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PROCEEDINGS —

Twenty-third Annual Meeting

Volume XXIII • Number 1

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TRANSPORTATION RESEARCH FORUM

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Twenty-third Annual Meeting

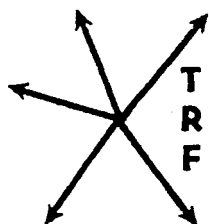
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TRANSPORTATION RESEARCH FORUM

Improving Railroad Marketing Effectiveness Through Management of the Customer Interface

by Dr. Craig E. Philip* and Emmitt J. Posey**

WHILE the primary product which railroads provide to shippers is the speed and reliability of its transportation service, another important feature of a railroad's total level of service to its customers is the timely provision of the proper freight car required by the shipper.

The ordering of freight cars by the shipper represents, in fact, the primary and only on-going communication which occurs between a railroad and its customers. Unfortunately, this interface is often handled in a very informal fashion, usually by clerical personnel who have many other duties besides the customer interface. This clerical employee, who has no responsibility for the commercial success of the business, is often left to make many of the most important distribution decisions. In essence most railroads make no attempt to proactively manage this primary interface with their customers.

In the past year, Conrail has implemented a new organization and information system that radically departs from this traditional set of practices. These changes support the increased emphasis on Marketing within the company, and have resulted in significant asset productivity improvements.

In this paper we will describe the causes of our customer interface problem, the changes to our organization and information systems that have been implemented to overcome this problem, and the benefits which these changes have produced.

CAUSES OF THE RAILROAD CUSTOMER INTERFACE PROBLEM

(1) Railroad Organizations Do Not Focus On The Customer

On most railroads equipment distribution functions reside within the Operating Department as part of the trans-

portation function.¹ This location within the organization has typically been a reflection of management's attitude about the car management or car distribution duties, namely that they are more closely linked to the operating side of the railroad than to the marketing side.

This traditional functional alignment severely restricts the ability of a car distribution organization to respond to customer or commercial issues in general:

"As a result of the traditional functional organization characteristic of most railroads in the United States today, there are strong barriers which limit Car Distribution's ability to respond to commercial objectives and priorities."²

(2) Conrail's Customer Interface Problem Was Similar To The Industry's

At Conrail the first step to reduce these functional barriers was taken in 1978 when the Car Management department was reorganized to support an asset-based marketing orientation. Car Management is a marketing and sales function which converts marketing strategies into tactical field actions. The department is headed by an Assistant Vice President reporting directly to the Senior Vice President of Market and Sales, the same as the Vice President of Marketing or the Vice President of Sales.

In 1978, when the car management function was transferred from the Transportation department, enhanced, and placed in the Marketing and Sales department, five year goals were established including a 21% improvement in freight car asset utilization by 1983.

In mid-1980, realizing that a 21% improvement could be extremely difficult, an Organization Development group was formed within Car Management to identify remaining problems and implement the changes necessary for Car Management to achieve its utilization objectives by 1983.

The initial audit of Car Management practices determined that previous methods of car management had two critical

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limitations. First, car management had been placed in the Marketing and Sales department, but it had yet to really adopt a marketing orientation. In addition and related to the first, available computer systems were inadequate to provide the proper information for decision-making when attempting to match customer needs with the assets available to decision-makers.

The Problem of Organization

With respect to organization, the audit revealed that the process was overly supply oriented (see Figure 1). Major concern was focused on supply without knowledge of current demand. Like most railroads, car management at Conrail "pushed" cars toward perceived or historical demand locations. The function that should have been given highest priority—that of determining real demand and making the order-match decision when applying cars to orders—was left to the local DICCS (Demurrage Industrial Car Control System) Clerk. Customers ordered their cars from the DICCS Clerk who then applied cars to the orders. This was a part-time function for these clerical forces at over 230 locations on Conrail. No effective means was ever found to manage this group due to the high turn-over rate typical of such clerical positions, and the limited opportunity to provide direct supervisory direction.

Additionally, these DICCS Clerks controlled local inventories. These inventories were managed with only one goal in mind—never forfeit a load. No effective means to measure clerical effective-

ness had ever been developed.³ Although this is an admirable goal, it is also a very costly one. Pockets of expensive inventory were located over the entire railroad, frequently resulting in local shortages in spite of system-wide surpluses.

