Abstract

The troubled introduction of an American air computerized reservation system at French Railways reflects the difficulty of transforming European public rail transport into a market-oriented industry. Computerized reservation systems played an important role in supporting increased competition, providing a global strategic advantage and modifying market structures in the US air industry. However, differences between US air and European rail market structures explain some of the difficulties in emulating this transformation, and put in question the effects global distribution networks and yield management may have on the European transport and tourism industry.

1. INTRODUCTION

In borrowing airline computerized reservation system techniques, French Railways had commercial and strategic objectives, which were to increase yields per seat and control distribution channels. The rhetoric of IT-led competitive advantage, due in particular to computerized reservation systems during US air deregulation in the 1980s (e.g. Monteiro and Macdonald 1996; Schulz 1992), and the almost mythical legend of Sabre’s strategic success at American Airlines, were very influential on the thinking of the company (see Section 3). Acquiring a global distribution system in the mid-1990s did provide French Railways with the first-mover advantage in the European rail electronic market. However, it is debatable whether the strategic coup that American Airlines accomplished with its computerized reservation system can be replicated (Copeland 1991; Hopper 1990). Whether American Airlines’ experience over many years can be transplanted and duplicated in a different context is a question at the core of the local/global debate.

After summarizing, in Section 2, the problems faced by French Railways when they adapted Sabre and first implemented their new system, this paper argues in Section 4 that the context of European rail transport deregulation and intermodal (between rail, air and road) competition is far more complex than that of the American air industry. It involves issues of infrastructures, concerning particularly trans-European high-speed trains, national and regional development and identities, traffic congestion, passenger pricing tactics, and the conflicting and political notions of public transport and liberalized transport (Mitev 1997). These issues would seem to explain many of the difficulties experienced when the system was first introduced.

Computerized yield management and statistical techniques (Section 4.4) used in global distribution systems are critical in supporting commercial optimization and complex differentiated pricing strategies (Daudel and Vialle 1989; Yeoman and Ingold 1997). They also correspond to a deregulated transport model and lead to accounting for the profitability of each route thereby transforming routes into individual and competitive products (rather than a national network), and to the maximization of capacity/revenue for profitable lines. For instance, yield management techniques were associated with the promotion of profitable high-speed trains that compete with planes for wealthy business customers. It is clear that adopting airline reservation optimization and pricing techniques was not just a matter of duplicating strategic success, but implied transferring the

Author

Nathalie Mitev has taught information systems at City University, Salford University and currently the London School of Economics in the UK. Her research activities centre on the organizational aspects of information systems, in particular implementation failures, which she has researched in various business sectors including health, small businesses and transport.
US air deregulation model to the French rail situation, which is not problem-free. It has important implications for transport planning and cannot be isolated from current debates on European transport at large (Cartelier et al. 1996; Fournier 1993; Julienne 1996).

Yield management attempts to manage demand and control consumers’ buying behaviour. Its use in rail distribution channels is the real innovation and tries to influence travelling patterns. Section 5 argues that it can be seen as the fundamental mechanism, which can make businesses compete freely through electronic markets. However, it raises many questions and can misfire when used in rail transport. French Railways is acknowledged as one of the few European tourism and transport companies with top-level expertise in CRS and yield management (Arthur Andersen 1997). Its currently unsuccessful transformation into an international rail distribution provider and organizer of travel and tourism (as opposed to transport) can be attributed to the tensions between demand-oriented pricing and equal access to transport. Perhaps more radically, it is concluded that the boundaries between transport, travel and tourism will need to be redefined before global electronic markets in transport can be fully operational.

2. AMERICAN AIRLINES’ COMPUTERIZED RESERVATION SYSTEM AT FRENCH RAILWAYS

2.1. The Case Study

SNCF (Société Nationale des Chemins de Fer Français) introduced Socrate (Système Offrant à la Clientèle des Réservations d’Affaires et de Tourisme en Europe), a computerized reservation system (CRS) in April 1993. SNCF bought Sabre from American Airlines in 1989 in order to build Socrate. One of its aims was to transform its commercial activities through a technological investment importing marketing and distribution techniques used in the airline industry. The general intention was to reposition the enterprise in a new European competitive environment, which would involve a substantial traffic expansion. Socrate would offer a better quality of service, and support the diversification of services. The initiators of the project also explicitly emphasized the importance of an appropriate policy for maximizing revenue, as SNCF had been an industrial and commercial establishment since 1982 (a semi-public as opposed to a strict public sector nationalized utility). One of their most important objectives was to instigate a ‘new philosophy of selling’ based on yield management techniques. SNCF bought Sabre, the American Airlines computerized reservation system and classic example of a successful strategic information system (Hopper 1990). Several years were spent adapting this software developed by a private air company to the context of the rail industry and of a national semi-public sector institution.

