

**Fuscões e Golaços:
Volkswagen in Brazil**

Aaron Brick

December 2004: submitted to Harley Shaiken
University of California, Berkeley

November 2006: revised and submitted to the
2nd Conference of Brazilian Studies in Northern California

1. Industrialization

As a young man returning from France in 1891, Alberto Santos Dumont brought home Brazil's first automobile, a Peugeot¹. It took almost another two decades before the local auto industry's modest start by Ford and General Motors. Their subsidiary firms were incorporated in 1919 and 1925, respectively, to assemble CKD (completely knocked down) cars from kit. This industrial base was installed in Ipiranga (suggestively, the site at which Dom Pedro I declared independence from Portugal), and lasted several decades, long enough for Volkswagen to eventually place their own CKD assembly facility nearby. Some body parts were locally fabricated or rewelded because the imports were not sturdy enough to withstand Brazil's relatively poor roads.

Getúlio Vargas and his successor Juscelino Kubitschek were the executives most responsible for encouraging the development of a national auto industry. Vargas in the 1930s offered tariff rebates on CKD imports, but it is not clear that these inducements were effective in nurturing the industry. He also attempted to purchase the Czech carmaker Škoda during World War II² (it was eventually bought by Volkswagen in 1991).

Midcentury, ECLAC Chairman Raúl Prebisch concluded with Hans Singer that a static level of raw material export is likely to purchase fewer manufactured imports over time³. This thinking motivated the development of dependency theory, which united pessimistic liberal academics and populists desiring self-sufficiency. What these parties missed was Harry Johnson's caveat that protectionist import substituting industrialization (ISI) is "likely to induce... foreign firms to set up local production facilities to satisfy the demand previously satisfied by exports from their home country, rather than to create a domestically owned and operated industry capable of competing successfully with its foreign rivals."⁴ Laplane and Sarti's recent call for "competitive import substitution"⁵ bears comparison. As several East Asian countries have shown, ISI does not necessarily lead to uncompetitiveness. However, that was indeed the trap into which Brazil fell.

Historically depending on manufactured imports from the developed world, Brazil has historically been short of foreign exchange. Its small reserves were so sensitive as to be proactively allocated by

¹ *Auto industry drives the Brazilian economy*

² Nascimento

³ Prebisch

⁴ Johnson

⁵ Laplane and Sarti [2003], pp. 10

the government to expand sectors seen as productive in the quest for industrialization and development. One of the policymakers' intentions was to create a broad network of services, parts, and materials suppliers which could support a national auto industry. Government policy banning from tariff exemption goods which could be constructed domestically, and its corresponding list of local producers and products, dated from 1911⁶.

Vargas oversaw the creation of the *Companhia Siderurgica Nacional* (National Steel Company) as dictator in 1941 and that of Petrobras as President in 1953, just before he killed himself. In the first case, the mills and machinery were designed in order to eventually accommodate the sheet metal sizes used in autobody construction. Vargas was very conscious of the motor industry's need for materials and supporting firms, and invited comment on how to achieve them. The Joint Brazil-U.S. Economic Development Commission's final report to him in 1953 recommended 41 mostly infrastructural projects, many of which were pursued.

The monetary authority *Superintendencia da Moeda e Crédito* (Superintendency of Money and Credit) released two important "Instructions" which lay a foundation for the financial and monetary constructs necessary to accommodate the auto industry. Instruction 70, of 1953, imposed multiple exchange rates for different classes of imports; Instruction 113, two years later, simply gave a preliminary welcome to foreign investment. The Bank of Brazil's *Carteira de Exportação e Importação* (Export and Import Bureau) also issued two interventionist Notices. Notice 288 banned the import of 104 parts it asserted were already manufactured in Brazil as of 1952; Notice 311, the following year, forbade the import of assembled vehicles. These policies supported Vargas's goals of coving auto manufacturers into local production. Fear that CKD import would also be banned was a strong motivator for industrial development.

Vargas was partial to tractors as the best sector for the new motor vehicle industry's initial focus. Admiral Lúcio Meira, head of the new Subcommittee of Jeeps, Tractors, Trucks, and Passenger Cars, convinced him that passenger cars might do better, despite the visible bias in his subcommittee's title. In 1952, one Ford director invited to speak to the group declared that the local production of engines was 8-10 years away because of Brazil's lack of supporting firms. Admiral Meira concluded that "we can see that they will use national products only when required by Government policies."⁷ In 1954, the

⁶ Abreu et al, pp. 5

⁷ Ventura Dias, pp. 18

body became the *Comissão Executiva da Indústria de Material Automóbilista* (Executive Commission of the Automotive Material Industry).