The meritable conclusion was that local clerical employees, who had no responsibility for the commercial success of the business, were being left to make many of the most important distribution, and thus profitability decisions. The organization structure was thus burdened by an overly decentralized division of the critical tasks, and the accountability structure did not establish meaningful performance objectives or controls consistent with this allocation.

The Problem of Information Support

The organizational orientation described above was also reflected in the data systems available to most car management personnel. These data systems focused on the "supply side" of the railroad's business, and provided information primarily concerned with the location and characteristics of empty freight cars.

No formal system to gather, collect, or communicate individual car orders had been established, a circumstance common on most railroads even today.⁴ And without precise demand information, information about available supply was not oriented to facilitate the matching of available supply with demand. Thus, on both the demand and supply side, available information was severely limited:

Demand Information Limitations:

Previous organization of car management was oriented toward managing supply.

ANALYSIS OF CAR MANAGEMENT FUNCTIONS

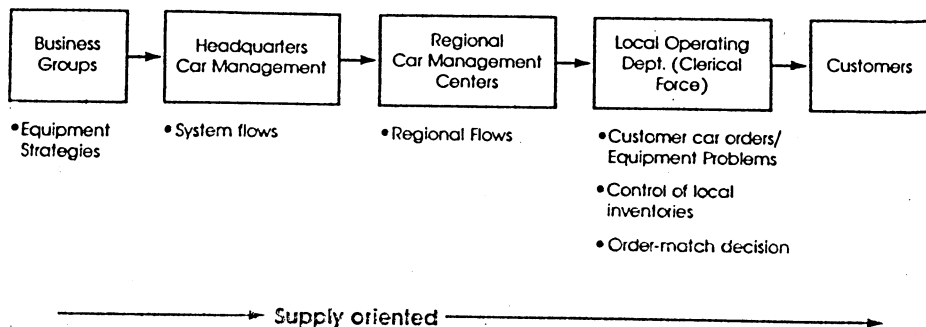


FIGURE 1

- Partial information about current orders
- Order information maintained locally
- Order information never retained for historical analysis

Supply Information Limitations:

- Limited supply horizon for local decisions
- Limited development of supply strategies
- Limited control of local inventories

The audit concluded that information and organizations were both preventing the customer interface role from functioning effectively. While the normal prescriptions for the solution of the customer—equipment matching problem on railroads usually focus on flow optimization,⁵ our problem diagnosis resulted in an even more fundamental solution approach. The changes in organization and the decision support systems described in the following sections focus on the basic problems of defining demand carefully and accurately, and characterizing or segmenting available car supply in a manner which results in an effective match between supply and demand.

REDIRECTING THE CUSTOMER INTERFACE ORGANIZATION

Based on the audit and diagnosis de-

scribed above, a series of organizational and technological changes were developed and carefully implemented.

Car Management functions have been reorganized, consolidating all tactical distribution decisions at regional car management centers. Shippers place their forecasts and car orders directly through the Regional Car Management Centers as opposed to the local DICCS Clerk as shown schematically in Figure 2.

This new organizational strategy is customer or demand oriented. The Car Management process begins with the shipper which allows us the "pull" cars toward actual demand (as shown in Figure 3). The order-match decision is now a function of each Car Management Center. These centers are manned by dedicated, full-time car management personnel. Their first concerns are to obtain forecasts, take car orders, and apply the appropriate cars to the orders.

By having good demand information, vis-a-vis, shipper forecasts, all car flows are managed at the CMC instead of headquarters. In addition, inventories are now managed at the regional CMC level, consolidating this effort from the better than 200 DICCS locations on the railroad, and thereby expanding dramatically the supply horizon considered in local decision-making. This was a major

The car management organization converts marketing strategies into tactical field actions.

