competitor railroad point is 187 kilometres. In Manitoba, distances range from 49 to 67 kilometres. Therefore, in Western Canada, there are two railroads within 50 to 60 kilometres of each other. The question needs to be studied carefully, but I would not assume that Western Canada would become like Montana. The geographic disposition of competition is a lot different here than that in Montana and will become even more significant if the border is opened up.

Afternoon Chair – Session 4 – Competitive Frameworks for Grain Transportation
Dr. Graham Parsons, President
Organization for Western Economic Cooperation

Our next session deals with an important public policy issue that is at the centre of competition and grain handling reform. Public policy deals with the whole competitive framework, including competitive access, common access and joint running rights. The telephone system has been the focus of important public policy changes revolving around the relative rights and obligations of signal carriers and long distance service providers. In railway regulation, similar policy developments are taking place around the world, especially in Britain, Sweden and Australia. Our two speakers this afternoon are experts on these issues. Ron Eley is the Transportation Policy Analyst for the Government of Saskatchewan. He has studied recent attempts to reform
Australia's transportation system. Tim Murphy is from Mercer Management Consulting in Boston, one of the world's largest railway consulting companies, a company that has implemented and evaluated transportation systems throughout the world.

**Mr. Ron Eley, Transport Policy Analyst**  
*Government of Saskatchewan*  
*Open Access: The Australian Experience*

Australia's rail system has two basic components. The first, the inter-state rail lines are of relatively recent origin. Under federal control, they connect the capital cities of Australia by rail. Prior to the introduction of the inter-state lines, intra-state lines moved the products grown or manufactured in a state to ports within that state. There was essentially no interaction between the rail lines of the different states. In fact, the different state rail lines have different rail gauges, previously a major problem. The tracks on the inter-state line were connected up only a few years ago. Now across the country, there is one standard gauge.

I want to talk about the relationship between the grain sector and rail. In Australia grain production varies from state to state, though it is generally small. Depending on the state, production amounts to between one and seven billion tonnes. Australia's grain production is much closer to tide water than Canada's. For example, in New South Wales the distance from grain producing regions to tide water is approximately 450 kilometres, in Victoria and Western Australia it is roughly 300 kilometres and in Queensland, between 200 and 300 kilometres. Because of the short distances and the fact that there is no significant inter-state movement, grain is usually moved to port. Basically, everything that is produced in New South Wales moves on the state system to one of its ports. For example, there is no movement between New South Wales and Victoria.

The ownership of the grain facilities has had an impact on the open access model. In New South Wales and in Victoria, one company in each state owns all of the grain handling facilities. Furthermore, the grain company usually deals with only one rail operator. Consequently, it has been very difficult for new rail operators to service those grain-handling outlets, an issue that is currently before the Australian competition bureau.
The open access model is a relatively new concept in Australia. The fee structure and the slot allocation system have not yet been settled. In the past, many of the grain handling facilities were state run. The facilities are still all very inefficient and need to reduce costs. In December of 1996 open access was instituted on the inter-state lines. Now there are five operators on that line, the original operator plus four shippers. The shippers had become fed up with the rates and the level of service provided by the one rail operator. Since the introduction of competition on the line, rates have dropped by about forty percent and service has improved.

Unfortunately, while there are now five operators on the line between Melbourne and Perth, there are no new operators on the line between Melbourne and Brisbane because of problems with rates and the poor condition of the line. In New South Wales open access has been functioning since July 1, 1996 but it has not successfully transformed or improved grain handling and transportation because it has not attracted any new operators. Potential operators have indicated to us there are neither the volumes nor the distances to justify having more than one operator moving grain. Of course, as I mentioned, there is also the institutional problem, the problem of the one grain handler that will not allow more than one operator to service the facility. An additional problem is the high fee schedule charged to access the track. Exacerbating these other problems. In Australia, the lease market for rail cars is non-existent or very small so even basic entry costs are quite high, new operators have to buy rail cars before they can start business.

Open access has been more successful in coal movement. The system in New South Wales transports roughly fifty to sixty million tonnes of coal. The length of haul is only 100 kilometres, but the volumes moved are so high that two potential new operators have shown interest in the line. In fact, even though no new operators have yet come into the system, the threat of competition has compelled the current rail operator to reduce his rates by about twenty-five percent in an effort to keep them out.

Victoria has had an open access system since 1997. Originally, fairly enthusiastic proponents of open access, participants have since begun to rethink their position. Essentially they have come to the same conclusions as those in New South Wales. There are neither sufficient volumes of grain nor the distances to justify the presence of more than one operator. At any rate, in Victoria trucks are a competitive alternative to rail; rail rates are priced in accordance with truck rates.
The one grain handler there, disappointed with the move away from open access, indicated that if the rail rates got out of line, he would start trucking grain to the port position.

The states that introduced open access tender out the maintenance of the infrastructure and signaling systems. Australian unions are militant and powerful. Consequently labour costs were quite high. Since the introduction of the tendering process, rail operators have realized savings of approximately twenty-five to thirty percent on maintenance. Moving to open access also forced all the rail operators to watch costs. Prior to emergence of competitive pressures, the state run industry was very top heavy and inefficient. Australia's rail system was one of the worst in the world.

The opponents of open access claim that in the long term, it will compromise safety standards, infrastructure maintenance and reinvestment. Moreover, they say that there is not enough volume of product moving through the system to justify this open access concept. The volume of western Canadian grain moving through the Canadian system is about thirty or thirty-five million tonnes. In Australia, depending on the state, the volume of grain moved is less than seven million tonnes. The movement of coal in New South Wales, on the other hand, involves about fifty-six million tonnes. On the inter-state rail line, the one with the five competing operators, total traffic involves ten million tonnes of product, mainly containers and general freight such as steel products.

In comparison to Canada, the distances grain moves in Australian are considerably shorter. The distance from Regina to Vancouver is about 1,700 kilometres, while in Australia grain movements travel about 300 to 450 kilometres. In New South Wales, coal movements travel about 100 kilometres and on the inter-state line between Melbourne and Perth the distance is approximately 350 kilometres. Consequently trucking, while not an option for moving grain to port in Canada, does represent an alternative to rail in most Australian states. The comparison becomes more striking in light of the fact that in Canada there is a fairly large lease market for cars and locomotives, whereas in Australia there is not.

Rail service across Canada is seamless. In Australia, even with the interstate system, it is not. Problems continue to occur at the state borders. Crews have to be changed at state borders because signaling systems are different and because of the power of labour; it is a union rule that crews be changed at the state borders. Theoretically a move of twenty miles could involve a
crew change. Another factor that makes the Canadian rail system more competitive than Australia’s is that in Canada the railways are privately owned and vertically integrated, whereas Australia’s system is state owned. This factor is gradually changing as rail operations are separated from the ownership of the infrastructure. In addition, in southern Australia the entire rail system, except for the one inter-state line, has been privatized.

An open access system could work economically in Canada. The volume of grain and the distances products travel make the institution of an open access system viable in Canada even though it has proven not to be successful in Australia. Looking at the open access system on Australia’s inter-state line provides us with the proper framework for comparison. A proper framework is necessary if we are to use the Australian experience to consider the potential of an open access model for Canadian grain and other bulk commodities.