Meira was transferred against his will to a naval base in Salvador, but managed to make contact with Juscelino Kubitschek during the latter's run for the Presidency after the suicide of Vargas. The Admiral suggested continued development of the auto industry as a rallying point for the campaign, and the candidate agreed. This focus became counterpart to his famous slogan “*50 anos em 5*” (fifty years [of development] in five). Promoting his *plano de metas* (plan of goals) upon taking office, JK convened the *Conselho do Desenvolvimento* (Development Council). This body assembled representatives of several decision-making bodies key to the nascent auto industry. Consolidating the committees, JK was able to make quick policy decisions and run the automotive sector by decree.

Another group, the *Grupo Executivo da Indústria Automobilística* (Working Group for the Automotive Industry), GEIA, was headed by Admiral Meira and established to advise and regulate the unfolding of the auto industry. The group concluded that the demand for trucks justified their production; parts suppliers should be separate and local; and that private and foreign investment were to be preferred. These last requirements can be viewed with skepticism in retrospect. Brazil being capital-poor, only the government could have come up with the tremendous funding needed for such endeavors; it did initially fund the National Motor Factory, but then sold it to Alfa Romeo. Nearly the whole industry started out in foreign hands. In the end, the subsidies deployed to encourage the industry were largely enjoyed by foreign capitalists, and Brazil has no prominent vehicle brand of its own (though see the discussion of Gurgel in *Models*).

Besides designing the subsidies, the GEIA also acted as doorman to the industry. It accepted plans from manufacturing enterprises wishing to enter the car market under conditions that were operationally strict and fiscally generous. In exchange for tax and tariff exemptions, easy loan terms, and reservations of foreign exchange, the carmakers committed to increase the local content of their products by weight in six stages. JK's decreed plans described the requirements; passenger cars could be 50% foreign in 1957 but had to be 99% local by the end of 1961. Nonetheless, the President of VW do Brasil asserted in 2003 that production was nationalized to avoid currency fluctuations⁸.

⁸ *Volkswagen do Brasil Celebrates 50th Anniversary*

Proposed Stages of Localization of Manufacture of Volkswagen do Brasil, 1957⁹

<u>Effective until</u>	<u>official requirements</u>	<u>VW proposal</u>	<u>difference</u>
July 1, 1958	50%	25.47%	24.53%
July 1, 1959	65%	41.16%	23.84%
July 1, 1960	85%	66.19%	18.81%
December 31, 1961	95%	90.74%	4.26%

Eighteen such plans were approved, of which eleven resulted in vehicle production. The GEIA's offer was lucrative enough to get the European firms' attention; the value of incentives deployed in calendar year 1959 were estimated at twelve billion cruzeiros¹⁰. The GEIA was wound up in 1960, and its role in sector incentivization was taken over by the *Conselho de Desenvolvimento Industrial* (Council of Industrial Development), whose group GS-V currently addresses policy relevant to the auto industry.

⁹ Ventura Dias, pp. 30

¹⁰ *ibid*, pp. 151

Carmaker Proposals Accepted by the GEIA¹¹

<u>Venture</u>	<u>Owner/Licensor</u>	<u>Manufacture</u>	<u>Outcome</u>
<i>Proposals Leading to Production</i>			
Fábrica Nacional de Motores*	FNM (BR)	18,600 CP	Bought by Alfa Romeo
Ford Motors do Brasil	Ford (US)	67,760 CM	Current player
General Motors do Brasil S.A.	GM (US)	64,231 CL, CM, C	Current player
International Harvester Máquinas S.A.	IH (US)	10,000 CP	Bought by Chrysler
Mercedes Benz do Brasil S.A.	Daimler-Benz (DE)	90,231 CM, CP, O	Current player
Scania Vabis do Brasil S.A.*	Scania (SE)	1,792 C	Produced only trucks
Simca do Brasil S.A.*	Simca (FR)	21,000 CP	Bought by Chrysler
Toyota do Brasil Ind. e Comércio	Toyota (JP)	9,500 U	Current player
Vemag S.A.*	Novo Mundo (BR) / Auto Union (DE, 13%)	23,684 J, U	Bought by VW
Volkswagen do Brasil Ltda.*	Volkswagen (DE) / Monteiro-Aranha (BR, 20%)	50,870 C, U	Current player
Willys-Overland do Brasil S.A.*	Willys-Overland (US)	64,231 J, CP, CR, R	Bought by Ford