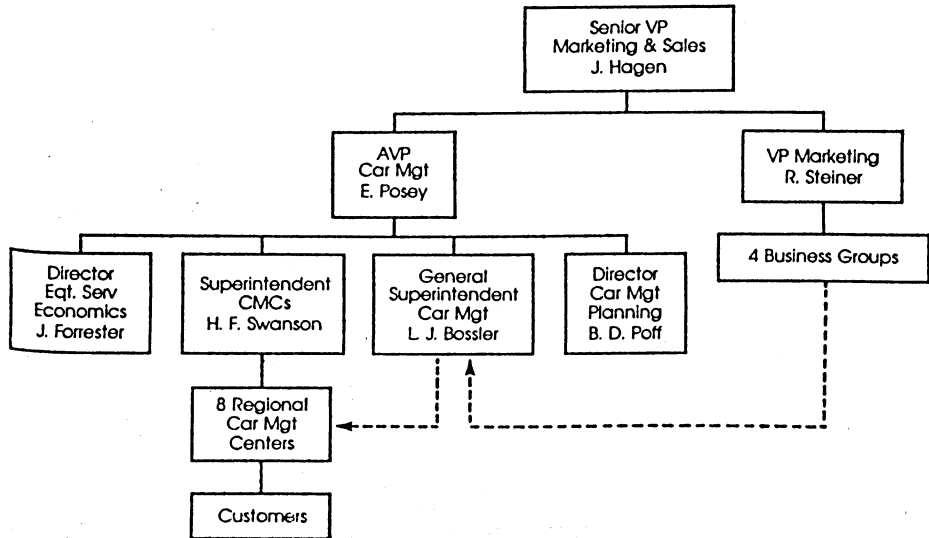


FIGURE 2

Car management focuses on a demand-driven process replacing a supply-driven process in order to more effectively manage available supply.

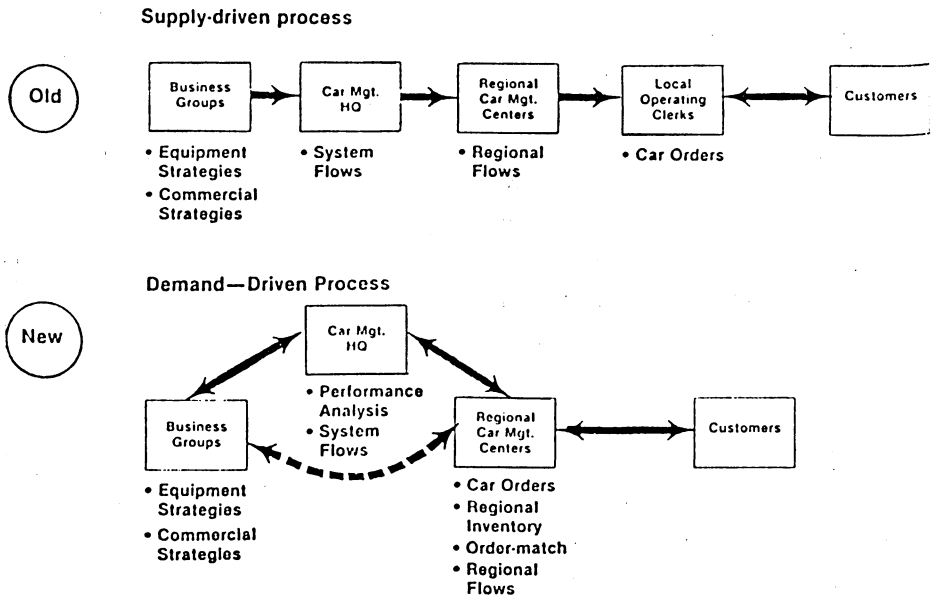


FIGURE 3

limitation of the previous process since the DICCS clerk had the ability to only look at his serving yard for inventory.

Implementation of this organization strategy has fundamentally changed the way customers deal with Conrail. Today, customers place orders for freight cars directly through one of the regional Car Management Centers. This insures that.

- The customer is always contacting an equipment expert who devotes full time to customer contact duties
- True demand is defined accurately for the first time
- A better match can be achieved between a customer's requirements and available supply.

These changes to the internal organization of the Car Management function have established a marketing orientation—a primary orientation toward our customer. This has reversed the traditional supply orientation of the industry, and would not have been successful without the coordinated development of new data systems.

ESTABLISHING A CUSTOMER/EQUIPMENT DECISION SUPPORT SYSTEM

The need for new decision support tools was driven by the restructured organization. Daily contact between thousands of customers had to be managed and this focused initial attention on the customer ordering process. At the same time, however, the centralization of this function demanded a better supply management system. Each was developed separately and is considered below.

(1) Customer Car Ordering System

The first priority was to develop a system to maintain a perpetual inventory of actual demand. Only with such a system could real improvements be realized in our ability to interact with every Conrail Customer.