When first implemented, however, SNCF staff and customers rejected this new technical tool and its underlying ticketing, pricing and selling policies. These implementation problems were widely reported and examined by SNCF itself, French trade unions, business consultants, passengers’ associations, the French government which commissioned a public inquiry into its implementation failure (Moissinier 1993), and by the media. Technical malfunctions, political pressure, poor management, unions and user resistance led to an inadequate and to some extent chaotic implementation (Eglizeau et al. 1996; Mitev 1996, 1997). The main problems were that:

- The project management team gave a rather secondary importance to the databases and input sets.
- Staff training was inadequate and did not prepare salespeople to face real-life problems such as tariff inconsistencies and printing problems.
- The user interface was designed using the airlines logic and therefore was not at all user-friendly.
- The new ticket proved unacceptable to customers.
- Public relations failed to prepare the public for such a dramatic change.

The inadequate database information on timetable and routes of trains, inaccurate tariff information, and unavailability of ticket exchange capabilities caused major problems for the SNCF sales force and customers alike. Impossible reservations on some trains, inappropriate tariffs and wrong train connections led to large queues of irate customers in all major stations and to a major public outcry in France. Online reservations available through the Minitel public network failed, booked tickets were for non-existent trains while other trains ran empty, railway unions went on strike (Devillechabrolle 1993), and passengers’ associations sued SNCF (Faujas 1993). These events showed that the project contributed to the upheaval of the French railways’ scene, which had been relatively unchanged, particularly regarding the services on offer and the ensuing passengers’ practices. The new ticketing and pricing policies introduced through Socrate radically changed railway users’ and rail workers’ practices, which were grounded in important cultural dimensions of French society. In contrast to previous technical changes, Socrate began to indicate a new phase of forced global innovation in an enterprise facing strategic imperatives. The competitive environment became that of European integration, which opened the area of transport to deregulatory moves, and to the growth of competition across transport modes (rail, air, road).

2.2. The Technology

The previous computerized reservation system RESA was implemented in the early 1980s at SNCF ticket offices and was also made available in private homes through the Minitel public network. It needed to be extended since it
was reaching saturation point (50 million reservations a year). It was projected that there would be a need for 130 million reservations a year as soon as 1995 (Bouché et al. 1993). SNCF therefore decided in 1988 to completely change its computerized reservation system. Important decisions about pricing strategies were also taken in parallel, which contributed to the difficulties experienced in 1993.

One of the most fundamental changes in database design was the disappearance of the railway station as the basic ‘unit’ or entity, which was replaced by a concept of the ‘relation’ between two stations (origin–destination), derived from air reservation systems. Design difficulties arose since Sabre was written for a maximum of 80 relations with very few intermediate stops (eg New York–Denver–Los Angeles). SNCF discovered that it had to be rewritten to cope with the 22,000 most important relations in the French rail network and its 2,400 stations. If the relation has not been pre-recorded (not enough demand in small stations) the transaction has to be done semi-manually by the sales staff and takes twice as long. This important fact was overlooked; only a small number of relations were pre-recorded for the launch in March 1993. This was one of the main reasons for the queues in the stations, and SNCF had to rapidly deploy input staff to record more relations. Another problem with Sabre was that it was designed for fare structures for air travel, which are simpler than for rail travel. American computer scientists had to be brought in and Socrate had cost 1.3 billion francs by 1993 (Bouché et al. 1993). Design and programming were carried out in the Paris area and in Lille, where three super-computer mainframes are centralized and control the network of sales workstations and automatic ticket machines in rail stations at SNCF premises. The SNCF server is accessible via the Minitel public data communications network. Socrate, like Sabre, Amadeus (Air France) and Galileo (British Airways) is a GDS or global distribution system. It is linked to Hermès and Esterel, which enable connections with European and global CRS for travel and tourism distribution channels.

Socrate was envisaged as a technical tool which can also manage, control and modify demand in order to maximize profits and allocate resources. By using a database management system together with a commercial optimization system, yield management, SNCF hoped to reproduce the strategic success and competitive advantage Sabre was claimed to have given American Airlines in the 1980s (Hopper 1990). Yield management techniques were applied to ensure optimal filling of trains, combined with as great a profit as possible for each seat filled, through optimizing the average price/rate of occupation ratio per seat. Beyond booking and ticketing, the optimization software aims at redirecting demand not by altering prices but by changing the number of seats on offer at normal and reduced prices (the pricing mix or ‘quota’) according to demand (Daudel and Vialle 1989; Yeoman and Ingold 1997) This system limits access to certain prices, particularly discounted prices, and is intended to make customers book their seats as early as possible. If customers buy their tickets near the time of departure, they are unlikely to be entitled to reductions, such as reductions for old age pensioners, children, families, etc. This highlights an important difference between European train and air travel, namely that there is a social dimension to rail travel which is not present in air transport. Socrate also includes some software (called Thalès and Aristote) which accumulates statistical profiles of types of seats sold and fares paid per individual train, in order to modify the pricing mix on offer in the future, for each individual train. The pricing mix for each train is therefore constantly modified and based on an analysis of past statistical data, marketing surveys, socio-economic characteristics of each origin–destination relation, competitors’ prices on that relation, and the value customers find in the service.