Analyzing Australia’s experience enables us to determine the conditions that are necessary for the success of open access policy. We have found four conditions that are essential to the viability of open access. Firstly, the barriers to the entry and exit of new operators have to be low. Especially important is the availability of lease cars and lease locomotives because potential entrants cannot necessarily afford to buy cars. Furthermore, car ownership represents a barrier to exit.

Secondly when there is monopoly ownership of the railway or the infrastructure access fees have to be regulated. Fees should also be transparent. In New South Wales the access fees are confidential. Consequently new operators fear that the owner of the infrastructure will offer preferential rates to the current operator. The transparency of access fees on the inter-state lines provides a much better situation for new shippers. In addition, the rates have to be set at a reasonable level. In Australia the current infrastructure is treated as a sunk cost; the rates, for the most part, only incorporate replacement and maintenance costs. Given that Canadian railroads are privately owned, a return on investment would have to be incorporated in the rate regime. Further research needs to be done to determine if the necessity of higher returns would make open access uneconomical.

Thirdly fees and time slots should be set by an independent agency. Without an independent agency potential new operators will not enter unless they can be certain that there will be no discrimination against new entrants. For example, if one rail operator causes delays in a system,
the independent agent has to be able to compel him to get off the track and let other people through. Consequently, the independent agency has to have quite broad powers. Fourthly safety issues and institutional constraints must be delineated and exposed right from the beginning so that all participants know the rules of the game. Canada of course will not have the same problems as occurred in Australia because here there is more competition between grain terminals.

Tim Murphy, Consultant
Mercer Management Consulting
Rail Access and Competition Issues

This afternoon, I am going to present the recommendations Mercer made to the United States Congress and the Surface Transportation Board (STB) on the relative merits of open access as opposed to vertical integration. Given what are euphemistically referred to, in the U.S., as 'western service failures', the U.S. congress and the STB have introduced legislation for opening up access. It is thought that the legislation, by forcing terminals to expand access, will remove bottleneck routes. These bills, introduced in the current session, are going to have to be reintroduced in the next. They have generated considerable active controversy.

What is referred to in the U.S. as open access is better termed 'forced access'. Forced access is a legislatively mandated opening of what are generally considered to be privately owned rights of way. Typically, open access refers to government owned infrastructure that is made available to various parties. It is necessary then, when considering open access policy, to distinguish it from forced access. Our comparison of the U.S. and Mexican models has led us to believe that for the rail freight industry the vertically integrated, privately owned deregulation model provides the best conditions, not only for reinvestment and growth but also for customer service.

Since deregulation in 1980, the U.S. has experienced real growth, especially apparent since the end of the recession in the early 1990s. The statistics on productivity reflect an environment of intense demand, a situation that always complicates service delivery. In the U.S., both truck and rail activity have been growing fast. Since deregulation, productivity has increased faster and more significantly in the transportation sector than in U.S. manufacturing. U.S. rail productivity has grown much more than that of the European railways over the same time period. This
amazing spurt of productivity—a positive outcome of deregulation and vertical integration—has resulted in improved service for time and service sensitive traffic, the intermodal trailers and containers. The growth in intermodal traffic continues, a consequence of intense deregulated full-service truckload competition. In this context carriers have had to deliver service benefits to their customers, otherwise they would lose business to their competitors.

While the U.S. network slimmed down drastically as a result of deregulation in the 1980s, the number of tonne-miles delivered increased by forty-eight percent. The system was so drastically downsized that there have been problems. Problems occurred, for example, with Union Pacific's attempt to merge its system into that of Southern Pacific, a much weaker carrier operating in the western United States. Union Pacific's difficulties cascaded over, affecting the other U.S. railroads. Nonetheless the tremendous improvement in network and equipment efficiencies that followed the implementation of this vertically integrated model have produced both benefits for consumers and significant profits for the railroads.

The benefits of deregulation go beyond making the railroads rich. Granted the stock prices for U.S. railroads have increased dramatically, as they have for most firms. Nevertheless, what is particularly striking is that, for the first five years of the 1990s, U.S railway capital reinvestment patterns have dwarfed those in even the most capital-intensive industries such as chemicals and paper. Fifteen cents out of every revenue dollar has been reinvested in plant and equipment. In 1997 the rate rose to over twenty cents out of every revenue dollar. The rate of reinvestment is likely to be even higher for 1998 because of the intensification of capital programs that are, in turn, plowing tremendous amounts of money back into the system. Reinvestment is producing the service improvements and low prices that are necessary to attract time and service sensitive commercial shipments.

We compared the rates for long hauls in the U.S. with European rates. The U.S. rates are among the lowest in the world. Approximately eighty percent of the cost reductions that have taken place since deregulation, lower labour, equipment and network costs, have been passed on to customers in the form of lower rates. Unit costs have risen sharply with inflation, resulting in higher wages per hour and higher car and maintenance costs yet the railroads have kept to the bottom line; operating costs per unit delivered continue to be low enough that rates have continued to decline. Even on a nominal basis, 1996 rail rates were thirty to forty percent below
the 1980 rates. Increases in productivity explain the railways' capacity to deliver low rates in the context of inflation.

There is a question as to whether U.S. railways can continue to increase productivity. The easy gains that result from tax benefits have already been taken. The benefits to be gained from mergers will soon be played out so future gains in productivity as well as the maintenance of current stock values are going to have to be driven by the technological development that results from capital reinvestment.

Which model best facilitates capital reinvestment, the open access, the forced access, or the vertically integrated system? At Mercer Management Consulting, we believe it is the vertically integrated model. Over the last three years, Mercer has been working with the Mexican government to privatize a system that was very bloated and broken down. Prior to privatization, the government was on the verge of closing down the last of three major freight line concessions. The Mexican government considered open access, forced access and vertical integration, eventually deciding to reform the system on the basis of vertical integration. Now those concessions are doing quite well. The Mexican economy, because of the improved performance of its railroads, is also now more efficient and competitive. Recently, the Mexicans have been working to reform their residual branch line and passenger services in accordance with the vertical integration model.

The vertical integration model also typically produces the greatest transaction benefits. When one U.S. railroad buys another, the transaction is usually double the revenues. In Mexico the first transaction was 7.7 times greater than revenue. In New Zealand, as can be seen with the sale of Trans-Rail, transaction ratios have been very low because the ownership of the track has been separated from the operations. As a result, operations were divided up at numerous access slots and contracted out; after considerable reform, New Zealand lines ended up with only one operator anyway, so the process did not lead to increased competition and efficiency. The introduction of the open access model there has actually dissipated market values. In the United Kingdom open access has given rise to very low transaction ratios, .4 for English, Welsh and Scottish access to the U.K. network. Thus the market reaction to the complex open access system in Britain has been very negative.
The case of Great Britain clearly demonstrates the potential consequence of mandating an open access system over a private network. In mandating open access, internal company decisions about track investment and train priorities and market based price signals are subsumed under a series of contracts that attempt to predetermine levels of cost recovery. Cost recovery in areas such as tariff mechanisms, pricing and penalty of incentive are all reduced to very complicated contracts. Forced access, in fact, involves the re-regulation of the whole system. In New South Wales, a very limited experiment with open access, a two hundred person work force inside the government had to be created to deal with the issues of how operators entering the system would relate to one another and to the infrastructure owner and how conflicts over safety or priorities would be resolved. Dealing with these problems would have taken a contingent of two hundred and twenty bureaucrats. By forcing access over a vertically integrated model, the system was essentially re-regulated.

