International Division of Labor and Global Economic Processes: An Analysis of the International Trade in Automobiles[1]

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1 INTRODUCTION

Many political discussions share a common understanding of a rapidly changing world. A global market economy is seen to pose new demands for national markets and is expected to increase the international competition concerning locational factors.

Globalization is the keyword of this debate. It describes an economic process that results from changes in the investment, production and distribution decisions made by individual firms and households. Unfortunately, the term globalization can mean different things to different people. Some observers define globalization as market integration (Frieden/ Rogowski 1997); others refer to the internationalization of production processes (Pauly/ Reich 1997; Archibugi/ Michie 1998). Though the two concepts are not mutually exclusive, they neither share a common definition nor do they examine the same processes. Whereas from the macroeconomic perspective of Jeff Frieden and Ronald Rogowski (1997), evidence for a globalizing or even a globalized world economy is to be found in the convergence of prices for goods, capital and services, the approach of Daniele Archibugi and Jonathan Michie (1998) regards globalization as a consequence of the growing number of transnational companies.

In this paper we concentrate exclusively on the latter perspective and analyze globalization on a sectoral and systemic level. The information that allows us to trace globalization involves sector-specific trade flows, which are available for a period of fourteen years. Network visualizations, a technique that we illustrate more closely in the following section, also help to describe the structural change to the world trade in automobiles on the systemic level.

The incentive for firms to globalize their production has many sources, one and possibly the most important being the reduction in transportation costs. The decline in transaction costs provides incentives to producers to "slice up the value chain" (Krugman 1995), i.e. to locate each single step in the production process at that location where production costs are lowest. What is new here is that countries do not always need to have a comparative advantage in producing cars, but in producing engines.

If such a process of locational differentiation within a single production process exists, we should be able to observe an increase in the trade of semi-finished goods relative to

trade in finished goods. If the process exists and if it is caused by a reduction of transportation costs, we should observe it more or less everywhere and equally distributed through the entire world. We will analyze these two processes in the remainder of this paper.

To do so, we have selected the automobile industry for a number of reasons. First, cars constitute the single industrial product that holds the biggest share in world trade, and cars are the most important commodity in the exports of many industrialized countries (Ruigrok/ van Tulder 1995). Almost ten percent of all German exports (by value) originate in car manufacturing, Germany being the biggest car exporter in the world in 1994. The share of exports is pushed up to a total of more than 14% when the value of the trade in car components is included. Secondly, trade in cars and car parts is important for the current account of countries. While for the UK the sectoral deficit of the car trade is 25 percent of the total national trade deficit, in the US the car trade deficit approximates a staggering 40% of the total current account deficit (according to the figures for 1994). Thirdly, 1.7 Million jobs in the EU are connected to the auto industry; almost one out of ten jobs in the EU is directly or indirectly associated with this industry. Under the conditions of industrial mass production, the international market for automobiles is characterized by its economies of scale, which is to say that the industry involves a relatively large number of transnational corporations that move high financial volumes with any production decision they take, amounting to sums that can easily distort the balance of a nation's trade.
Yet the car industry is not only economically important, it is also an important engine of world change (Womack/ Jones/ Ross 1990).

In addition, for the purpose of our analysis, the industry has certain methodological advantages. Most importantly, car manufacturing is, unlike other sectors, characterized by a comparatively small number of producers and export nations. This is due to the size of fixed capital investments needed to produce cars. Assembly plants require smaller volumes of production and investments than sites producing car engines, whereas sites for engines require smaller fixed investments than does the production of car bodies in a body-stamping site. Thus, there are large incentives for internationalization and the creation of production chains (Ruigrok/ van Tulder 1991; Lee/ Cason 1994; Gereffi/ Korzeniewicz 1994).

There are also disadvantages, however, to choosing to trade in cars and car parts as our object of study. Here the practice of governments in regulating car markets is most important (Berg 1988; Cole/ Yakushiji 1984 ; Nobel 1992; Smith 1994). Regulations can take various forms: governments may choose to impose tariffs and import quotas, to pay export subsidies, to grant tax subsidies or reductions, and to impose local content regulations on foreign firm, to name but the most important and distorting regulations (Krugman/ Obstfeld 1994; Yoffie 1993).

The aim of our study is threefold. First, we wish to shed light on the structure and the dynamics of the international trade in cars and car parts. Using network visualization as a tool of analysis, we can show how the focus of international car trade has changed over time, mainly because new countries have begun to export cars. The second purpose of this paper is to illustrate that notwithstanding the globalization of business, geography still matters. We use the examples of Germany and Japan, as the two most important countries involved in car trade, to visualize the degree of distinctiveness in trading patterns by country. Finally, we analyze where and to what extent an international division of labor has been established and also provide some evidence that a geographical pattern persists in the organization of business.

2 METHOD AND DATA

Information concerning the composition and changes in world trade have been documented by international agencies for quite some years now. Nevertheless, research on the internationalization of the car industry has rarely made use of this informational richness, preferring instead to rely on national studies. Methods of information visualization provide a powerful means of accessing and communicating the richness of such information, as observed in other disciplines that need to handle large amounts of data (Card/ Mackinlay/ Shneiderman 1999).

Such methods enable us to study the structure and growth of transnational trade for specific markets, which can be pursued in a much more elaborate manner than has been possible until now. However, before we can use the newly developed tools to grasp the current state of international trade, it is necessary to introduce the method of analysis in brief.

Visualization methods are able to use large amounts of statistical information in a systematic manner, and they are able to reconstruct the overall global structure of the international trade system from data on trade flows. Algorithms allow the researcher to use the volume of the trade flows to create images that try to conserve at least the rank order of the trade volumes. High volumes between any two countries result typically in a placement of the countries as neighbors, unless a specific high volume link is counterbalanced by the joint volume of links to other countries. Additional esthetical constraints enhance readability by enforcing a minimal distance between any two nodes. The resulting placement of the countries in the images is an equilibrium distribution of the connectedness by trade volumes and the imposed esthetics. The algorithms that are used to order the empirical information are known as spring embedders, a family of algorithms that are based on force directed placement (Eades 1984, Kamada/ Tawai 1989). Krempel has refined the spring embedder technique to handle valued graphs and two-mode data (Krempel 1999).

The volumes of the trade flows between any two countries describe the exports and imports of each country and their bilateral trading balance. The sectoral balance for each

country is symbolized with spheres. The size of the spheres represents the volumes of imports and exports. A 'mushroom' symbolizes a country with a trade deficit (higher imports than exports), a complete 'sphere' a country with a balanced trade account, and a 'potbelly' a country with a surplus. The image below uses the shares of the country-specific destinations and origins as additional information. This allows us to read the direction of trade from the pie charts that are drawn onto each country's symbol.