Organizational and Political Conflicts

Union organizations condemned the new SNCF strategic objectives as early as December 1991 with arguments about social costs and environmental consequences (under-utilization of rail infrastructures, road traffic saturation, pollution, accidents, effects on regional development) (Faïta 1993). They suggested that, instead of competition across different transport sectors, there is room for cooperation and complementarity in the interest of the public and that Socrate could be used to support this objective instead and integrate different transport modes as well as consider social aspects. Unions were also keen not to be seen as blaming the technology. Unions saw Socrate as an opportunity taken by SNCF and the government to realize their own political agenda and as a way of replenishing the public coffers and tackling the SNCF budget deficit, prior to privatization. Some contended that it was also inconsistent in the medium to long-term: fare increases for captive travellers on profitable lines, such as the Paris–Lyon and Paris–Lille lines, improve profits; but if increases are carried too far and on too many lines, the balance is broken, demand diminishes and passengers choose to travel by car instead. This was one of the reasons why the number of sales dropped after Socrate was actually introduced (Adine and Lewino 1993).

The strategic choice was also in opposition to existing organizational cultures and skills within SNCF; some staff perceived it as based on financial motives rather than principles of public service. The interests of various SNCF divisions diverge, particularly those of regional and inter-city transport. Conflicts arose as Socrate concentrated on inter-city, particularly TGV, connections. Regional trains suffered because regional timetable information was not readily available through Socrate; and reservations for regional trains were semi-manual and time-consuming since they had not been pre-recorded in the first Socrate version. The organizational climate, already poor due to a series of
Budget deficits and staff cuts, became more tense and conflictual, rivalries between divisions worsened, staff became de-motivated. Sales staff were particularly exposed to de-motivation. Before the launch of Socrate, training sessions were organized which lasted five days; three days were spent explaining the new commercial policies and the rationale for the new pricing structures. It was judged inadequate by staff and unions as it did not provide enough information on the user-computer interface and too little time was spent explaining the technical and user-computer interface aspects. Unlike its predecessor, which was almost self-explanatory and ‘transparent’, the new system required a thorough understanding of what happens behind the screen. Sales staff’s qualifications and promotions were structured around a thorough knowledge and understanding of fare structures; their professional ethos was to create good relationships with the passengers and find the best possible routes and fares for them. For sales staff their knowledge of fares became irrelevant, the computer system having taken over that role. The dialogue with clients became difficult since staff had to keep looking at a complicated and cluttered screen; their role became one of reporting to the clients what was displayed on the screen, without being able to explain it. Customer choice became more complex and paradoxically the staff–client dialogue was made more difficult. SNCF management argued that since staff do not look at the screen while talking to the customers, work breaks were not necessary. This added to stress levels experienced by sales staff, who had to deal with large queues of angry and confused customers. This was also in contradiction with the new commercial attitudes staff were expected to adopt, for instance through the use of words such as ‘customers’ and ‘clients’ instead of ‘passengers’ or ‘users’. At the same time as introducing the new computerized system, SNCF implemented a monitoring system, which keeps track of the number of transactions, the time taken for each transaction, the types and prices of tickets sold, for each sales employee. Sales staff were therefore subjected to a change of computer system and its user interface together with: changes in training, role, qualifications, promotions and job prospects (cheaper and less qualified staff were now employed part-time in small stations and staff numbers were reduced), professional ethos, working conditions, handling of performance monitoring and reporting. It is little surprising that they took the side of the passengers-turned-customers, joined in protests and went on strike by issuing open tickets. Ticket controllers and train agents refused to inspect tickets, which was also very popular with passengers’ associations and the general public.

3. COMPUTERIZED RESERVATION SYSTEMS AND STRATEGIC ADVANTAGE

The choice of Sabre, the American Airlines system, in March 1989 only confirms the fact that, from the beginning, there was a wish to mimic the air industry. A sophisticated computerized reservation system could help SNCF fill its trains, in the same way that it allowed American Airlines to fill its planes and make SNCF as effective as air companies (Lévy 1992). In Metzler and Lemaître’s words (1990: 21): ‘rail must reach the level of its competitors, particularly air companies. The answer to this challenge is information systems, in the form of modern reservation systems . . . International sales must be facilitated through global distribution systems such as the ones found in air companies’.

SNCF’s search for technical partners was heavily influenced by the perception of competition with air transport. At SNCF board level (SNCF 1989), decisions by air transporters regarding their choice of GDS were carefully examined, if not emulated. Operational systems such as those of rail transporters AMTRAK, and Deutsche Bahn, but also air transporters Swissair, British Airways, those of air distributors such as System One, Sabre, Galileo, Amadeus, and also one IT supplier, Unisys, were investigated. Sabre, of AMR, was chosen because it had a strong emphasis on distribution and optimization, and its technology platform was common to many GDS therefore allowing technical compatibility. Sabre was also the biggest and oldest (30 years old) reservation system in existence at the time. Another consideration was the eventual possibility that the system would host some if not all services of other rail companies.