In the Swedish system track ownership was separated from train operations. The engineers responsible for maintaining the infrastructure were not subject to the discipline of the market. Maintenance costs rose dramatically, costs that were sustained by the government. The Swedish rail network was not a broken track system; costs simply increased because engineering decisions became separated from market restraint. The experiment and the subsequent process of getting costs back under control have cost the Swedish government a boatload of money.

Restructuring experiments throughout the world, in Sweden, eastern Europe, Australia, Mexico, Argentina, Great Britain and the United States demonstrate that vertically integrated approaches result in better rail industry performance, capital reinvestment, customer service and pricing than the limited open or forced access experiments we have discussed here today.

Dr. Graham Parsons, President
Organization for Western Economic Cooperation

As these problems have been at the centre of the debate on how to reform the western Canadian grain handling and transportation system, some people must have questions.

QUESTION FROM THE FLOOR:
I have a few comments to make to Tim Murphy. You indicated that in the U.S. railway system costs were reduced and as a result rates fell. However, rates only fall with increases in
productivity if there is competition. Secondly, Canadian rail rates are the only ones that are lower than the U.S. rates, perhaps because of the relative weakness of the Canadian dollar.

MR. TIM MURPHY:
Yes, competition has forced the railways to pass cost savings on to the consumer. The U.S. system is evolving to having essentially two railroads in any given market. Nonetheless, as Dr. Wilson has shown, in many areas product, geographic and intermodal competition can ensure that cost savings are passed on, even if there is only one or two railways.

QUESTION FROM THE FLOOR:
I have a question for Ron Eley. In recent years, in Canada the trend, reflected in the Canadian Transportation Act (CTA) that came into effect in 1996, has been towards less regulation of transportation. The sale of Canadian National has led to more efficient and less costly rail operations. The current rail rates for grain are now actually lower than they were in 1986-1987. Both railways are operating solid trains of grain to port position. An open access framework for Canada would require a heavily regulated system. Given the consensus that the least costly and most efficient systems are market based, I fail to see how a more regulated one will lead to more efficiencies and lower costs in the Canadian rail system.

MR. RON ELEY:
There is not enough competition in the Canadian rail system, especially in the movement of bulk commodities. I see the open access system as the next best alternative to a competitive market. If we remove the rate cap, we would have fewer regulations but, at the end of the day, producers might be paying a lot more for the transportation of their product. From the producer’s point of view, open access, a system with some regulation is better than deregulation in an environment in which there is not enough competition.

QUESTION FROM THE FLOOR:
Tim, you drew distinctions between 1) open access and forced access models and 2) the government ownership and the private ownership of the infrastructure. Ron, on the other hand, emphasized the importance of free entry and free exit. Both of you eluded to the problem of incumbents, in either the open or forced access systems. In the Canadian system, a regulated one, entry into the railway business is associated with service obligations. In an open access system would all operators have the freedom to exit the market? Would any one operator be
obligated to serve those customers who are left? Clearly some customers are more attractive than others are. In a situation of free exit, is there not a risk that operators would exit the business of serving the hard to serve, the difficult or less profitable customers?

**MR. RON ELEY:**
That is a good question. In Australia common carrier obligations were abolished with the introduction of the open access system. Proponents of the model argued that those willing to pay the price would get service. In Canada, what would happen to common carrier obligations is one of the questions that would have to be addressed.

**MR. TIM MURPHY:**
The question you have raised exposes one of the disadvantages of an open access system. The issue of who would sustain the common carrier obligations and the privileges associated with it would have to be decided through contracts between independent parties. It would lead to the re-regulation of an industry we have been trying to deregulate for a long time.

**QUESTION FROM THE FLOOR:**
In Australia, the farthest farmer from tide water is only about three hundred miles away. Farmers there have alternatives that Canadian farmers do not have. We have two railroads and some farmers are one hundred and fifty or two hundred miles away from their Canadian National or Canadian Pacific line. Canadian farmers are captive shippers because they have to rely on the railroads to get their products to port. If OmniTRAX were allowed to move to Thunder Bay or Vancouver would it have lower labour costs than CP and CN?

**MR. TIM MURPHY:**
If it did, CP and CN would be forced to re-negotiate the contracts with some of their unions.

**MR. RON ELEY:**
In Australia, the open access system gave operators and state governments some leverage over the unions because it facilitated contracting out. Contracting out enabled operators to save labour and infrastructure maintenance costs.
There are no easy solutions for reform. Thus we have four presenters, each representing one of the various system stakeholders. The first speaker in this session is Larry Maguire. Larry and his wife Beryl own and operate Maguire Farms in Elgin, Manitoba. They produce cereals, oil seeds and pulse crops. In 1992, Larry was elected vice-president of the Wheat Growers Association. In 1995 he became president and now, in addition, he serves as the Wheat Growers representative on the Western Grains Standards Committee.

Mr. Larry Maguire  
*President, WCWG*  
*Farm Perspectives*

Within ten years, little if any of the grain produced in Manitoba and Southeastern Saskatchewan will be shipped offshore. Here in western Canada, grain will be used for value added products, processing and export to the United States. The termination of the Crow subsidy and the emergence of new markets have already started to reshape the prairie landscape. Manitoba, southeastern Saskatchewan and especially Alberta will be feed grain deficient in a few years. The domestic processing of canola, oats and other crops will continue to increase, the export of raw grain will become a thing of the past and farmers will have more domestic and continental market opportunities than they have ever had before.

The changes are particularly evident in the companies that do business with farmers. The Saskatchewan Wheat Pool has gone public, is diversifying. The UGG has partnered with ADM. The new Agricore Program, established by the Manitoba and Alberta Pools, has expanded into Saskatchewan. Here in western Canada, global players like ConAgra and Louis Dreyfus have established grain-sourcing networks. In mid-November 1998, Cargill purchased Conalla Grains. In addition, chemical companies have restructured and positioned themselves to take advantage of the emerging life sciences market. Some people, clinging to the institutions of the past, are encouraging farmers to resist the forces of change. Others tell farmers that they must adapt to the new realities and move forward. Indeed, we need to prepare for the challenges of the future, to create different kinds of farms in order to ensure the industry’s prosperity in the future.
For a long time, the Wheat Growers Association has been lobbying for transportation reform. Years ago, proposing a more commercial approach to grain handling and transportation, I advocated that incentive rates be implemented, that the Crow be abolished and that cabooses on trains were unnecessary. These concepts, insignificant today, were considered to be sheer heresy at the time but the grain backlog two winters ago proved that the paternalistic command and control system was incapable of serving the needs of farmers and their customers. The regulated system has had its day.

Nonetheless, since the repeal of the Western Grain Transportation Act in 1995, farmers have been disappointed with the inadequate level of service and the high cost of transportation. Virtually overnight, freight transport became one of the farmer’s biggest expenses; in the eastern prairies this cost doubled or quadrupled. Despite massive investments in high throughput elevators on the main lines, farmers have seen only limited improvements. Fifty and one hundred car spots are still under utilized even though grain companies have the technology to load unit-trains. The incentives that are offered for loading large blocks of cars remain unattractive.