A system was developed and implemented to capture, organize, and evaluate demand data received from customers, on a real-time basis. This system includes a profile about each customer, identifies each of the customer's forecasts and future needs as shown in Figure 4. Each customer has been assigned a unique I.D. number. Every time a

CONRAIL CUSTOMER CAR ORDERING SYSTEM

STEP 1: FORECASTS

01/11/82 1530

 CUSTOMER INFORMATION
 ID NUMBER: S2000 P.A.C. 841111
 INDUSTRY: NATIONAL STARCH AND CHEM. CO. CITY: INDIANAPOLIS ST: IN
 ADDRESS: P. O. BOX 1084 PHONE: 317-635-4455
 INDUSTRY CONTACT: CHUCK BURGER PHONE: 317-267-4823
 DICES LOCATION: HAWTHORNE NUMBER OF SWITCHES: 6 DAYS PER WEEK
 SERVING YARD/TRAIN: HAWTHORNE/H162 H110 TKG CAPACITY/SPOTS: 159
 # OF TRACKS & TYPE: 17 LEASED
 REMARKS: SWITCHED 2 LINES A DAY MONDAY THRU FRIDAY ONE SWITCH ON SATURDAY

 INBOUND SUPPLY ESTIMATE * ASSIGNED OR LEASED EQUIPMENT

TYP	AMOUNT	COMMODITY	TYP	AMOUNT	COMMODITY
I4	2	CHEM	I4	200	STARCH
			H6	30	STARCH
			H7	20	STARCH

 WEEKLY OUTBOUND FORECAST

TYP	AMT	LAST-CHK	ADEQUACY	PRIORITY	REMARKS
H5	006	811202	-	---	EAST
H7	006	811202	-	---	WEST
H6	003	811202	-	---	VARIOUS
		820111	-	---	
		820111	-	---	

SELECT 0 - RETURN TO SECONDARY OPTIONS MENU
 OPTION == 2 - ORDERS (LIST, UPDATE, ADD)

FIGURE 4

customer calls, the Car Management Center clerk simply enters the I.D. number to access the customer's current profiles.

Based on the clerk's entry, the system captures all actual car orders as they are received, as shown in Figure 5. Of course, before new orders are entered, the CMC clerk can review all outstanding unfilled orders with the customer, reducing the incidence of over-ordering which has often characterized railroad-customer relations.

As cars are applied by car management personnel to satisfy each customer's order, as shown in Figure 6, the system maintains a real-time temporal and geographic picture of outstanding, unfilled demand. At any time, it is thus possible for personnel at all levels to review the actual outstanding customer requirements.

This Car Ordering System, while unique in the rail industry, is in fact just a sophisticated data entry and book-keeping device, but with the addition of a memory. This memory operates interactively to support the order-entry function. It also operates historically to improve the accuracy of our demand information. In specific, the system provides:

- Real-time CRT entry of all shipper

car orders

- Improved customer interface vis-a-vis car orders and car supply
- Real-time retrieval and analysis of all outstanding car orders
- Accurate historical data to improve forecasts of future car needs

(2) Supply Analysis System

Dynamic assessment and application of available car supply links customer needs with marketing strategies. Choosing the proper equipment to satisfy shipper car orders is an important determinant of the equipment and transportation costs incurred by any railroad.

Conrail has developed commercial strategies which in the past were limited in their effectiveness because it was necessary that they be static and simple since communication to the field was manual. To overcome this problem a system has been developed which identifies all candidate cars for loading at each point on the railroad and determines the best use for each empty freight car (as shown in figure 7). Best use is based on a car's characteristics (location, value, ownership, etc.) and on the total equipment needs across the entire railroad. The system then presents each candidate car to the decision-maker at the Car

CONRAIL CUSTOMER CAR ORDERING SYSTEM

01/11/82 1534

STEP 2: CAR ORDERS

 CUSTOMER INFORMATION
 ID NUMBER: S2000 P.A.C. 041111
 INDUSTRY: NATIONAL STARCH AND CHEM. CO. CITY: INDIANAPOLIS ST: IN
 ADDRESS: P. O. BOX 1004 PHONE: 317-635-4455
 INDUSTRY CONTACT: CHUCK BURGER PHONE: 317-267-4023
 DCCS LOCATION: HAWTHORNE PHONE: 317-267-4023
 SERVING YARD/TRAIN: HAWTHORNE/HT62 HT10 NUMBER OF SWITCHES: 6 DAYS PER WEEK
 # OF TRACKS & TYPE: 17 LEASED TRK CAPACITY/SPOTS: 159
 REMARKS: SWITCHED 2 TIMES A DAY MONDAY THRU FRIDAY ONE SWITCH ON SATURDAY