One major attraction for SNCF top management was the fact that Sabre was claimed to generate three-quarters of American Airlines profits (Lévy 1992). This was translated by SNCF in the potential to gain market share against road and air transport, through controlling the distribution channels in Europe by being the first and hopefully dominant electronic distribution network, selling tickets to ‘all Europeans’, and expanding the high-speed rail network in Europe (Anonymous 1992).

3.1. Computerized Reservation Systems and Air Transport Markets

The emergence of computerized reservation systems, in particular Sabre at American Airlines, and their role as a competitive weapon’ have been described and analysed by many authors since the mid-1980s (see classic papers by Earl 1988; Ives and Learmonth 1984; McFarlan 1984; Porter and Millar 1985). Sabre is seen as the archetypal example of how information can provide strategic advantage. This however has been interpreted and analysed in many different ways and even disputed.

From basic operational support to start with, the airline use of computers has expanded over the last 30 years to include most functions (Henderson 1994): passenger service, maintenance and engineering, financial, fare quotation, frequent flyer, yield management, bag tag, airport information, hotel/car/tour reservations, fuel, cockpit
information, etc. The world’s airlines continue to spend heavily on automation, some are reported to spend $0.5 billion a year and the most heavily automated functions are reservations and maintenance/engineering. Top companies such as United Airlines also sell applications and automation services to other carriers, and the most extensive offerings are those of American Airlines’ parent, AMR Corp. which supplies both services and applications to a lengthy list of fellow carriers (Henderson 1994).

The first commercial real-time venture was Saber (Semi-Automatic Business Environment Research) began in October 1959 after five years of analysis and design study by American Airlines and IBM. The development of the initial system took four and half years, over 400 man-years and cost $30 million. The initial version was capable of handling information from and about other air carriers and AA was able to charge rent for the use of its system. By then, the system could handle up to 1,800 messages per second from 80,000 linked terminals (Adam 1990).

This mover’s advantage lasted several years until other companies launched their own systems, leading to a period of confusion then consolidation. Schulz (1992) refers to these developments as the first generation CRS (1958–74) that concentrated on system-building and competency acquisition, with airlines now customers of the CRS vendor airlines. The technical lead held by American Airlines and then Eastern Airlines was no longer so obvious by the mid-1970s (Adam 1990). All the main carriers had stable and reliable internal systems and communications networks supporting their main operations.

The second generation CRS (1975–85) concentrated on marketing and niche innovations (Schulz 1992). With the deregulation of US airlines in 1978, American Airlines introduced ‘name check-in’ which linked passenger name records with marketing records, and allowed the introduction of the first frequent flyer programme. Another innovation was the realization of the importance of the travel agent market, which had provided 30% of bookings in 1967, compared to three that number in 1987 (Adam 1990). AA started aggressively pursuing travel agents as ‘lease’ customers and installing Sabre terminals. By the end of 1985 American and United had 45% and 29% of the CRS market respectively (Schulz 1992) and by 1987, 95 per cent of travel agents were automated (Monteiro and Macdonald 1996). Additionally, AA realized the market potential of Sabre and devised the ‘co-host’ scheme whereby smaller carriers can pay to have preferential displays on agents’ terminals, ie for their flights to appear on the screen before those of competitors (Adam 1990). This gave rise to numerous carriers and travel agents filing petitions with the Civil Aviation Board because of problems associated with CRS dominance (Miéus 1989). Even though the legislation that emerged ‘generally eliminated the more blatant forms of anti-competitive use of CRS, it was not totally satisfactory’ (Monteiro and Macdonald 1996: 178). Vendors were not prevented from making charges, which continue to make CRS ownership a financial gold mine. Now 98% of US travel agencies do their bookings on one of the four dominant CRS (Sabre, Apollo, Worldspan and System One).

Schulz (1992) suggests a third generation of CRS (1986–90s) characterized by smart workstations, which allowed, for instance Delta Airlines to enter the corporate travel market. The US air travel agency industry is very competitive and agencies use IT extensively to lower cost and improve service. The corporate segment in particular makes use of complex databases to manage corporate clients’ travel expenses. Doll (1989) argues that corporate travel agencies will continue to grow as they broaden the range of services they offer their customers, particularly through the use of integrated reservation services, world wide databases of tours and resorts and travel management software. In the mass travel market, there will be consolidation of nation-wide ‘mega’ agencies that will dominate the travel service industry. Additionally, PCs and internet-based services allow passengers to book directly from home, and this may re-shape the travel agents’ industry even further. A recent example of an internet-based service is the Web Pets Travel Service, which is a KLM online reservation system through which customers can organize for the air transport of their cat or dog (Christiaanse and Zimmerman 1998).