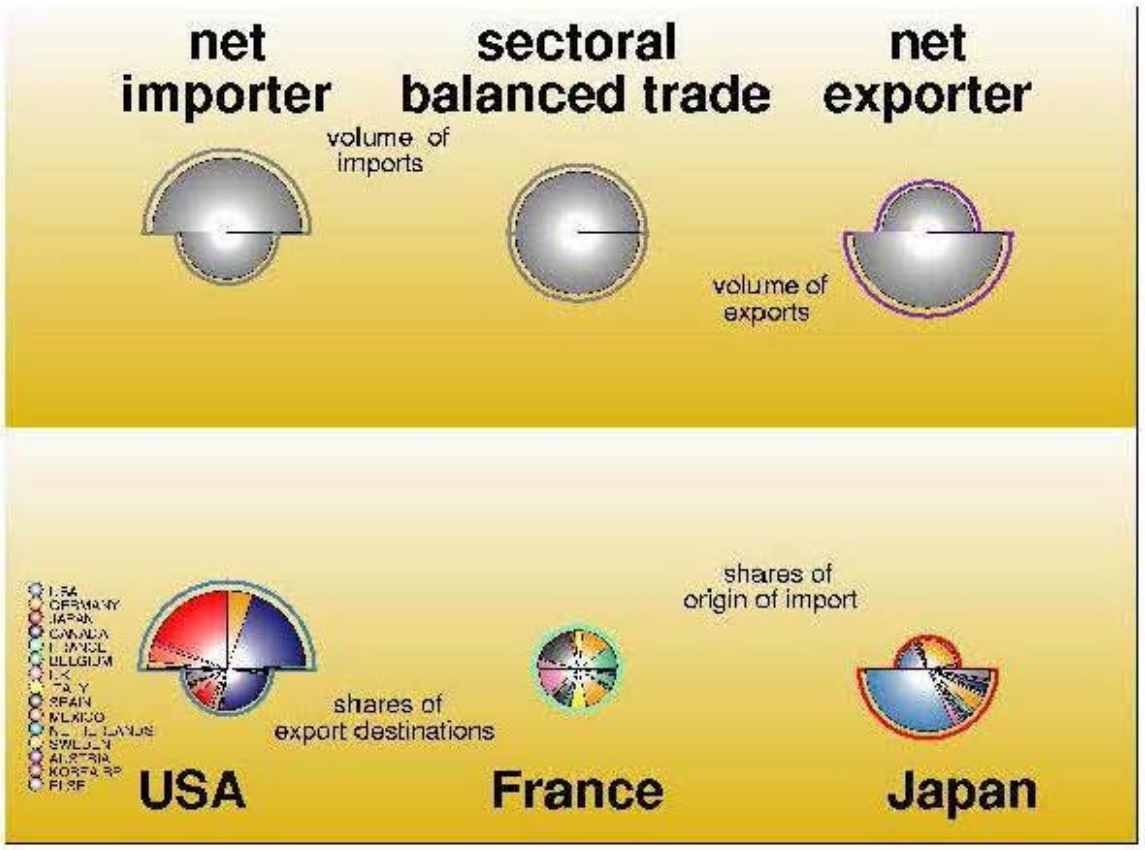


Figure 1: Symbols Used to Summarize the Sectoral Balance of National Trade

We can now read the origin of the imports (top) and the destination of a country's exports (bottom). The dominant light-blue sector in the bottom of the Japanese pie illustrates the importance of the US market for the Japanese exporters, whereas the Japanese imports from the US (light blue, top) yield only a small share of all Japanese imports. This coding of information allows us to evaluate specific phenomena from a world systems perspective and to identify specific structures that can be analyzed with any additional information available. Data on the change of trade volumes and composition of traded goods can be mapped onto the resulting trade structures, visually summarized and aggregated, and linked to the restructuring of the international system. This provides us with the information necessary to examine structural change and its correlates, which allows us to identify some of the underlying dynamics of change. In the case of the global

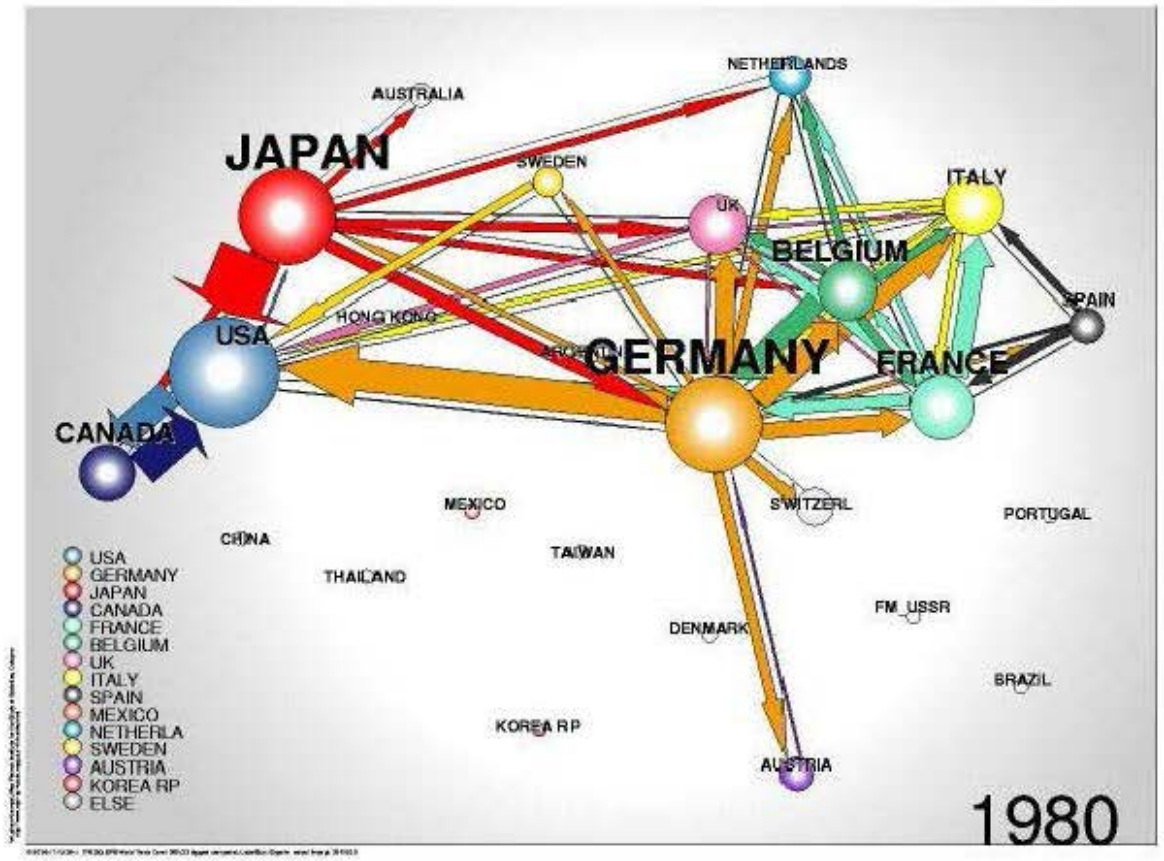
car trade, we will apply these methods to analyze the degree of internationalization and to identify if the overall structure consists mainly of regional patterns, or whether a global tendency towards integration is discernible.