Grain companies and railways do not have sufficient flexibility to manage their assets for maximum efficiency. The system we have today could be described as incorporating the worst of two models, a partially regulated system. While farmers are saddled with high freight costs, there is just enough regulation to discourage efficiency gains. No participant in the system is fully accountable for his performance, neither the railways, the grain companies, the Canadian Wheat Board, nor the farmers. The incentives or penalties necessary to facilitate better service performance are minimal. In order to obtain the benefits of a competitive marketplace, the Canadian transportation system needs to be thoroughly deregulated.

A system based on commercial contracts would enable farmers to reliably supply their customers. The Estey review on transportation provides us with the best opportunity to overhaul the system since the 1995 SEO process. The Wheat Growers Association recently submitted a comprehensive paper to Justice Estey that outlined how a contractual system for grain movement might work. Under our proposal the Canadian Wheat Board would become a port receiver of grain with no direct role in the transportation system. Shippers and carriers would manage the logistics of moving the grain to port. Our proposals set out to define the accountability of each
of the four parties in the grain transportation system. The relationships between supply and
demand, between the grain entering the system and the grain required to meet the contracts,
would have to be tightened up. Grain companies and railways would have management control
over the facilities so that efficiencies could be introduced into the system.

The commercial system we proposed would consist of four separate contractual arrangements.
There would be contracts 1) between farmers and the Canadian Wheat Board, 2) between the
Canadian Wheat Board and the country shipper, 3) between the farmer and the shipper and 4)
between the shipper and the rail carriers. The first, the contracts between the farmers and the
Wheat Board would be modeled after existing contracts. Farmers would be accountable for
delivering the right grain to the primary elevator when there is a call. The Canadian Wheat
Board would be accountable for purchasing the grain.

In the second type of contract, the one between the Board and the shippers, the latter would be
accountable for acquiring the grain from the producers when the Canadian Wheat Board called
the contracts. The responsibilities of the shippers would include getting the right quantity and
quality of grain to the port terminals on time. The Wheat Board would then be accountable for
taking ownership of the grain and assuring that it was shipped within the specified period of
time.

The third, the contracts between the farmers and the country shippers would ensure that shippers
could access the grain required to meet their commitments to the Canadian Wheat Board.
Deliveries would be controlled so that only the grain required to meet the sales would enter the
system. Under these contracts farmers would be accountable for delivering a specific portion of
their Canadian Wheat Board contract to a specific elevator company; the company would then be
committed to take the amount contracted. Finally, the fourth, the contracts between shippers and
carriers would be similar to current arrangements on non-administered grain.

The Wheat Growers Association proposed that changes be introduced incrementally. We
recommended that an implementation secretariat be established to manage the transition from the
current regulated system to the future contractual one. This commercial contractual system
would introduce accountability, improve service and reduce costs. Whether the savings realized
by such a system would flow through to farmers has been the subject of considerable debate but I
am confident that they would. The alternative is to attempt to force accountability by imposing
more regulation, an option that has failed time and time again and that hinders the realization of the efficiencies created when market forces are allowed to come into play.

In designing the grain transportation system of the future, the issue of railway market power cannot be ignored. Farmers have recently experienced higher freight rates, fewer branch lines and inadequate service. Yet these concerns are far less onerous than the losses we sustain everyday because of regulation in the transportation system. Wheat growers maintain that the rate cap, for example, is an obstacle to efficiency because it forces the low cost lines to subsidize high cost ones. In our submission to Estey we suggested the rate cap be removed to allow the fullest expression of market forces. However, the removal would have to be accompanied by measures designed to monitor railway market power. In addition, we suggested that a review of the Canadian Transportation Act’s “Shipper Protection Provisions” be undertaken and that the concept of common running rights or open access be assessed.

Farmers would embrace a commercial contractual system, even if it meant giving up the rate cap, as long as they could be assured that there was sufficient competition between railways. Although people question whether real competition exists between Canadian National and Canadian Pacific, it is clear that an intensely competitive environment is emerging between the grain companies trying to feed the growing network of inland terminals. In a commercial transportation system grain companies would have to share the incentive rate savings with farmers in order to draw grain into their facilities and protect their market share. Of course another way to increase competition for grain volumes would be to open up the U.S. border, allowing farmers and grain companies to move grain freely into the American market. Finally, creating a voluntary Wheat Board is another option that could generate more competition.

The legacy of the regulated grain handling and transportation system has been inefficiency and expense for the grain farmer. The command and control approach has repeatedly failed and has cost farmers lost sales. Furthermore, it has served to diminish Canada’s reputation as a reliable supplier. The opportunity to design a new system is before us. The way we resolve the question of grain transportation reform will determine whether or not Canada will effectively participate in the global food market of the Twenty-First Century.
The next presenter is Brian Hayward of the United Grain Growers. A native of Montreal, he has a Master's degree in agricultural economics from McGill. In 1981, he moved to Winnipeg to join the United Grain Growers and has taken on additional responsibilities since then. He was head of the grain marketing division until 1991 when he was appointed to his current position as CEO of the United Grain Growers.

Brian Hayward, CEO
United Grain Growers
Grain Company Perspective

Since 1981, when I first became involved in efforts to effect grain transportation reform, I have found that we tend to get mired in the issues. I want to talk about the future in focusing on two issues crucial to the grain industry, the economics of the grain transportation system and biotechnology. Secondly, I would like to introduce a new conceptual model for the reform of the grain transportation system.

We are all aware of the effects of rail line consolidation and of the concentration of the elevator infrastructure. Companies such as the United Grain Growers (UGG) are building new terminals, partly because the old ones were built between the 1920s and 1950s. Even though they have been upgraded, they are no longer capable of effectively doing business. Studies done by the UGG indicate that, in western Canada, in the future there will be more grain processing and more movement of grain through the system. Growth is possible in both agricultural processing and the export of primary agricultural products; the growth in processing does not preclude growth in overseas exports. Consequently, in the future, the volume of product moving through the Canadian grain transportation system will increase. We need to design a system that can handle the increased volume and the diversity of the products transported.

Recently the volume of grain moving through the system has stagnated but this is likely a temporary phenomenon; previous growth patterns will re-emerge. In the future a lot more grain is going to be moving through a lot fewer grain handling facilities. In the 1950s there were about
5,500 grain elevators in western Canada. Now there are fewer than 1,000, a change that reflects a tremendous consolidation. The Saskatchewan Wheat Board has already announced its intention to consolidate its facilities even more and the United Grain Growers is planning another fifty percent reduction over the next seven or eight years.

Going back over the last forty or fifty years, or even as recently as the early 1980s, the average elevator in western Canada was handling approximately 10,000 tonnes of grain a year. To put this volume into perspective, consider that a 100-car unit now carries about 8,000 tonnes and the 110-car unit about 10,000 tonnes of grain. Consequently now, in 1998 one week of business can equal the average annual volume of grain handled by a 1980 elevator. In the future the average facility in Western Canada will handle between 80,000 and 100,000 tonnes a year. Consider the different capacity of the system currently in place with that of the grain handling and logistics system of the future; a logistics system designed to move 5,000 or 10,000 tonnes of grain a year through many small elevators is completely different from the one required for moving high volumes of grain through fewer facilities. In addition, the processed customer specific grains, (the products of the future) will be significantly more time sensitive. The transportation system will have to be able to operate with time constraints.