Another feature of the third generation CRS according to Schulz (1992) is yield management. ‘Within the context of a deregulated environment, yield management, in combination with PC-based reservation systems, as well as the established large-scale systems, provides the airlines with unprecedented capabilities at providing customer service and marketplace pricing’ (Schulz 1992: 71).

Perhaps most importantly for SNCF, ‘conservative estimates credit Sabre with a cumulative cash contribution to American Airlines between 1976 and 1986 of $900 million, producing an internal rate of return during the decade of 68.7%’ (Copeland 1991). In 1991, with 85,000 terminals in travel agencies in 47 countries providing access to fares and schedules for 665 airlines, Sabre accounted for about 85% of American Airlines’ earnings (Copeland 1991). In 1997, Sabre was in place in 54 countries and with some 20,000 travel agents, with estimates suggesting that some 130,000 terminals were connected to the system. Each day some 1.6 billion bookings were taken over it for some 740 airlines and it dealt with 20 times this number of enquiries about product details contained with it (Russell and Johns 1997: 124).

The air industry has been seen as one of the best illustrations of how information technology can have an impact on industry structure; and, since the 1970s, Sabre has been cited as an example of the use of information systems for competitive advantage. According to Max Hopper, vice president for IS at American Airlines and vice chairman of AMR Information Services, who joined AA as director of Sabre in 1972, ‘we helped define an era’ (Hopper 1990: 118). However, he argues that it is difficult to document the claim that Sabre generated
substantial increases in traffic by creating market-power advantages over the competition. He states that ‘Sabre’s real importance to AA was that it prevented an erosion of market share’ (Hopper 1990: 122). Together with Copeland (1991), he also believes that most common explanations for Sabre’s success focus on the competitive advantages realized by locating terminals in travel agencies and are too shallow. The cumulative, complementary and incremental technical and organizational capabilities are a better explanation. Factors such as well-established functional and technical operating routines, and a long-standing pattern of tit-for-tat rivalry between American and United Airlines, even prior to deregulation, accounted for many necessary competitive counteractions. AA did not plan to dominate distribution channels but learnt by doing. For instance, as an incentive to travel agents to subscribe, it added functions to help them; one such function was improved passenger records, since travel agents were interested in data grouped by passenger, in contrast to traditional airline priorities where data are grouped by flight. Once this enhancement was complete, AA saw in this the basis for the first frequent flyer’s programme. This attracted full-fare business travellers, who subsidized the low fares AA was forced to offer when low-cost airlines such as People Express entered one of its markets (Copeland 1991). Further, Copeland states that: ‘it is most unlikely that another organisation will replicate the strategic coup that American accomplished with Sabre’; and that ‘today no company would allow a competitor to gain electronic control over a distribution channel, in large part because of the example of the airlines’ experience’ (Copeland 1991: 60).

4. EUROPEAN AIR AND RAIL TRANSPORT

Transport in Europe is different from the US in that it has to consider intermodal competition (between rail, road and air) as well as intramodal competition (within a particular sector eg air). One aim of European liberalization is to harmonize standards so that rail and air transport companies can operate freely in any European member state. Since the late 1980s the European Union (EU) has introduced measures to abolish market restrictions in the air and rail sectors (Hope 1993). The first measures taken by the EU have been the clarification of the relationships between national states and transport companies, the emphasis on fast-speed networks (Freeman Allen 1991), and the abolition of public service obligations and compensations. Separating the accountability of infrastructures and exploitation is the logical next step, followed by the cooperation of national companies to exploit international transport and the opening of national routes to competition.

The 1991 EU Directive 91-440 on the liberalization of rail transport (adopted in France in 1995) aims to revitalize rail transport through market forces; but it also believes in supporting trains as they pollute less, and envisages that increased intra-European exchanges through high-speed train networks will reduce road traffic congestion. One can discern here some tension, usually, and perhaps simplistically, taken to be a clash of views between Karel Van Miert, the EU competition commissioner who supports free-market economics, and Neil Kinnock, the EU transport commissioner, who wants to promote rail transport. Applying the free-market model to rail transport is presumed to enable economics of scope in the design, production and operation of infrastructures, as it did in the US air industry. However, consequences such as the disappearance of short routes are very controversial in smaller and more densely populated countries. This is particularly manifest in the decisions surrounding the French TGV routes. The TGVs are regarded as a great technological success in France, but financing TGV infrastructures is extremely costly, and opinions are split on its benefits. In the face of current opposition in many countries, it remains unclear whether the EU will achieve its aim of opening all European freight, international and domestic passenger rail transport to competition.

4.1. SNCF and French Opposition to Liberalization

SNCF and the French government have been, and still are to some degree, hostile to the liberalization of European rail transport (Jakubyszyn 1996a) on the grounds that the national rail network would be weakened if split, and that deregulation ignores the cultural and public service differences between countries. SNCF has expressed strong opposition to the opening of domestic routes to competing operators (Jakubyszyn and Le Boucher 1996). Various French governments (under Juppé and Jospin) have appeared publicly to protect France from the ultraliberal EU agenda and oppose any ‘unreasonable liberalisation which would destabilise SNCF’ (Tillier 1996). Nevertheless, since the early 1980s, SNCF has had to respond to competition and increase its profitability.