Our analysis is based on the statistics published by the IMF Direction of Trade Statistics and the GATT, which have been further enhanced for statistical purposes by Statistics Canada. The data are comparable across time. The underlying database describes the trade among 160 countries on a yearly basis between 1980 and 1994. The trade flows between nations are broken down to a very detailed level, which allows us to distinguish between all sorts of sectoral trade, even that of male and female underwear. For our purposes it is more important that we can separate trade in cars from trade in car components.

3 THE STRUCTURE OF THE INTERNATIONAL TRADE IN AUTOMOBILES

For 1995, the World Motor Vehicle Data Handbook (1995) reports the production of over 34 million passenger cars worldwide as being supplied by only 38 manufacturers. According to the trade statistics of the IMF, cars in the value of 200 billion US$ have been traded across national borders. Depending on the average value of a single car, this suggests that between 23% ($25,000) and 39% ($15,000) of the total world production is traded on the world market. The share of trade in passenger cars amounts to about 5 per cent of all internationally traded goods. The volume of world trade in cars has almost doubled in value (inflation corrected), while the ratio of trade in unfinished car parts has remained fairly stable, at 34 percent of all traded cars and components. The global car market is highly concentrated: only 25 countries account for 85% of the total volume of cars (by value) traded worldwide in 1994. These countries are mostly the highly industrialized countries of the OECD.

A closer look at the geographical pattern of the automobile trade displays two regional clusters, one of which consists of Japan and North America, while the second contains the European countries, which are grouped around Germany, the largest exporter of the European cluster. Note that the placement of 'countries' in the images have been computed from the bilateral trade flows only. Trade occurs between the two clusters; however, as the visualization reveals, the intensity of flows between clusters is not high enough to integrate them into a system with a single center. The configuration found for 1980 remains mostly stable in the 1994 solution.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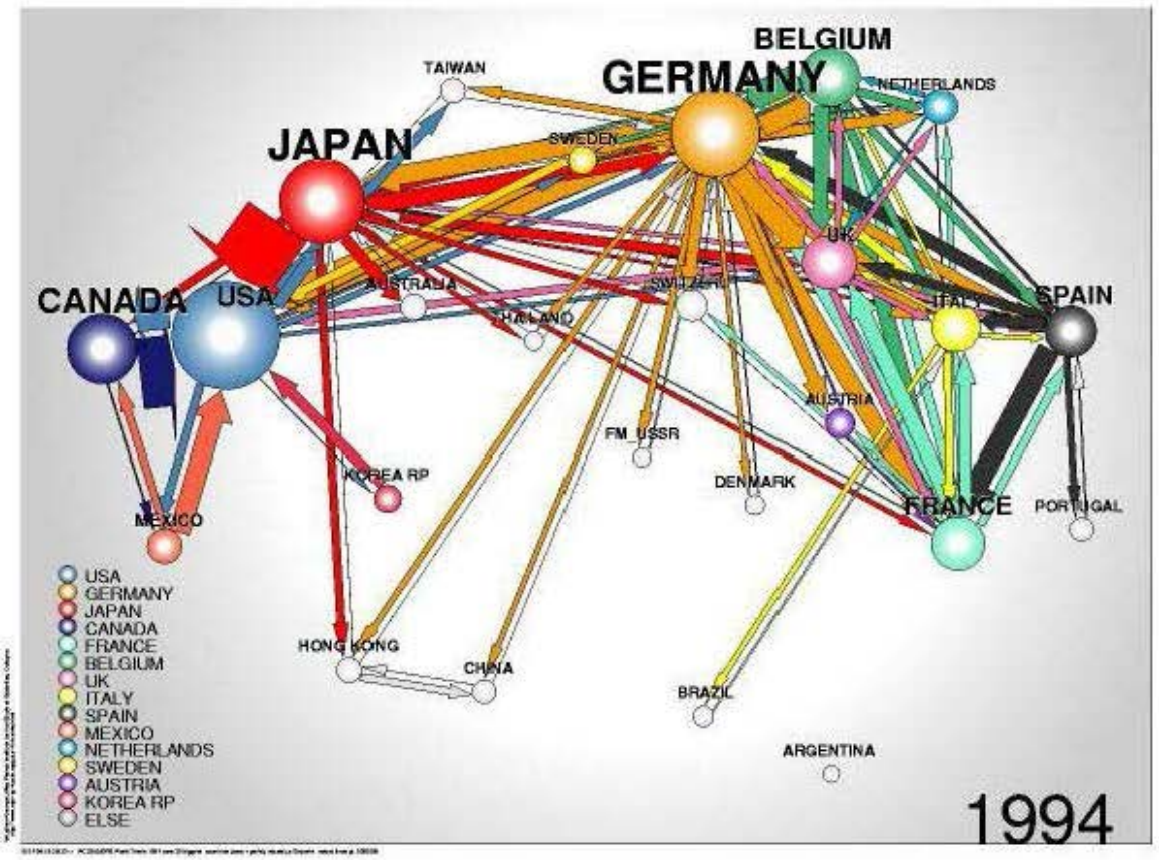


Figure 2: The World Trade in Cars for 1980 (a) and 1994 (b) for the 25 Most Important Countries

Figures 2a and 2b are standardized and allow for an easy comparison. From such a comparison it immediately becomes clear that the structures of 1980 and 1994 show structural changes taking place: within the European cluster Germany increased its orientation toward Japan in 1994. This results from an increase of Germany's shipments to Japan and the relatively smaller volume of German exports to the US in 1994. Owing to the strong inter-European trade flows, the entire European cluster is reoriented. Spain has gained importance in 1994 (Langendijk 1995a, 1995b) and Portugal becomes a visible newcomer. Compared to the 1980 trade pattern, in 1994 the European cluster is more condensed.