Proposals Not Leading to Production

Borgward do Brasil S.A.	Borgward (DE)	10,000 CP	Parent went bankrupt
Chrysler-Willys do Brasil S.A.	Chrysler (US) / Willys (US)	22,000 CP**	Collaborators split up
Fábrica Brasileira de Autos Alfa	Alfa Romeo (IT)	9,900 CP	Abortive FMN merger
Indústria Nacional de Locomotivas	Krupp (DE)	1,200 CP**	Project abandoned
Máquinas Agrícolas Romi S.A.	BMW (DE)	8,500 CP	Makes machine tools
NSU Brasileira S.A.	NSU (DE)	10,000 CP	Bought by Audi
Rover do Brasil S.A.	Rover (UK)	4,800 J**	Several owners

Key:

* Launched with some local capital

** Figures only for year 1960

C = *carro do passeio* (passenger car),

CL = *caminhão leve* (light truck), CM = *caminhão medio* (medium truck),

CP = *caminhão pesado* (heavy truck), CR = *caminhão militar* (military truck),

J = *jipe*, (Jeep), O = *ônibus* (bus), R = *rural* (work truck), U = *utilitário* (van).

¹¹ Pimenta; Ventura Dias; Volkswagen; *O BNDES e o Plano de Metas*

2. Experience

Shortages during World War II, when many cars had been taken off the road for a lack of parts, inspired the development of a domestic industry to provide them. It overwhelmingly consisted of São Paulo garages who made parts as they were needed. When foreign firms entered this illiquid market, these proto-manufacturers rapidly relinquished market supremacy to the discipline and scale of the operations backed by foreign capital. In the particular case of rubber products, multinationals had always dominated local firms. Whatever the origin of their capital, the presence in Brazil of a network of parts suppliers has enabled auto manufacture.

Interfirm linkages via supply chain and *Sindipeças*, the association of parts manufacturers, have embodied organizational and institutional attempts towards the goal of connecting economic vanguard and rearguard, as described by Unger. However, the Brazilian parts sector took years to approach competitiveness with the foreign-funded suppliers. Brazilian firms have now become Tier 1 suppliers to automakers.

Modern carmaking depends on the prior foundation of complementary industries. Besides commonly occasioning the further growth of input markets by the backward-linkage effect, vehicle production is predicated on the nearby availability of heavy industry and manufacturers of complex subsystems. This was not the case in antiquity, when cars could be designed and built in merely sophisticated garages. Today, installation of an auto factory is a major capital-intensive endeavor. With so much at stake – Volkswagen do Brasil's recent plants have cost nine digits – location is just as paramount as in the residential real-estate market. Any potential to decrease shipping or collaboration costs is welcome. The auto industry already accounts for 10% of worldwide trade.

Given the incredible importance of geographic location to auto manufacture, there are two main reasons for auto manufacturers to move afield into potentially unstable developing countries. The more common is to exploit cheaper labor, probably somewhere neighboring a major market. These plants tend to be in developing countries just over borders from the rich world, locally staffed but managed from the parent. In this case, the firm's major concern is cost reduction, in order to stay competitive in the important target market. One example of this sort of carmaking globalization is the parts industry housed in Mexican *maquiladoras*.

In the other model, of which Brazil is an example, production is convenient to no mature markets; the target is the growing domestic market. Strategies largely seek to expand the customer base, focusing on the inexpensive entry class vehicles most accessible to middle-class Brazilians. One problem with this model is strategists' difficulty in estimating the size of the fully developed market, which involves predicting when adoption might slow. A second is that currency instability affects both production and demand: when Brazil devalued the real in 1999, auto sales plummeted. These issues are not insurmountable, but Volkswagen did not build large factories in Brazil until rather intensive government intervention convinced it to do so.

Industrialization is not as good a proxy for development or growth as policymakers assumed. The gradual and painful exposure of local manufacture to global competition made increasingly clear that the market failures resulting from policy interventions were not fully understood. The ISI auto policy suffered from a quasi-pharaonic belief that the Brazilian auto market was large and unique enough to support a local auto industry. This move did develop a large job market around São Paulo, at the cost of potentially more expensive vehicles. Urban-rural inequality may have been increased by policy and investment catering to suburban manufacturers. Lastly, profits from such industry were also likely to be repatriated abroad.

Brazil's large labor surplus did not indicate the development of such a capital-intensive industry. Nonetheless, Ventura Dias, author of the most comprehensive study of the auto industry's creation, calls it "a successful experience of industrial sectoral planning."¹² Brazil does have one of the Third World's largest and oldest auto industries, providing employment and skills on a large scale. The sector has always been dominated by foreign money: Only three of the original eighteen automakers had partial local funding, and of these only Volkswagen, with 20% owned by the Monteiro-Aranha investment group of Rio de Janeiro¹³, was not taken over.