Continuing public deficits at SNCF over the last ten years have lead to several government reports commissioned to examine the ‘catastrophic situation’. The Martinandy report (Malingre 1996) identified three causes: decreasing revenues, low productivity and poor returns on investments. The Rapport de la Cour des Comptes (Grosrichard and Jakubyszyn 1996) criticizes SNCF for its inflated traffic estimates on the TGV Nord (Paris–Lille opened in 1993): actual figures were less than half the forecasts. It argues that this serious overestimating was not accidental and was carried out to obtain a return, which could justify the investments. The costly TGV building programme (1981–94) led to enormous financial costs calculated to reach a level of 400 billion francs of debt by 2005, corresponding to a third of SNCF revenues. On the other hand, there is recognition that SNCF pushed TGV
technology to the detriment of its ‘classical’ inter-city network and did not look into alternative and cheaper technologies such as tilting fast trains that can run on existing tracks (TGVs need new tracks to reach high speeds). It is clear that decisions, roles and responsibilities about rail infrastructures and their costs are crucial and there has been an on-going and very heated debate between the company, the government, the unions and public opinion.

SNCF has become more accountable and, in its 1990–94 contract with the French State (‘Contrat de Plan’), had to reorganize its activities into purchaser/supplier relationships. More recently, the government has decided to divide infrastructures and trains operations into two companies (Jakubyszyn 1996b). The newly created public infrastructure company, the Réseau Ferré de France (RFF) took on the SNCF debt (125 billion francs) and inherited assets worth 135 billion francs, therefore freeing SNCF from a future of uncertainty and increasing levels of deficit. RFF is in charge of investments and maintenance for the whole rail network, and charges operators. Some problem areas still remain about the future payments SNCF will have to make to use the tracks, and also about who will maintain the tracks, run triage and telecom activities. Overall, however, the network remains intact, the national monopoly is preserved and the public service is still in place. On the other hand, it is now up to RFF to negotiate with the government on matters of infrastructures and regulation of rail and other transport modes, but with little bargaining power.

4.2. A Redefinition of a Public Rail Transport

During these recent events, the role and public mission of SNCF have been reconsidered. One possible redefinition of SNCF is as a multimodal, intermodal, combined public transport company (Malingre 1996). An important aspect of this ongoing restructuring of French rail transport is the controversy surrounding the cost of infrastructures and the choice of the TGV technology. It is related to a very lively debate about what the French call ‘territory management’ or the concerted planning of national and regional economic development. The growth of the TGV network, contrary to expectations, is seen as creating a discontinuous space and reinforcing rural ‘desertification’. The TGV is more profitable the fewer stops there are and investments concentrate on profitable segments, which are becoming saturated to the detriment of peripheral zones. And, as a result, the intermodal competition increases on profitable segments, for example Paris–Lyon where a fierce battle between the TGV and Air Inter (the French national domestic air company) takes place.

These issues strongly coloured the public reaction to the introduction of Socrate. The price differentiation policies enabled by the new system were interpreted as forcing passengers onto the more expensive TGVs, to recoup the infrastructure costs and compete with air, to the detriment of the ‘classical’ national inter-city lines, which the French public and SNCF employees, who are very attached to their national rail network, are very keen to protect.

Having already built the most profitable lines eg Paris–Lyon, SNCF faced enormous further debts if it invested in new TGV lines without state or European aid. Consequently, there has been a series of decisions and counter-decisions concerning the construction of the TGV Est route over the last few years (Andréani 1996; Béleret, 1998), after complex negotiations involving local, regional, national and European political actors.

Perhaps more significantly, there is evidence of a rethink to a global transport strategy, with a ‘Plan Rail’ which is moving away from the strong emphasis on TGV technology or ‘Tout TGV’ as well as from the ‘Tout Autoroute’. A more balanced view is present, for instance in the consideration of new tilting TGVs which can use existing regional and inter-city tracks for extensions West and South-west beyond le Mans, towards Brest and Bordeaux, and in decisions to increase substantially budgets for the classical and regional networks. The associations between rail transport, regional development and national identity are strongly expressed through these debates, but in new ways. The technocratic reverence towards the TGV is condemned, and its de-structuring effects (pauperization of the state and regions, desertification) acknowledged. Also under discussion is whether SNCF should use the TGV to compete with planes for wealthy business customers on a few profitable segments, or should make trains accessible to all in order to cover fixed costs and offer a true mass public transport service.