The North-American-Japanese cluster contains two new members in 1994: Mexico and Korea. While Mexico is dominantly linked to both the USA and Canada, Korea is almost exclusively connected to the US (Kim/ Lee 1994; Lee/ Cason 1994). There are also stronger connections from the periphery of the total system to both clusters in 1994: both the trade with Argentina and Brazil and the trade with China and Hong Kong surpass the (inflation corrected) volume threshold, which was imposed for the flows of the above

images. While we have imposed value thresholds for the trade flows in the visualizations, the actual country positions in the images as well as the percentages in the following tables have been computed on the basis of all reported trade flows.

Despite the structural changes in the global car trade, one can nevertheless see that continuity prevails over change, as can be read from the following table, which describes the share of world trade of the largest car exporting nations:

Table 1: Share of World Trade in Passenger Cars by Value (in %) in Selected Countries

	1980	1982	1984	1986	1988	1990	1992	1994
DEU	23,14	25,23	22,40	23,94	24,07	24,24	22,35	21,05
JAP	27,51	30,17	29,95	30,70	27,47	24,80	25,04	20,69
CAN	7,00	10,27	15,34	12,6	10,51	8,65	8,01	11,46
BEL	7.29	7,17	5,67	6,53	7,73	7,90	7,23	8,31
USA	7,57	5,49	7,37	6,51	6,77	6,67	7,79	8,17
FRA	10,72	7,92	6,20	6,19	7,05	7,98	7,58	6,89
SPA	2,42	2,03	2,77	2,55	3,12	4,35	5,95	6,05
GBR	3,08	2,67	1,90	1,78	2,60	3.48	3.80	3.93
ITA	3.93	2.45	2.19	2.45	2,92	3.55	2,58	2,92
MEX	0.13	0.07	0.15	0,30	0,39	1,67	1,82	2,60
KOR	0.08	0,08	0.24	1,24	2,36	1,09	1,29	2,06
SWE	1,90	2,30	2,73	2,40	2,17	1,93	1,75	1,69
Rest	5,13	4,23	3,07	2,75	3,49	3,61	4,70	4,09

Table 1 shows that a number of new exporters have joined the car exporting nations. We find Mexico and Korea as the most important new exporters, which is of course a well-documented fact (Shapiro 1993; Lee/ Cason 1994). On closer inspection, Table 1 reveals that, from these 12 countries, seven increased their trade share between 1980 and 1994, whereas five countries declined in importance. The heaviest loss in world market share was suffered by Japan and France, whereas Canada enjoyed the strongest growth in absolute numbers. In relative terms, the newcomers have shown the highest growth rates: South Korea and Mexico have increased their share from almost zero to 2.6% and 2.1% respectively. In absolute terms Mexico has increased its exports from 83 million to more than 5.6 billion and South Korea from 52 million to 4.4 billion dollars. The car industry literature is mainly focused on the description of the success stories in the global car market. The impression that world market competition has changed due to the rising market share of low-wage countries is completely misleading, however. The correlation between the exports of 1994 and 1980 can be used as a rough indicator of market change. Yielding an R^2 of 0.933, the analysis shows that the overall structure of the world market by and large has remained unchanged.

A second table allows us to further investigate the structural stability. Table 2 records the share of passenger cars compared to all exports of a given country.

Table 2: Car Exports as the Share of Total Exports of Selected Countries (in %)

	1980	1982	1984	1986	1988	1990	1992	1994
DEU	7.63	8.87	9.54	10.97	10.32	10.36	10.10	9.99
JAP	12.43	13.02	12.89	15.75	14.89	14.41	14.32	11.37
CAN	6.23	8.81	12.31	14.89	12.55	11.03	11.14	14.10
BEL	7.12	8.52	8.14	10.74	10.97	11.54	11.48	12.30
USA	1.97	1.51	2.35	3.06	2.85	2.75	3.23	3.24
FRA	6.07	5.36	4.91	5.83	6.04	6.49	6.35	5.92
SPA	7.38	6.28	8.78	10.54	10.70	13.34	16.78	16.72
GBR	1.56	1.61	1.39	1.73	2.24	3.04	3.64	3.61
ITA	3.18	2.10	2.20	2.81	3.15	3.60	2.81	3.11
MEX	0.51	0.21	0.40	2.29	2.54	9.86	7.38	8.60
KOR	0.28	0.22	0.60	3.89	5.50	2.82	3.29	4.66
SWE	3.88	5.40	6.91	7.26	6.05	5.74	6.09	5.56
NDL	0.50	0.59	0.70	0.73	1.03	1.19	1.10	1.03

Table 2 reveals the extent to which cars contribute to the total exports in different countries. In Germany, Japan, Canada, Belgium and Spain the export share of cars exceeds 10 percent of the total exports. The importance of car manufacturing has increased for all these countries except Japan. Interestingly, Japan - the country most dependent on car exports in the eighties - has lost her unfavorable position to Spain, who nowadays is the most car-export dependent nation.