 ORDERS PAGE 01 OF 01

ORDER#	CAR	DATE	REQD	CMDTY	SPECIAL	REQUIREMT	ST	ROAD	TIME	FLG	123	APP	PLA	RJ	CL
S2107710	RS	004	0100	STCRH	IN	ANYWHERE PA	RE		1325	Y		004	004	00	00
S2108752	RS	003	0111	STCRH	ANYWHERE	PA	MAINE		1324	N		003	000	00	00
S2108753	RAH	004	0100	STCRH	ASSIGNED				1343	Y		004	004	00	00
			NUDY						1534	N		000	000	00	00
			NUDY						1534	N		000	000	00	00
			NUDY						1534	N		000	000	00	00
			NUDY						1534	N		000	000	00	00

SELECT OPTION ==> 0 - RETURN TO SECONDARY OPTIONS MENU
 1 - CUSTOMER (LIST, UPDATE)
 2 - SCROLL ORDERS
 ORDER# ==> 3 - CARS APPLIED (LIST, UPDATE, ADD)

FIGURE 5

CONRAIL CUSTOMER CAR ORDERING SYSTEM

01/11/82 1536

STEP 3: CARS APPLIED

 CUSTOMER INFORMATION
 ID NUMBER: S2000 P.A.C. 041111
 INDUSTRY: NATIONAL STARCH AND CHEM. CO. CITY: INDIANAPOLIS ST: IN
 ADDRESS: P. O. BOX 1004 PHONE: 317-635-4455
 INDUSTRY CONTACT: CHUCK BURGER PHONE: 317-267-4023
 DCCS LOCATION: HAWTHORNE PHONE: 317-267-4023
 SERVING YARD/TRAIN: HAWTHORNE/HT62 HT10 NUMBER OF SWITCHES: 6 DAYS PER WEEK
 # OF TRACKS & TYPE: 17 LEASED TRK CAPACITY/SPOTS: 159
 REMARKS: SWITCHED 2 TIMES A DAY MONDAY THRU FRIDAY ONE SWITCH ON SATURDAY

 ORDER

ORDER#	CAR	DATE	REQD	CMDTY	SPECIAL	REQUIREMT	ST	ROAD	TIME	FLG	123	APP	PLA	RJ	CL
S2107710	RS	004	0100	STCRH	IN	ANYWHERE PA	RE		1325	Y		004	004	00	00

 CARS APPLIED PAGE 01 OF 01

INIT NUMBER	KEY	APPL	PLAC	RJCT	KEY	INIT NUMBER	KEY	APPL	PLAC	RJCT	KEY
ER0X	040799	3	0107	0100				0111			
CR	363983	3	0107	0100				0111			
CR	231705	3	0107	0100				0111			
CR	231779	3	0107	0100				0111			

SELECT OPTION ==> 0 - RETURN TO SECONDARY OPTIONS MENU
 1 - CUSTOMER (LIST, UPDATE)
 2 - ORDERS (LIST, UPDATE, ADD)
 3 - SCROLL CARS APPLIED

FIGURE 6

COMPUTER-ASSISTED EQUIPMENT STRATEGY IMPLEMENTATION

Computerization enables Conrail to implement strategies that are complex, location-specific, and that can be changed quickly at headquarters.