4.3. Liberalization Via the Back Door?

These changing priorities in French rail transport have been realized to accommodate some of the EU liberalization objectives, which have now been reached: accounting for infrastructures and operations separately, getting rid of public debt, and recognition by the state of its responsibility in financing infrastructures. Further changes are taking place in a new direction: the opening up of rail freeways corridors to competition from operators, initially in freight transport. French, Luxembourg, Belgian and Italian railways have opened a ‘rail freight corridor’ across their countries which they have been operating together since January 1998 and which is not open to competitors, and which they are planning to extend to Valencia in Spain. Interestingly, this corridor uses a single, centralized reservation bureau. On the other hand, in January 1998, Austrian, German, Dutch, Swiss and Italian railways opened a North-South rail freight corridor, which is open to operators and which could be extended to Sweden and Denmark (Jakubyszyn 1998a). Further developments may occur on East-West freight trunks. In terms of passenger transport, national monopolies have so far preferred to
cooperate on certain segments: the Paris–London Eurostar and the Paris–Brussels–Amsterdam Thalys; SNCF and Deutsche Bahn on the TGV/Thalys Paris–Brussels–Aix-la-Chapelle–Cologne and ICE Paris–Metz–Francfort routes, extending eventually to Paris–Strasbourg–Stuttgart. These collaborations tend to contradict Brussels’ liberalism, while the EU is hoping that it will be able to impose a real competition if monopolies cannot stop a decline in traffic.

However, the SNCF deficit was less than 1 billion francs in 1997 and passenger traffic is increasing (Jakubyszyn 1998b). One major reason is a pricing revolution, which has accumulated revenues through decreasing prices. This low-price strategy had been abandoned for several years when the primary aim was a search for the highest yield per unit. Socrate and the TGV were the means to do this, and this resulted in a decrease of 15% of passenger traffic in the three years, from 1994 to 1996 (Jakubyszyn 1998b). Now revenues are increasing because of traffic increases rather than price increases. The pricing tactics have also been simplified (from 4 to 2 price levels, therefore making parts of Socrate software redundant) and discounts have been introduced for the 25–59 age group, who are usually excluded. These pricing changes follow from the revised conception of rail transport mentioned above, rethought of as a mass public transport system. Whether this is the alternative to rail liberalization that SNCF is seeking to challenge EU deregulatory moves remains to be seen.

4.4. Yield Management

The techniques of yield management and commercial optimization correspond to a deregulated transport model in which operators compete on yield per unit. Imposing that model to rail has proved problematic. The Cour des Comptes Report (Grosrichard and Jakubyszyn 1996) found that, although an interesting modernization exercise, the optimization part of Socrate was introduced without a reliable way of analysing passenger data and of measuring the impact of these commercial changes. It criticized SNCF for ‘playing’ with its new computer system, paying too much for it and becoming too dependent upon its provider, American Airlines, while running the risk of destabilizing its clients, and banking on differentiated pricing strategies based on speed (TGVs), with disastrous effects.

It would seem that SNCF, having tried to link a complex pricing strategy to high yields on TGV routes particularly, has learned the lessons from the implementation of Socrate and has gone back to earlier principles, for the time being. However, the issue of deregulation has not disappeared and may be replaced by the notion that differentiated charging of operators, i.e., higher fees for using busy and modernized tracks, will act as a market regulator. It is not clear how this will affect passenger pricing.

Using yield management techniques also supports the new logic of separating infrastructures and operations, which leads to accounting for the profitability of each route, thereby transforming routes into individual and potentially competitive products. Karel van Miert, the European competition commissioner, articulated the same logic when saying that SNCF, with its high tech TGVs and sophisticated computerized reservation systems, would be able to attack other European markets (Jakubyszyn 1998b). Yield management software supports the maximization of capacity/revenue for profitable lines and helps control costs. This both responds and contributes to transport deregulation and to intra- and intermodal competition; it has implications for transport planning through the separate accountability of identifiable and marketable transport segments; and it is associated with the split between rail operations and infrastructures. Yield management was also important to established US airline companies as it enabled them to appear to be competitive with potential entrants in a liberalized market. Whatever role yield management will play on the European scene, it is clear that the use of computerized reservation systems and optimization software cannot be isolated from the current debate on European transport liberalization and deregulation (see Cartelier et al. 1996; Fournier 1993; Julienne 1996). What remains unknown is the relationship between global electronic reservation travel markets and the evolution of European and national transport and tourism industries in the political context of conflicting market and non-market principles.

5. INDUSTRY RE-STRUCTURING: TOWARDS GLOBAL TOURISM SYSTEMS?

It was found that applying airline reservation and pricing optimization techniques to French Railways also implied transferring the US air deregulation model to the French rail situation. This is not problem-free and seems to explain some of the difficulties experienced when SNCF first implemented Socrate. It is not clear which shape the French and European rail transport network will take and how it will stabilize in the current context of deregulation and globalization. A current unexpected outcome is the redefinition and reorientation of SNCF as a low price mass public rail transport company, with recent positive results.