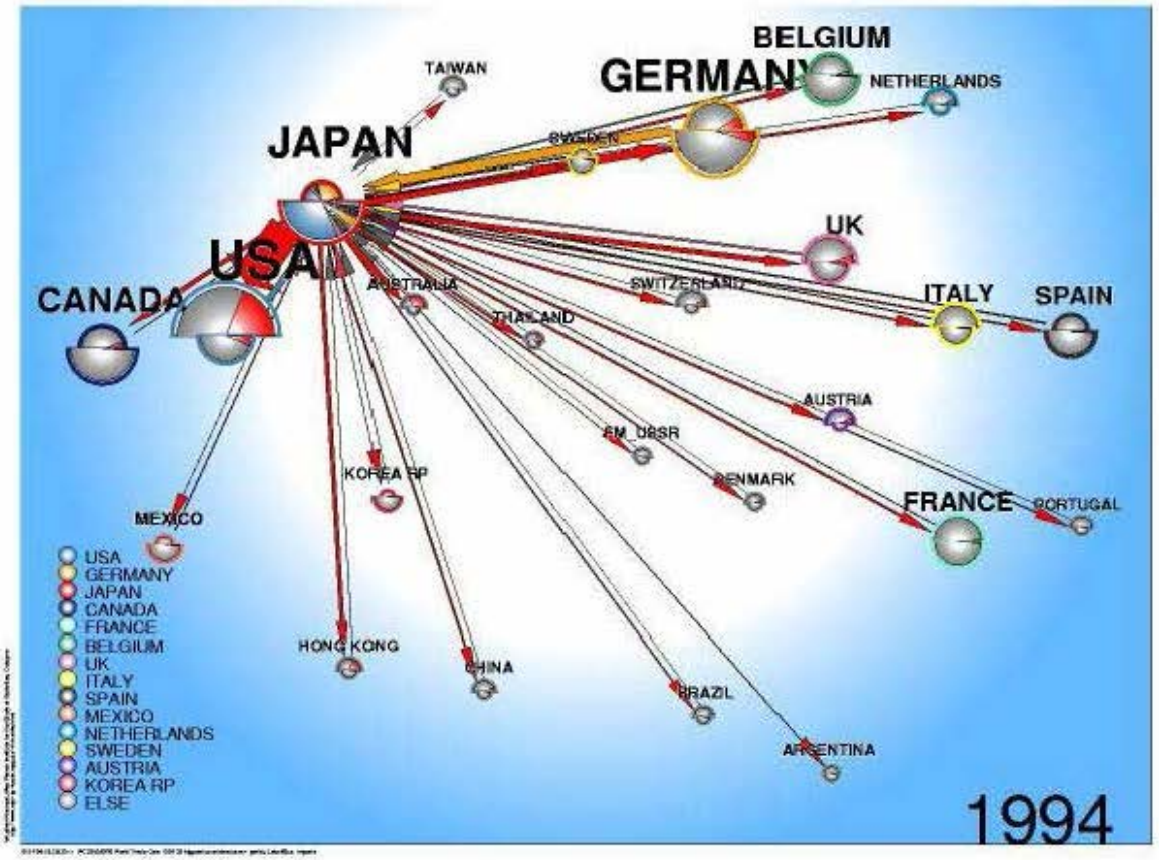
4 COMPETITION OVER THIRD MARKETS

The notion of a growing economic world system and the decline of transportation costs suggests a picture of emerging global competition (Thurow 1992; Wallerstein 1992). The question of whether competition is truly global, however, cannot be answered by pointing to the existence of multinational corporations in distinct parts of the global economy. One way to test for the existence of a global market is to compare prices: only if the price of an homogenous commodity on different world markets does not differ (much) can one speak of a truly integrated, single world market. The frequently cited McDonald's Index indicates, however, that there is very little international convergence of prices.

We have chosen another way to analyze the impact of geography on competition. Our analysis is based on the assumption that the market shares that dominant exporters face on third markets is an illustration of the degree to which global competition exists today. Let us suppose there are only two corporations in the world, but 100 nations: under these circumstances there can be fierce competition along with a geographically determined duopoly, in which each corporation holds a monopoly on, say, 50 national markets.

Hence, for calculating the extent of global competition, third market rivalry may serve as a good indicator.

The next visualizations show the structure of imports and exports in the Japanese and German car trade. The images give the shares of all export destinations for Japan (red) and for Germany (yellow) in relation to the total Japanese and German exports. For all other trade partners, the Japanese shares are given as red and the German shares as yellow pies for the total amount of cars a specific country imports.



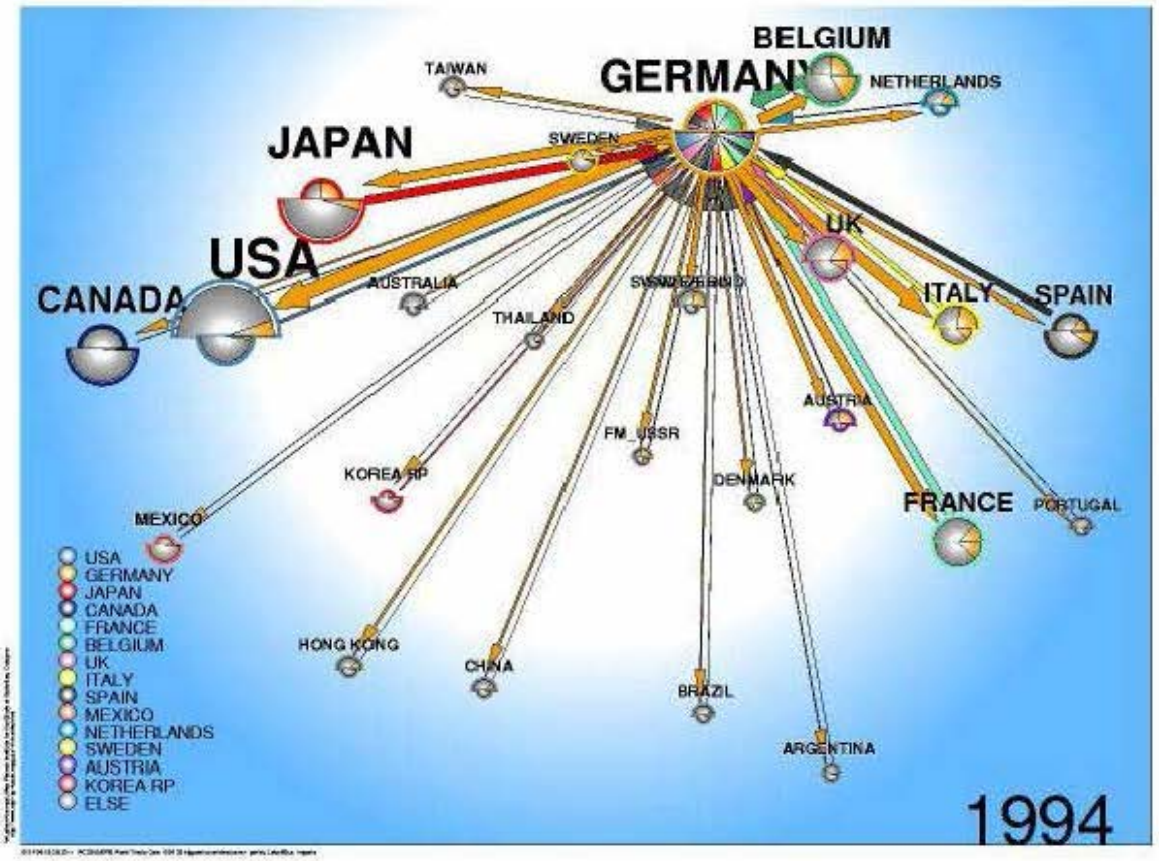


Figure 3: Japan's (a) and Germany's (b) Participation in the World Trade of Passenger Cars. Exports and Imports by Destination and their Relative Shares of Third Markets in 1994

For both Germany and Japan, we find a decrease in imports with increasing distances in the visualization. This highlights the fact that even today geographic distance is an important factor in trade volumes and that globalization is still a long way from equalizing geographic distance as a transaction cost. It also means that there is no strong support for a significant decrease in transaction and transportation costs, from which we might expect changes in the world trade structure. Instead, the geographic pattern of third market competition lets us conclude that the internationalization of corporations is strongly influenced by distance and the number of competitors that have already entered a market.