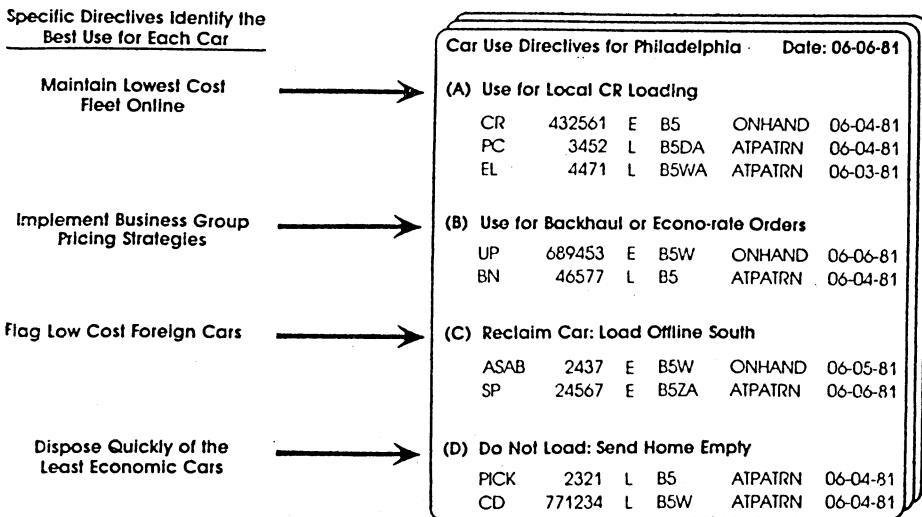


FIGURE 7

Management Center grouped according to the best use identified.

In this way asset management commercial strategies are translated directly into car distribution actions in the field.

IMPACT OF THE CHANGED CUSTOMER INTERFACE

While improved relations with customers is difficult, or perhaps impossible to quantify, these changes within the Car Management Department have resulted in significant improvements in car utilization as shown in Figure 8. These improvements have been an important contributor of Conrail's crossing of the profitability threshold.

Long term, we are convinced the improved relationship which has been established with our customers through the adoption of the programs described

in this paper should be an equally significant source of benefits for Conrail.

FOOTNOTES

1 See AAR Freight Car Utilization Program, Managing Railroad Car Distribution, Final Report April 1980. Since the publication of this report in 1980 only a few railroads besides Conrail notably the ICC, B&M, and MILW have located Car Management.

2 Craig E. Philip, "Improving Freight Car Distribution Organization Support System: A Planned Change Approach," Dissertation, Department of Civil Engineering, MIT, June 1980, p. 281.

3 Earlier studies by one of the authors discovered similar practices on another major carrier. See, C. E. Philip and J. M. Sussman, "An Inventory Model of the Railroad Empty Car Distribution Process," Transportation Research Record 65.6, 1977.

4 op cit Philip, 1980.

5 A recent catalog of these approaches is included in Jordan, W. C., "The Impact of Uncertain Demand & Supply on Railroad Empty Car Distribution," Dissertation, Cornell University, January 1982.

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SUMMARY

Car management has successfully changed its role and organization to achieve our **physical productivity objectives** and better support the corporation's **financial productivity goals**

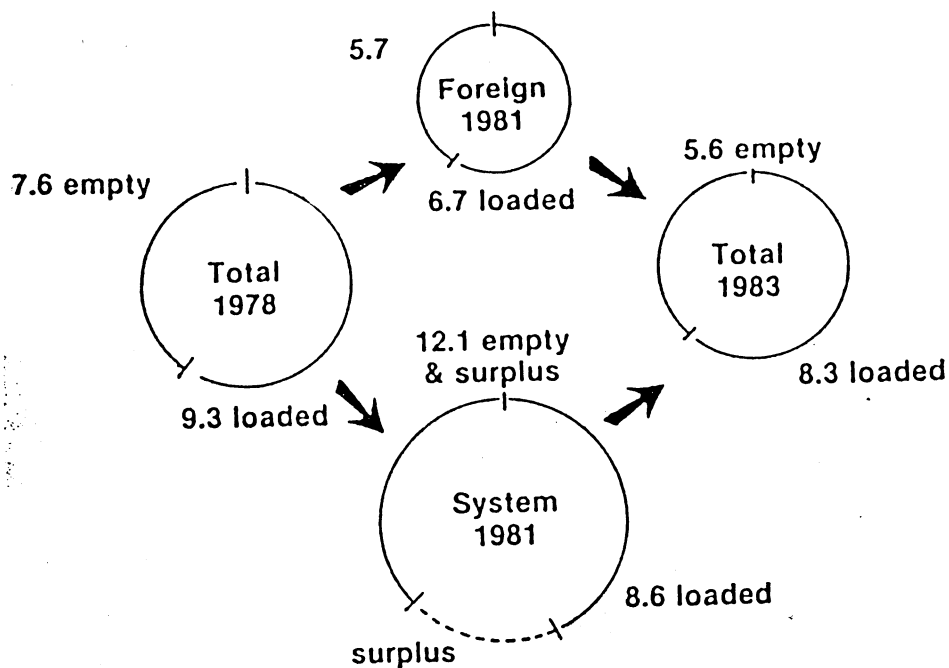


FIGURE 8