Biotechnology is also going to radically transform the grain industry. Policy makers today should be trying to consider what the grain industry is going to look like, what challenges it will face ten years from now. Monsanto has recently been actively working to develop biotechnology for profit. In the mid-1970s, given the state of computer technology, it would have cost Monsanto $2.5 million to sequence a gene. The same work today costs $150. Some of the largest seed breeding companies in the world are working with not so small entities such as IBM to understand the genomics of plant material. Researchers will soon know what it takes to breed plants that do specific things, have specific qualities. Historically agricultural production and health and pharmaceuticals research have been kept separate. Now, however with the so-called designer crops, crops with a specific end-user, researchers are working to insert a particular output trait into a seed. In the future nutraceuticals will be commonplace. Nutraceuticals are foods held to impart certain health advantages to the people who eat them. Wheat, for example, that had antioxidant properties, which over time lowered the risk of cancer or heart disease in people who ate it, would be an example of a nutraceutical food.
What is the relationship between technological developments—neutreacuticals and designer crops—and grain logistics? If farmers were producing grain under contract for a specific end user, the currently used formula-based car allocation system would not be adequate. In an administered system at least ten or fifteen percent of the car orders will be allocated to a competitor, then the cars will go into a car pooling system somewhere along the line and then to a port position perhaps to be commingled and loaded into a vessel. Contract specific crops will probably never represent one hundred percent of future grain movements but they will become significant enough that a logistics system designed to accommodate their specific needs will have to be created.

The implications of the consolidation of grain handling and the increasing significance of contract specific movement are that, in the future, fewer facilities will be handling a lot more grain and certain products will have to go to particular elevators to be loaded into large units going to a specific end-user. These changes will put enormous pressure at the contact or interface points between the farm and the country elevator. Already UGG's farmer customers are being asked more often to deliver a specific grain to a particular facility at a specific time. Increasingly, there will be a lot of pressure at points between the country elevator and the rail side, and also at the rail/terminal interface and the terminal/vessel. Merchandising will become more important because shippers will be dealing with more demanding customers.

Agribusiness in western Canada is increasingly becoming much more commercially driven and increasingly focused on the bottom line. Is it right to adopt an administered business system when the success of individuals, firms and employment is very much at stake? I would submit the impersonal market provides the best way to adapt to change and as a consequence designer procurement, (because of logistical pressures) is going to lead to the death of formula car allocation.

A model for the logistics system capable of dealing with challenges of the future will have to satisfy the end user because he will be particularly important. One of the mistakes we have made in the past is that we have tried to top load a non-Board system onto a Wheat Board one. I have put together a system that will work for either Wheat Board or non-Board shippers. In this model, the end user will deal either with the Board or with a grain company. The grain company might be the UGG that has facilities or with the equivalent of Scoular grain that does not. An
end user buying non-Board grain would deal with a grain company. An end user buying malt barley might be buying both Board and non-Board grains.

Contracts will set the terms and conditions of the transaction, such as the origin, delivery destinations and times. The contract would contain details regarding the consignment of the fulfillment of the order. The consignee would be responsible for providing the execution services, either directly or by sub-contracting. The consignee would also be responsible for loading the right grain on the boat or rail car at the contracted place and time. He would have to secure the product either directly, by contracting with farmers, or indirectly, by buying it from other grain companies. The consignee would have to get the product in position to fill the rail cars, trucks or whatever other mode is to be used. Finally, once the execution services have been provided and the origination contract signed with a farmer, the consignee would have to put a truck or rail car under the spout and make sure there was transportation.

This model relies heavily on contracts and sub-contracts. Through the use of contracts we can get accountability by making people liable for their mistakes. If something goes wrong, someone is responsible and has to pay the bill. We need a system capable of adapting to the ebb and flow of commerce. We should not have to design a special allocation formula to accommodate new players. If, in the future, there are unanticipated mergers, alliances or if new product flows change the balance of market forces, the system should automatically, dynamically accommodate the new products or flows.

The model I have just described is a conceptual model with execution risk. In this system, if something goes wrong, someone is responsible. Liability is not something grain companies or shippers are very enthusiastic about, but the system would save (for instance) the farmer from having to pay demurrage fees to the Wheat Board. The basic model would work in any kind of car allocation system. If this conceptual model was adopted, I can envision a "cots" or "perts" system coming to fruition. Some kind of commercial system is required because grain shippers are dissatisfied with the current rail rate spreads, (between small blocks of cars and large blocks).

In the United States there is a lot more flexibility in how grain economics work. Elevation rates are lower than in Canada. We need to develop flexibility; the ability to blend at a terminal position, (as is the case in the U.S.) so that we can manufacture and transport whatever product is required at the end of the pipeline.
The system of the future will have to be a different one than the one that exists at the present time. Canadian shippers, carriers, farmers and the Canadian Wheat Board are all going to have to accept that the system has to change.

Chair, Mr. Greg Arason
Transport Institute External Advisory Committee

The next presenter is Rob Ritchie, the president and CEO of Canadian Pacific Railway. Mr. Ritchie joined CP in 1970 after having moved through various positions including that of president, until 1995 when he was appointed to his current position as CEO. He is also chairman of the Railway Association of Canada (RAC). He represents the RAC at the Association of American Railroads.

Mr. Rob Ritchie, President
Canadian Pacific Railway
Railway Perspective

In Canada we need to construct a lower cost handling and distribution service, a system that provides better service, one in which the participants have clearly accountable roles. In order to improve performance, the two Canadian railways have to engage in more collaborative efforts with each other and with shippers. After all, agricultural exporters and railways are dependent on each other; the railway needs the shipper’s business and the shipper needs the railway’s service. This sort of synergistic relationship is not uncommon in today’s global economy. The distrust between shippers and carriers, a distrust that exists now and has existed in the past, has given rise to the current regulative system. It is the root source of the existing regulative and bureaucratic system, a system that restricts the Canadian Pacific Railway (CPR) from delivering high quality, efficient and low cost service. The regulatory structure is damaging all the industry participants, producers, railways, grain companies and exporters.

The proposals that the CPR made in the Estey review process outlined a strategy for breaking out of the current system and instituting a new one, a system that would provide the basis for more positive relationships in the future. The proposals reflected the fundamental belief that the establishment of a commercial system would drive down costs and induce efficiency. After one
hundred years of regulation, it is clear that the system does not work. The world of trade and transportation is a world of commercial partnerships. Canada’s international customers use the country’s internal discord to discredit it as a supplier, and drive down the price. The CPR wants a system that will call the right grain to the right elevator, that will place the cars where they are needed when they are needed and that will deliver the right grain to the right port at the right time.

The risk sustained by producers must be reduced. The responsibilities of each participant must be clearly defined, and clear performance criteria, as well as ways to ensure they are met, must be provided. The pillars for change to achieve such objectives are direct commercial negotiations, the institution of commercial car allocations and flexible rail service and prices. These changes will drive costs of all logistics’ components on a downward trend. How would a commercial system work? Producers do not want to be responsible for circumstances that are not under their control. Direct contractual negotiations between specific parties are needed, in order to increase each participant’s ability to assume and realistically define risk. Contractual negotiations limit the producer’s risk because once they fulfill their obligation to deliver grain, other parties in the chain, not the producers begin to take responsibility for the movement of the product. Grain companies would assume the risks associated with handling, rail companies would take responsibility for car supply and delivery and exporters would be responsible for marketing and end-user customer relations. If the grain companies or the railways fail in their areas of responsibility, they should pay for it, not the producers.