Combining both single images allows us further to identify the degree of market penetration of single markets by Japanese and German car exports and to point to those markets where market shares of the Japanese exports quantitatively approximate German exports. Owing to the logic of visual reconstruction, we find similar shares occurring for

those countries which are placed between Japan and Germany in the images - Thailand, Switzerland and Sweden - and for Denmark and Hong Kong on the periphery of the system. For all countries placed either to the left of Japan or to the right of Germany we find either a clear Japanese or, respectively, a clear German dominance. There are only few markets among the 25 most important car-exporting nations that can be characterized by a significant coexistence of Japanese and German imports. The result is robust and is not altered by increasing the number of countries. This forces us to conclude that third market competition is relatively weak despite the recent increase in global economic integration.

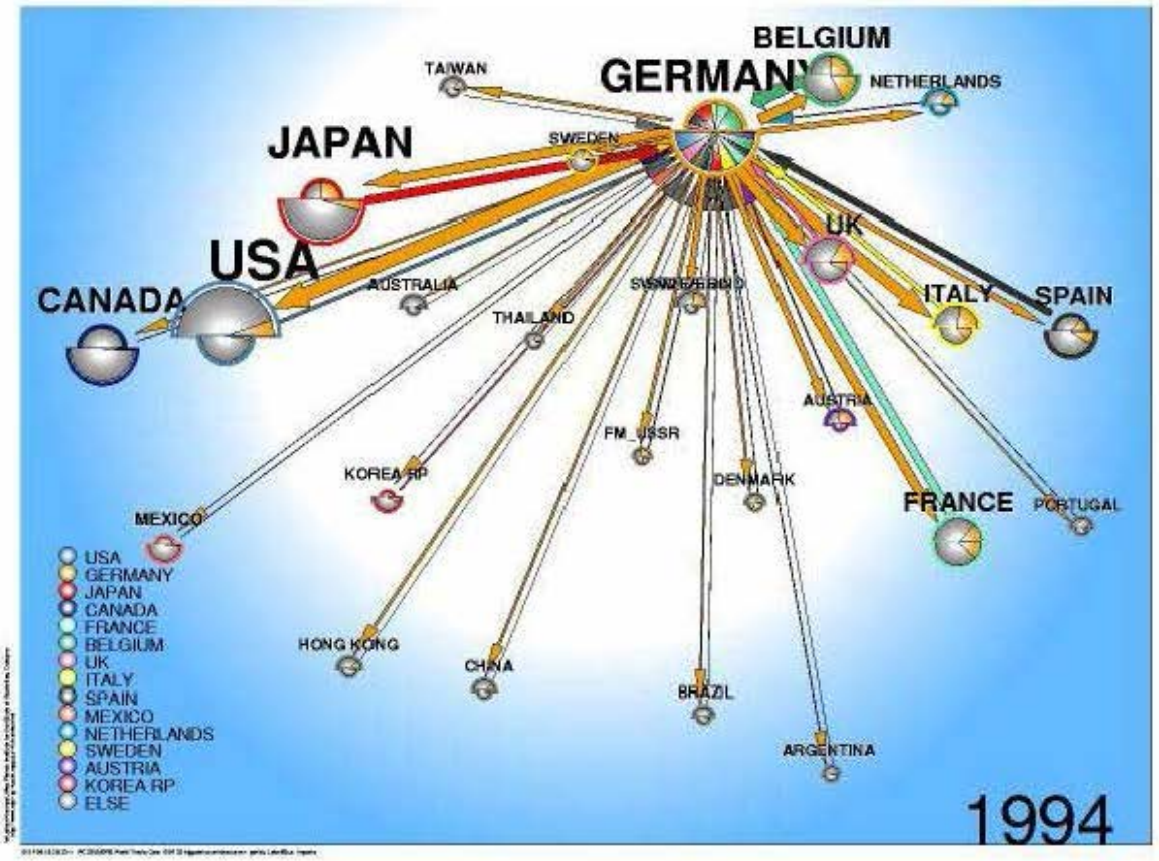


Figure 4: Japan's versus Germany's Penetration of Third Markets

5 STRUCTURAL CHANGE IN THE WORLD MARKET FOR CAR PARTS AND COMPONENTS

Following the previous general descriptions, we are now in a position to approach the more specific goal of our analysis. As mentioned earlier, we set out to describe the potential impact of the structural changes in the international car trade on the international division of labor. In order to identify the degree to which this occurs, we will now use the volumes for the trade in car components as additional information. A

comparison of the two types of trade allows us to identify which locations are connected by cross-border production of cars.

As a first step we will look solely at the organization of international trade in car components and its growth between 1980 and 1994. For the following image, we have colored the volumes of the bilateral trade in components for 1994 with their growth rates since 1980. Red arrows indicate trade flows in 1994 that have grown strongly compared to 1980 (more than 3 times their amount in 1980). The import and export symbols for the nodes now aggregate the exports and imports that originate or depart from a specific country on the basis of this growth classification. The pies show the shares of all destinations in 1994 that have strongly increased, stayed unchanged or declined for the total exports and imports of a country. A completely red pie (e.g. Japan) describes a country that has increased its trade in components with almost all destinations; a blue pie chart (e.g. Canada) indicates a country for which the volume of trade in components with all destinations has declined.