In the context of the deregulation of US airlines, computerized reservation systems contributed to standardization, increased competition, industry restructuring and globalization of air transport, first within the US then, progressively, in the rest of the world. In selling Sabre to SNCF, American Airlines benefited from a strong cultural, technological and economic advantage in marketing their CRS. SNCF wanted to emulate this competitive advantage in the anticipated globalization of European transport, through the ownership of the first ever rail global distribution system and the control of electronic distribution
channels. However, it is not clear that this first-mover advantage is, and will be, sufficient. It tends to assume that the existence of electronic markets automatically leads to industry restructuring, whatever the industry, and that domination of electronic markets provides industrial superiority.

Through controlling the European distribution market, SNCF was intending to redefine itself as an organizer of travel and tourism, an international rail distribution provider and a seller of GDS services (e.g. hosting services from other rail companies, providing reservation access, offering car rental and hotel bookings, etc.). In fact, SNCF signed an agreement with Amadeus at the end of 1995 (Anonymous 1995), one of the biggest electronic reservation system in the world linking 153,000 terminals in airline sales offices and travel agencies. From 1996, travel agencies subscribing to Amadeus were able to book rail tickets in the SNCF reservation system from their Amadeus terminals. Socrate was bought by the Anglo–Belgian–French rail consortium, European Passenger Services, to sell Eurostar tickets between London, Brussels and Paris.

More fundamentally, yield management techniques, forecasting and optimization models are the real innovation in rail transport and constitute the strategic core and most complex part of Socrate. Yield management takes into account the information provided by reservations to maximize revenues, by combining differentiated pricing, profit maximization and quota management. Information is gathered continuously on each journey, so that the price mix (or quota) can be modified in real time. Forecasting and optimization models analyse customer buying-behaviour in order to control and manage demand and traveling habits, and they support sophisticated market segmentation. In the European rail industry, Danish Railways already use some yield management, while Norwegian railways are reportedly working on a major yield management project, and the Austrian federal railway is developing pricing policies that will more closely reflect yield management principles (Arthur Andersen 1997: 55).

More broadly, among European tourism and transport companies, British Airways, Lufthansa, SNCF and the Club Méditerranée are the only ones generally acknowledged to have top-level expertise in CRS and yield management (Arthur Andersen 1997). In recent years, other areas of the tourism industry have joined airlines in the use of yield management technology, for instance hotel chains, cruise lines and car rental companies. The tourism sector has been transformed in the last few years into an intensely competitive and global arena. Artificial price constraints limit businesses’ ability to deal with the seasonality of demand and optimize profits. In fact, yield management could be of use to any service firms such as hiring of equipment (cranes, computers), labour (temp agencies), know-how (consultants), space (car parks), or even time (processing and communication time) (Daudel and Vialle 1989: 137). Kimes (1997) states that yield management is most appropriate for firms with fixed capacity, high fixed costs, low variable costs, time-varied demand and similarity of inventory units.

The use of yield management, however, raises many questions and varies from sector to sector. Market segmentation and price differentiation are technically difficult to implement in railways. The travelling public is large and complex and these techniques can misfire and lead to a mixing of segments and a failure to distribute demand more evenly. Some advocate more demand-based discounting, more differentiated pricing, more restricted discounts and the elimination of regulations ‘which restrict the prices of otherwise freely competing businesses’ (Arthur Andersen 1997: 327). Yield management is therefore seen as the fundamental mechanism, which can make these businesses compete freely through electronic markets. This redefines transport as a service industry amenable to marketing and segmentation principles. But public transport enterprises may feel differentiated demand-oriented pricing is inconsistent with their mission and politically untenable. They may want to preserve equal access to national, homogeneous, mass transport networks. The boundaries between transport, travel and tourism will probably first need to be redefined and negotiated, before global electronic markets in transport can really become fully operational.

Notes
1. The date of 1 April 1993 as the launch of Socrate was seen as crucial by SNCF management as it coincided with the opening of the new Paris–Lille TGV Nord (Train à Grande Vitesse) connection. SNCF wanted to launch Socrate at the same time as TGV Nord as a publicity exercise. It also wanted to accumulate information about travel patterns on that new line as soon as it was opened, since it was considered a highly strategic line leading to the North of Europe and to the opening of the Channel tunnel rail link in 1994. Monitoring demand and influencing travelling patterns as soon as the line was open was considered a top priority. It was argued by many afterwards that this strategic imperative was the reason for many rushed decisions, which had dramatic consequences. Many SNCF managers agreed that they should have started Socrate on only that line in April 1993, instead of launching it on the whole SNCF inter-city network.
2. ‘All TGVs’ and ‘All motorways’.
3. The French National Audit Office.
4. As opposed to transport. Note the words ‘Affaires’ and ‘Tourisme’ (‘business travel’ and ‘tourism’) in the acronym of Socrate, as well as ‘Europe’ (see Section 2.1).
5. It constantly works out the ideal point at which a customer who does not get a discounted fare either transfers to the higher fare or to another flight at the same price (rather than not travelling or using another mode of transport).
References