Rail car allocation is an important topic because it restricts competition and efficiency. Participants each get “their share” of cars based on historical patterns, rather than on current needs. The new Canadian Wheat Board zone system increases flexibility by increasing the number of locations where orders may be placed but the share approach restricts the grain company’s freedom. Grain companies need flexibility and freedom in order to manage their assets to the fullest. The commercial approach to car allocation would increase the level of competition between grain companies and between railways. Although a railway is driven by volume, the same share system that applies to grain companies also applies to railways. Consequently, right now there is little motivation to compete. As grain companies get full control over their facilities their negotiating powers will increase. Producers will be able to decide where their grain will be delivered on the basis of the prices and services offered to them.
at different locations. There will be more competition for railways, and consequently for grain companies and producers.

The CPR believes that customers should be able to choose from a range of different services and that different services should be priced differently. Given that grain is not a generic commodity, different grains require different service at different times of the year at different locations. Services should be priced accordingly. Keeping the maximum rate scale does not improve rate service nor will it keep the rates down. Since the current rate scale is based on the average cost of all movements, low cost rail movements are currently subsidizing the high cost ones. The real cost of a specific movement is hidden from shippers and distorting the market. A commercial regime would put a constant, dynamic and reward motivated pressure on costs that would drive them down. The maximum rate scale keeps needless costs in the system, reducing choice and efficiency. In addition to creating more flexibility in service and rates, a commercial environment would facilitate price transparency, reduced rates from origin efficiencies, multiple car blocks and trainload movements. Rates would be higher for single cars but, overall, prices would reflect the different characteristics of different services.

In a commercial price environment, total rail transportation charges for any given volume of grain would not exceed the charges paid now under the maximum rate scale. CPR is prepared to have its grain reserves audited to ensure that it creates an environment that facilitates freight rate reductions and that the basket of rail freight charges goes down. We can prove that the commercial prices will not exceed the maximum rate scale. We will consider decreasing or increasing the rates for specific products. In commercial rate making, a portion of the rate is usually tied to the price of the commodity shipped. Could this system work for grain?

CPR has considered various options for safeguarding remote or low volume areas. One option is to tie the branch line rates to mainline rates in a proportional relationship. If the cap is eliminated and a commercial system is put into place, CPR is prepared to help ease the impact of branch line discontinuance. Right now, the cost savings derived from rationalization and discontinuances are spread thinly between all producers. To help alleviate the local impacts, CPR sees the need for a transitional mechanism that would redistribute the savings to the areas in which lines are discontinued. CPR sees secondary lines as feeder lines, instead of branch lines. It is important to recognize that the network of the future would include a significant component of strong, high capacity feeder lines. Incentives would be offered for efficiencies on both the
mainlines and feeder lines. CPR is prepared to do its best to help its industry partners bring about the best possible system. The only way to do this is to have an open dialogue between partners, a dialogue that will build solutions. Damning the CPR might make for good local politics but it will not produce a better, more complete and efficient logistics' system that will work for everyone.

Chair, Mr. Greg Arason
Transport Institute External Advisory Committee

Our final presenter, Tami Reynolds, represents the perspective of the Canadian Wheat Board. Tami joined the Wheat Board in 1994 to work on domestic policy issues with a particular emphasis on transportation. In 1997 she was appointed as head of the transportation transition group and in 1998 became the head of the corporate policy group. Prior to joining the Board Tami worked for ten years, in various capacities, for the Grain Transportation Agency.

Ms. Tami Reynolds, Corporate Policy
Canadian Wheat Board
Canadian Wheat Board Perspective

Occasionally it is important to challenge people’s perceptions. Many speakers this afternoon have said that the U.S. system is an efficient system that provides a model for the reform of the Canadian one. Let us look at what is happening in the United States. This figure based on Burlington Northern and Canadian Wheat Board (CWB) sources, compares U.S. and Canadian loading performances. The information is as recent as September 1998. The figure shows a weekly record of the cars that were loaded and unloaded. It includes all grains. The top line shows Canadian loading performance, including that of both the Canadian National and Canadian Pacific railways. The blue line represents the loading performance of the U.S. railway. Note that the Canadian system loaded eighty-five percent of all grain orders while the U.S. loaded only fifteen percent.

Furthermore, in the Canadian system ninety-seven percent of grain orders were loaded two weeks after the placement of the order. The U.S. system, on the other hand, loaded only seventy-two percent within the same time period. U.S. railroads market a premium service that guarantees spotting within fifteen days. In Canada spotting is done within one week.
Consequently, analysis of loading performance indicates that the Canadian system is, in fact, working very well.

Another important criterion to consider is how loading performance has changed over the past two years, from 1996-1998. The Canadian system has shown continuous improvement, a performance of fifty-eight percent of orders filled within one week, in 1996-1997, improved to seventy-seven percent in 1997-1998. By September of 1998, loading performance was at eighty-five percent. This performance is very good, and exceeds U.S. performance by ten percent. Some may say that the September figures are not representative but those numbers conform to the loading performance of the previous months.

The CWB has proposed ten solutions, based on three principles, to help us move forward into the next millennium. The first is that concrete working arrangements and agreements need to be fostered between all parties. We already have contracts with farmers and with the grain companies, our agents. We could expand this progress further into our relationship with the railways by deepening the agreements we already have with CN and CP. The second proposal advocates developing competition because the lack, or the potential lack, of competition between railways makes grain marketing difficult. The CWB’s third objective is to significantly increase system capacity. Increasing movement through the system benefits all participants, farmers, grain companies, railways and the CWB.

The CWB has instituted an enhanced car allocation and zone system, reforms that provide the grain companies and railways with increased flexibility and yet still meet the CWB’s marketing needs. In addition, the CWB would like to implement financial incentives, particularly in the car penalty system. We also think that there may be an opportunity to increase tendering with our agents, the grain companies. However, the CWB does not advocate a system in which tendering is the only option. A third party has to be involved in the process in order to ensure that there is sufficient competition in the system. There needs to be competitive rail access and an appropriate rate structure. If competitive elements are not present, the rate cap will have to be maintained. The CWB wants a competitive system and, in order to achieve it, advocates scheduled railway operations. A predictable schedule operation would help to level out the volatility that creates added costs for all industry stakeholders.
A key element in any commercial grain transportation system is a terminal handling agreement, especially at the West Coast, one of our most constrained corridors, the site of bottlenecks. The employment of a port logistics or railway coordinator could significantly improve port operations. Finally, a system of accurate information would enable us all to better plan, cooperate and coordinate our respective activities together. Understanding the needs of the grain company, the railway, the CWB and the farmer would result in a much more efficient system.