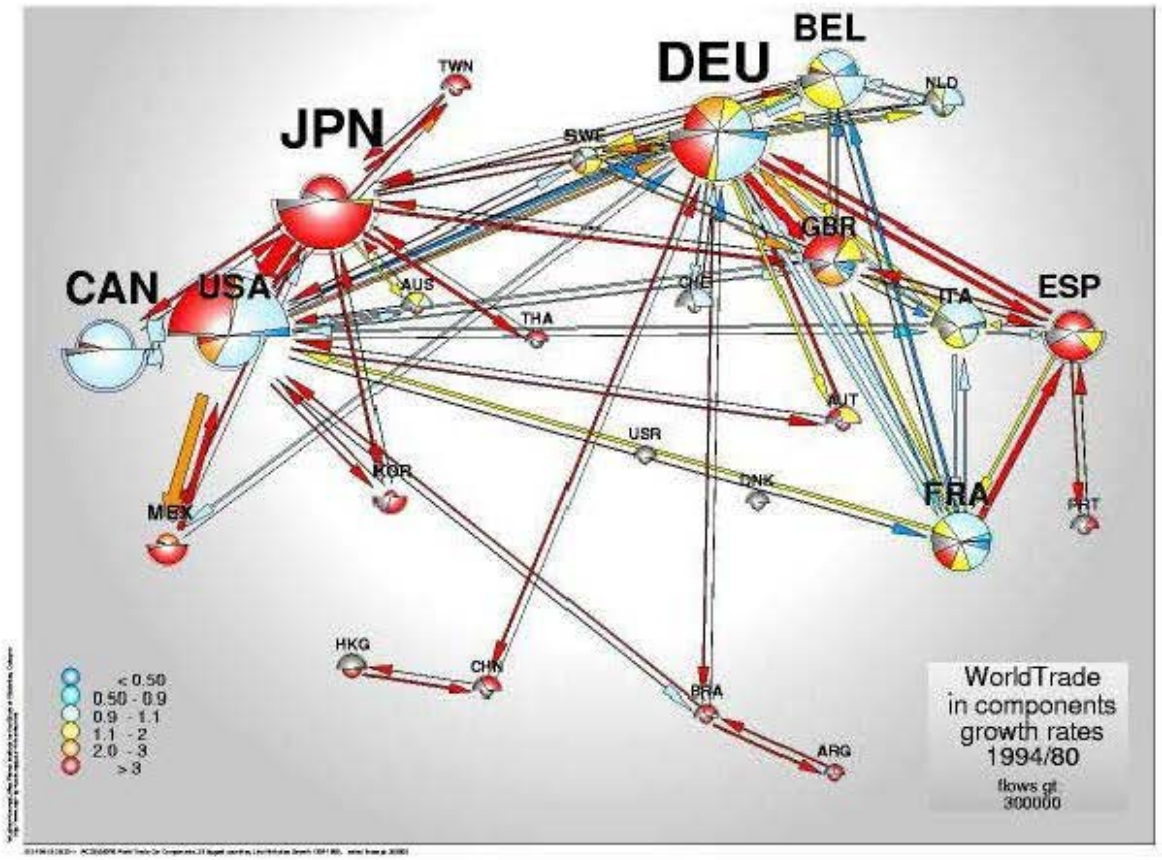


Figure 5: Growth Rates for Trade in Parts and Components 1994/1980

Flows exceeding $ 300,000 in 1994. High growth is shown in red, declining deliveries are shown in blue. The import and export pies aggregate this information and allow classification of the countries by the growth of their component exports and imports.

We see strong growth in the trade of components for Mexico and Japan, as well as for Korea, albeit for a smaller total volume. In the European cluster, we can identify the UK and Spain and to a lesser degree Germany (where the changes in import composition dominate the change in exports) as high growth countries.

The component trade of Japan and Germany, both dominant exporters of their clusters, target mainly smaller countries on the periphery of the total system. The main receivers of Japanese exports are Taiwan, Thailand and Korea. The US industry exports components and parts mainly to Canada, Mexico and Australia. Large shares of German components go to Mexico, Brazil and Argentina.

The high US shares of component shipments to Canada seem to be traditional ones. They have not significantly increased if only growth between 1980 and 1994 is considered. Japan's overall exports have increased sharply and are, with the exception of the UK, mainly directed to the periphery of the North-American-Japanese cluster. Exports and imports of components for Germany show increases only for very specific destinations: the UK and Spain.

For the international trade in components we can identify centers in both clusters; in the North-American cluster we find Japan, Mexico and Korea as countries with a strong growth of trade in car components. In the European cluster this is true for Spain, the UK and Germany.

The question of a transnational organization of an international auto production chain can now be answered through a simultaneous classification of the trade flows of cars and the trade in components. We use both types of trade to classify the total flow through the share of components in 1994.

If the trade between any two countries consists mainly of components, this points to either a cross-border organization of production or an assembly of car components in the destination country (in the sense of import substitution of finished cars). In the image below, we mark trade flows consisting mainly of car parts as red; flows where trade is almost solely made up of fully assembled cars are dark green. The pies show the resulting country-specific aggregation of a country's total trade: whether imports or exports consist mainly of parts (red) or exclusively of cars (green).

Dark green flows occur mainly between the two clusters of the world's car trade, reflecting the fact that trade between the North-American/Japanese cluster and the European cluster consists mainly of finished cars.

Red flows are explained by two factors. First, a high degree of component imports is found for those countries that assemble imported components in order to supply cars locally. Such a pattern is typical for smaller countries or less developed countries. They tend to substitute expensive, imported finished products (which include the cost of labor supplied by the exporting country) with the local assembly of components. This is often a first step toward building up local industries and creating jobs inside the importing country over the long term. Real import substitution will thus lead to a relative decrease in the imports of finished cars or even to the absence of any imports of finished products.

Second, red flows in one direction coupled with green flows in the other reflect an international division of labor in which some countries import mostly components and export finished products, or vice-versa. Such pairs of different colored trade relations are located mainly in the North American/Japanese cluster. US exports comprise mainly parts, and the destinations of these exports are Canada and Mexico.