Figure 2 shows the vessel days in port at the West Coast, the port with the greatest volume of product. The figure includes days in port for CWB, non-CWB and non-administered (non-admin) grain. Note that in 1996-1997 the number of days in port rose, especially for non-admins. Notice also that, with the exception of the 1996-1997 period where there is an increase in days, the CWB consistently has the lowest number of days in port. On a per-tonne basis the Board and the non-Board average 2.6 and 3.3 days respectively. Non-admin vessels average 6.7 days per 10,000 tonnes. What is particularly interesting about these figures is that the non-admins function in a system totally in the control of the marketer; non-admins are shipper-carrier negotiated. Shippers and carriers have control over their vessels and can determine when to load. Given that non-admin ordering is terminal specific and staged in the country, you would expect to see a more efficient movement.

What are the stock turnover ratios by port? The CWB stock turnover is greater than that of non-Board grains, including oats, rye, flax and canola. It is 19.5 compared to 16.2 for non-admins. Consistently across all grains and all ports, the CWB grains show better movement and better turnover through the port, even though it tends to handle more segregations than are characteristic of non-Board and non-admin commodities. Despite handling a higher number of segregations, the CWB has a higher turnover rate. This is particularly significant in the light of the fact that, in our system, our ability to move through the port is also our bottleneck.

Consider people's perception of phantom ordering. For 1997-1998 the CWB's CAPSHI targets correlated with actual shipments to the West Coast. All grains, including non-Board and non-admin grains, were transported as predicted. The CWB has been able to successfully forecast demand. We have also successfully met it. At the Thunder Bay port, the CWB actually moved a little more than it projected. In the case of all grains, the CWB moved ninety percent of the targeted amount. CAPSHI has been an effective tool, enabling us to meet projected sales demand while providing accurate information to all parties in the system.
The grain companies on our behalf handle malting barley. The companies control the movement of grain from the country, including ordering, moving, putting it in their terminal elevators and loading it out. Without even comparing its movement to that of the most efficient grains, in-transit times to Vancouver are higher for malting barley than for all grains. Some of the key factors contributing to the higher transit times for barley are that the cars are staged prior to port and sent to a specific terminal. The question is do we want to extend that sort of movement across the system and how would doing so impact capacity? One way of measuring it is to look at stock turnover. The turnover for all grains tends to be higher than it is for malting barley. You would, in fact, expect malting barley to have a higher turnover than other grains, the opposite of what actually occurs. The movement of malting barley is within the control of the grain companies. Consequently, it should show a more efficient movement.

We need to compare Canada's capacity utilization, in particular the relationship between commercial storage and exports, to that of the United States, our major competition. The U.S. has far more commercial storage than Canada. The U.S. can move grain the entire year because it has the capacity to store an entire year's crop. Canada has roughly half the storage needed to hold its total exports. Canada, on the other hand, has the least amount of storage relative to exports of any country in the world. This is particularly critical when you realize that Canada exports eighty percent and consumes twenty percent of the grain it produces while the U.S. exports twenty percent and consumes eighty percent of its grain. Disruptions in the Canadian system have a direct impact on the management of our exports.

In both captive and non-captive areas, Canadian and U.S. rates are similar. People say that Canada's system needs to become more cost competitive but, in fact, Canada already has a cost competitive system. Our rates are comparable to those in the U.S., the lowest in the world. The U.S. cot, general tariff and swat system is very elegant and well conceived. It is an especially good system for the railways because it gives them the ability to control prices, service and routes.

Some shippers in the U.S. believe that the railways control the location of, for example, the establishment of value added processing. Montana grain shippers without any alternative to rail have seen, since the Burlington Northern/Santa Fe and the UP/SP mergers, less timely service, more car shortages, continuing locomotive power shortages and higher rates. Service, they say,
is worse and more costly. These complaints are reflected in the Montana Wheat and Barley Committee’s March 1998 filing to the Surface Transportation Board’s review of rail access.

The Canadian system is, in some ways, more advanced than the U.S. system. The USDA and the STB have signed a pact to create a grain logistics task force that will identify the types of information that will help the grain and rail industries better plan for and adjust to shifts in the supply and demand for grain and grain transportation. The information included would be about the capacity of the grain handling and transportation system to collect, store, position and move grain. There would be information on grain supplies and uses. The task force will also establish the appropriate mechanisms for collecting and reporting this information. CAPSHI already does this. It is necessary to challenge perceptions if we are to move forward. In contrast to people’s perception of it, the CWB system is cost effective and efficient.

QUESTION FROM THE FLOOR:

Tami, I would like to make a few comments on some of your statistics. First, the vessel days per port were per 10,000 tonnes. Since a lot of the non-admins go out in very small volumes, it is not surprising that vessel days per 10,000 tonnes were more numerous for non-admins. Secondly, on the stock turnover figures: Inventory theory would predict that the larger the volume the faster the turnover. Thus again it is not surprising that CWB grains turned over faster than non-Board grain because the volume of Board grains at the west coast is four times that of non-Boards. Thirdly, you attribute the longer in-transit time for malting barley to the fact that it operates on a tendering system but you did not mention the relative volumes, the kinds of processing, the storage requirements for malting barley. Finally, the figures on grain storage capacity relative to exports did not show two very key factors. First, that the U.S. has a very, very large proportion of domestic movements in relation to its exports; consequently its storage capacity would have to be much higher than Canada’s. Second, in Australia all the grain has to be taken in at harvest because of problems associated with infestation and quality preservation. The CWB’s case is not made by manipulating the numbers, as you have done here.

MS. TAMI REYNOLDS:

As I said, it is very important to challenge people’s perceptions. Using a 10,000 tonne volume is an appropriate measure for comparing different commodities. On your comment that higher stock turnover would be expected with higher volumes: The same figures show up when comparing like-volume commodities such as canola. In fact, the CWB movement tends to turn
over faster with all commodities. Malting barley does have specific characteristics, nonetheless it is handled very much the same as the other commodities I used for the comparison.

**QUESTION FROM THE FLOOR:**
I have a question for either Mr. Hayward or Mr. Ritchie. You both maintained that there have been considerable efficiency gains and that the goal for the future is to make the system even more efficient. Are any of the benefits that result from deregulation flowing to farmers or just to the stockholders?

**MR. BRIAN HAYWARD:**
Yes, efficiency gains have gone to farmers. The rates have not gone up; in fact, in real terms they have decreased. The future benefits will go to both the farmers and the shareholders. People who borrow money to invest expect returns. Investors have to be able to pay their debts. Nonetheless, in order to collect the grain, or to attract it to a facility, a grain company has to be able to attract farmers. Consequently the farmer is going to get the benefits of the capital invested. Grain companies have to maximize their bottom line because they are in a brutally competitive, dynamic business in which it is difficult to make margins. There has to be a significant spread between the single car rate and that of large blocks of cars. Most of what the CPR and CN give to the grain companies is going to flow back to the farmers because we are going to use that funding to provide incentives to farmers who bring their grain to our facilities. If we do not offer incentives, farmers are not going to haul their grain to our elevator.

**QUESTION FROM THE FLOOR:**
Jim Thompson, Trimac Transportation. My question is for Mr. Ritchie. What do you think the relationship between the railways and the grain trucking industry will be in the future?