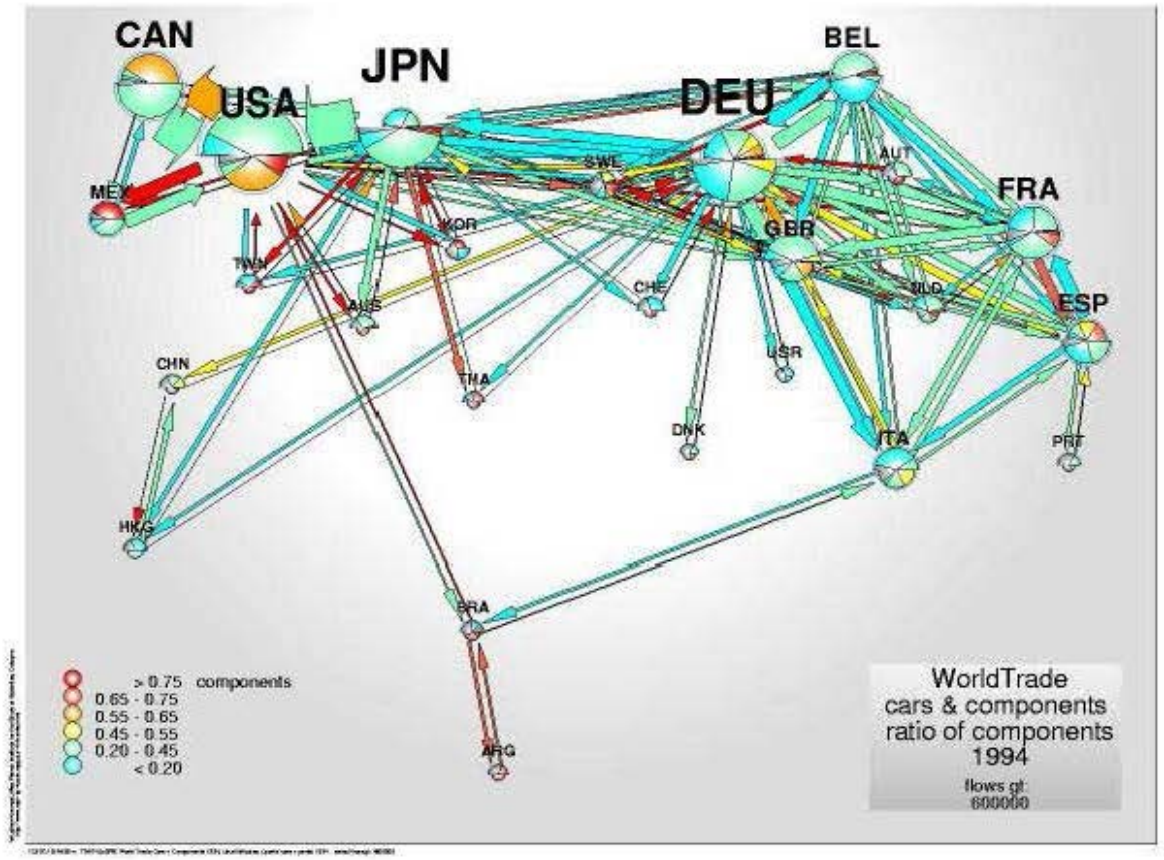


Figure 6: Shares of the Component Deliveries

Shares of the component deliveries of the total exports (parts + finished products) color-coded for trade flows exceeding $ 600.000 in 1994. High shares of components are coded red, flows consisting mainly fully-assembled cars as blue-green. The pies show the resulting country-specific aggregation of a country's total trade: i.e. whether imports or exports consist mainly out components (red) or solely of fully-assembled cars (blue-green).

While the US trade with Canada is more important (by volume), the pattern of specialization for trade with Mexico is almost unique: Mexico's imports from the US consist almost entirely of car components, while its (return) exports to the US consist almost exclusively of finished cars.

Most importantly, patterns of such clarity are not found in Europe and, if they do exist, they are far less dominant. We find a complementing trade flow between France and Spain with flows of components out of France and a reciprocal import of finished cars from Spain, but this is far less developed than the similar structure between the US and Mexico. For Germany, we find a reversed pattern of component imports: the trade with Austria and, to a lesser extent, the trade with the UK. In both cases, Germany imports components and exports mainly finished cars. In Europe, quite unlike the North American division of labor, we find component suppliers to be internationalized, whereas the production and assembly of finished products remains in the old industrial centers.

This clearly demonstrates that the international division of labor and explicit specialization in either car or component manufacturing is more important for American car manufacturers compared to their European counterparts. If it is true that transnational production chains take advantage of the different cost of production factors in the associated countries, our findings raise crucial questions as to the reason for the apparent differences in production chain specialization. Though our analysis is basically descriptive and we are not intent on testing hypotheses, our belief is that historical path dependencies are more important in Europe because of the practice of government intervention in old industrial locations. Once a certain region has developed a sufficiently large car industry, governments tend to support the persistence of the particular industrial location despite its loss of competitiveness. If an European car producer goes bankrupt, a government will almost certainly subsidize any (foreign) corporation that takes over the production facilities (Berg 1988). For this reason, European car manufacturers own production facilities in a number of European countries. Specialization exists only to the extent that smaller cars are more likely to be built in Spain than in Germany (Wells/ Rawlinson 1994).

6 CONCLUSION

Starting from the public concern over the potentially negative consequences of the globalization of international economic activity for the industrialized countries, we have tried to identify the degree to which we can find an internationalization of markets and international production chain in the automobile industry. Our reconstruction of the world economy on the basis of data for the international trade in passenger cars has revealed two local clusters, which have remained fairly stable in their overall structure between 1980 and 1994. In both clusters we have identified new producer countries, which are positioned at the periphery of the local clusters. The volumes that these new countries contribute to the total trade are relatively small. We discern mainly trade in finished

products (cars) between both clusters, whereas trade in car components occurs mainly inside each cluster or with the periphery of the total system.

Significant indicators for an apparent increase in an international division of labor for the period between 1980 and 1994 are found for the North American-Japanese cluster only. A consistent and strongly complementary pattern exists for the US trade relations: both Canada and Mexico receive a very high proportion of US component shipments and export mainly complete cars (back) into the US.

In the European cluster we find such patterns only to a much smaller extent. The American pattern exists only between France and Spain: France exports components and imports finished cars from Spain. For Germany, Austria, and England we find a second type of international organization. Here Austria and the UK export components to Germany, whereas Germany tends to ship complete cars only. The amount of change we have found for the international automobile industry is far less then was expected based on the literature on the globalization of the world economy. We cannot positively identify the existence of a global trend for the automobile industry, by which parts of the domestic production are transferred to countries with low wages. The only country in our study for which the data point in such a direction is the USA. The American car manufacturers use the instrument of low-wage assembly to a much higher degree than their European or Japanese counterparts. Clearly, the comparison of the US and European situations points to deficits in the literature on globalization, especially since the labor costs in Europe are much higher than in North America, which would suggest that European producers are under greater pressure to relocate their industries. Our attempts to explain this shortcoming by reference to political interventions and subsidies remains a mere hypothesis that has yet to be subjected to a rigorous test.

NOTES

[1] Earlier versions of this paper have been presented on several occasions: a the Working Group Netzwerkanalye (Netzkränzchen) , at the MPIfG, and the World Congress of Sociology July 10th 1997, Cologne. We thank participants at these seminars and conferences for helpful and encouraging comments. Special thanks to Gregory Jackson and anonymous reviewers for their comments on earlier drafts of this paper and John Booth for copy-editing our English manuscript.

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