**MR. ROB RITCHIE:**
If the system is deregulated, more grain will move by truck. Railways and truckers will be collaborators and competitors, just as they are in almost every other bulk industry in western Canada. As competitors the railways' grain marketers will have to out-market the trucking marketers. More grain will probably move in single car slots. When the railways get into grain load rates, they will out-compete the truckers. As collaborators, both railways and truckers will have to work together with the farmers and the grain companies to bring the right grain to the right place at the right time.
QUESTION FROM THE FLOOR:
I have a comment, specifically for Mr. Ritchie but maybe Mr. Hayward would also like to reply. First, Mr. Ritchie, on the comment you made about companies having to manage their assets: Producers who are one hundred miles away from an inland terminal will be looking for incentives to haul on a viable short-line. At the UDG convention in Regina the other day people were talking about $7.00 and $10.00 incentives between hauling one car and fifty-two cars. If a short-line operator had that kind of an incentive to ship to an elevator that was built in the 1960s, that handled a million bushels then and could easily handle two million now, and if that elevator was allocated cars, we would have a situation that benefited the railways and the producers in that one area. These old elevators and branch lines would be able to compete with the UGG facilities a hundred miles away. I think it would be an unfair use of the producer’s money because the incentive amounts to a subsidy for one producer at the expense of another. Producers also have assets to manage. I do not think that they should move to cattle or to hogs if there is a system in place now that will work for them. The viable branch lines should be sustained. I do not mean to say that every branch line in western Canada is going to work but the ones that producers have commitments on, the ones that they are working on now, should be kept.

MR. ROB RITCHIE:
The Canadian Pacific is not an anti-short line railway. The railroads do not want the farmers to start feeding cows, the railroads want farmers to ship grain because moving grain is what pays the railroad. The railroad’s job is to get high net backs and low costs for farmers so that they do not start feeding grain. Railways are businesses. In North Dakota and Minnesota Canadian Pacific has forty percent of the market. We use short lines to feed our main and feeder lines. Some people complain that the CPR does not let them on the mainline, will not give them a break by coming off the mainline to collect grain. Well, railways are businesses. If there is a deal to be made on a short line that sustains full system costs, CP is willing to consider keeping it. The rail lines in southern Saskatchewan might be economic to run because it is in the railroad’s best interest to haul grain.
Chair, Mr. Greg Arason
Transport Institute External Advisory Committee

Dr. Brian Oleson is going to sum up the day’s proceedings. After a distinguished academic career and at the Canadian Wheat Board, Brian has just accepted a three-year appointment to fill the Agricultural Business Chair in Cooperatives and Group Marketing at the University of Manitoba.

Brian Oleson, Professor
Agribusiness Chair in Cooperatives and Group Marketing, University of Manitoba
Summary and Concluding Thoughts

As we have seen from today’s presentations, questions, responses and observations, the grain sector is a very interesting sector. There is always a lot of tension over the key issues discussed today and I thank everyone for their courtesy and professionalism.

The Canadian grain industry and the world agricultural industry in general is in the midst of major structural change, the most significant structural change since the 1930s. The current Canadian structure, the American farm programs and the groundwork for many of the later European programs all took place in the 1930s. The Uruguay Round reinforced major changes in farm programs taking place in the U.S., Europe and Canada. The historic transportation subsidy that had been with Canada for most of the century was changed. A number of new players, most significantly trans national corporations, have entered the western scene. The Canadian National Railway has been privatized, the cooperatives and the Canadian Wheat Board have been restructured.

The Canadian Wheat Board now plays a very significant role in the supply chain, from the farmer, to the country elevator, to the terminal and, finally, to the customer. Between all these links transportation is of critical importance. The CWB works on behalf of the farmer. This close link is now reflected with the new Board of Directors structure. The farmer elected Directors of the CWB puts the farmer at the negotiating table in a way farmers never before have been represented. The farmer’s influence on the board will be a new factor for railways, grain
companies and other participants. Giving the farmer a greater voice in the system will significantly change the dynamics of the discussions regarding the future of the system.

The presentation regarding the introduction of open access in the Australian system was very interesting. In Canada the separation of the operations from the infrastructure (i.e. the nationalization of the rail bed and the notion of common running rights) were concepts that, in the 1970s and 1980s, were written off as ideas coming from the radical left. Here we are in the late 1990's and open access is an option under discussion. Perhaps Canadians missed an important opportunity with the privatization of Canadian National. Instead of privatizing the entire operation, including all assets, we might have privatized only the operations and used the rail bed as the basis of an open access system.

The issue of railway power was one of the recurring themes in today's discussions. We had quite open and honest discussion from all sides, users, grain companies and railways. Rail rates here in Canada are actually lower than the ones that were shown for the United States. As Ms. Reynolds argued, the Canadian system has many positive characteristics. Some of the challenges to be faced are to design a logistics system that can, at the margin, accommodate change while preserving many of the positive features of our system.

In this morning's session we discussed the necessity of considering the costs of the roads, the need to maintain the road system and the need for a better federal-provincial-municipal framework for road funding. We saw how the system must be able to sustain real competition in the context of a consolidating grain handling system given the existence of only two railroads. We need to ensure the mechanisms and processes that are developed address a market place which alone may not be enough to ensure efficient pricing. We can hope, as Otto Lang sometimes says, that what should be done, will be done, eventually.
Barry Prentice, Director
Transport Institute

Acknowledgment and Thanks

The reason we are here on November 16th rather than on the 23rd as originally scheduled is that, in August, Gord Tufts tried to get a room. There were only six rooms left in the City of Winnipeg! It turned out that we had scheduled the conference during Grey Cup week so we decided to change the date.

I want to raise an analogy between football and this conference. I have had the pleasure of being quarter back because I have been able to hand the ball off to a running back who has done all the work, Jill Dutka. Jill, please accept this small token of appreciation from us for all the work you have done.

I would like to thank everyone in attendance for coming to the Third Annual Fields on Wheels. It is wonderful to see so many new members of the Canadian Transportation Research Forum. I hope to see you all in Montreal in May 1999. I guarantee that the debates in Montreal will be just as engaging as they were here today. Thank-you.

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1998 Participants
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*President, Organization for Western Economic Cooperation*

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Mr. Sheldon Fulton  
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Dr. Barry E. Prentice  
*Director, Transport Institute, University of Manitoba*

Mr. Peter Wallis  
*President and CEO, Van Horne Institute*

Honourable Otto Lang  
*CEO, Centra Gas*

Mr. Douglas Duncan  
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Mr. David Colledge  
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Mr. Ron Eley  
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Mr. Tim Murphy  
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Mr. Greg Arason  
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Mr. Larry Maguire  
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Mr. Brian Hayward  
*CEO, United Grain Growers*

Mr. Rob Ritchie  
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*Canadian Pacific Railway*

Lloyd Ash  
*Trimac Consulting Services*

Hedley Auld  
*Canadian National Railway*

Greg Barnlund  
*Centra Gas*
<table>
<thead>
<tr>
<th>Name</th>
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<td>Harvest Foods</td>
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<tr>
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</table>
Tricia Trepanier  
Karen Tucker  
Gordon Tufts  
Larry Wah  
Michele Waters  
Sandi Wheatcroft  
Jay Whetzer  
Brian White  
Arthur G. Wilson  
John Thiessen  

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Canadian Transportation Agency  
PEI Transportation  
TransX  
Winnipeg Commodity Exchange  
AgPro Grain  
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Doug Duncan  
Jill Dutka  
Darren Gorman  
Jake Kosior  
Scott Shurvell  
Zhao Kun Wang  
Darren Prokop