The two enterprises established with larger shares of national capital found it difficult to procure more funding, and were bought out within a decade by firms from the developed world. Chrysler bought Simca and International Harvester's local operations; Volkswagen forcibly took over Vemag; Alfa Romeo bought the publically funded Fábrica Nacional de Motores (National Motor Factory). By the late 1960s, Volkswagen, Ford, and GM controlled 89% of the Brazilian vehicle market.

¹² Ventura Dias, pp. 34

¹³ *Volkswagen do Brasil Celebrates 50th Anniversary*

3. Resources

The story of Ferdinand Porsche's bulbous design and Hitler's enthusiasm for the stamp-book savings scheme which allowed the German proletariat to purchase the *KdF-Wagen* (Strength through Joy Wagon) is well known. Despite early skepticism, the iconic car gained a worldwide reputation for stylish practicality. Along with Volkswagen's small buses, it would become especially associated with the U.S. counterculture in the 1960s, and retain that cult status. Its shape is recognized almost universally, along with other such distinctive forms as the glass Coke bottle or Eiffel Tower. This particular piece of intellectual property gave Volkswagen a powerful position from its arrival in Brazil.

Like other subsidiaries of large corporations, Volkswagen do Brasil has the potential to avail itself of many resources from its parent: finances, designs, managers, and so on. This flexibility seems likely to have helped the venture afford a longer-term viability horizon than a locally funded automaker. While yearly profit statements may not be available, it seems certain that Volkswagen purchased market share in Brazil long before benefiting from it. Luckily for the company, if not the country, successive heavy-handed governments repressed concerns about labor.

Vargas's 1930s decrees and 1943 *Consolidação das Leis do Trabalho* (Consolidation of Labor Laws) established a lasting labor law framework, not even much altered by the 1946 constitution adopted between his terms in office. The arrangement was described as "corporatist" by Erickson: unions were beholden to the executive, who could more or less impose his will upon them. "Brazilian labor legislation ... carefully circumscribes the legitimate activities of workers' and employers' organizations, and creates mechanisms for government intervention in union elections, finances, and internal affairs."¹⁴ Ostensibly complementing labor organization was a social security system for workers which, though "actuarially sound"¹⁵, never functioned owing to incentive and enforcement problems. Labor was officially organized at local, regional, and federal layers as *sindicatos* (unions), *federações* (federations), and *confederações* (confederations). The *Sindicato dos Metalúrgicos* (Metallurgists' Union) of São Bernardo do Campo, in which Lula rose to prominence, was founded in 1959.

The early 1960s saw repeated industrial striking, general and sectoral, though workers in the auto sector did not take a leading role. General Emílio Garrastazu Médici's administration subsequently cracked down on labor, forbidding strikes; two were put down by force in 1968. "The military

¹⁴ Erickson, pp. 35

¹⁵ *ibid*, pp. 32

government simply decapitated the radical labor movement.”¹⁶ Not only were their organizations attacked, “workers were brutally repressed during the military regime, and ultimately forced to shoulder the costs of its austerity program.”¹⁷ This correlation is unsurprising: “when the government denies political participation to the working class, the denial of economic participation follows.”¹⁸ Getúlio’s cherished minimum wage fell to a fraction of its previous value, even as the economy boomed under the *milagre brasileiro* (Brazilian miracle).

The *Congresso Nacional da Classe Trabalhadora* (National Congress of the Working Class). It is currently Brazil’s biggest union federation. Though their goals have often been linked, the CUT and Lula’s Workers’ Party have stressed their independence. Syndicates founded under the dictatorship have tended to connect less with government than their corporatized predecessors. Ironically, it took repression in order to develop more independent institutions.

In the industry’s fiscal crisis of 1999, Volkswagen cut a deal with the metallurgical syndicates in São Bernardo do Campo and Taubaté. The workers, which had struck, agreed to a four-day work week and lower salaries in order to avert layoffs. Strikes also occurred in 2003 over proposed layoffs. Volkswagen’s relations with labor, fraught with impasse but able to compromise, have not been remarkable in the Brazilian context.

Volkswagen, like other multinationals, increasingly emphasizes its social responsibility, quality control, environmental soundness, worker training, and labor standards. In 2005 the company held a “Regional Environmental Protection Conference” in Brazil. Their annual reports give only light information, but the SAM Group’s 2004 sustainability evaluation of VAG¹⁹ gave it a positive score. The group claims that the Taubaté plant’s industrial water recycling facility is Latin America’s largest²⁰.

¹⁶ *ibid*, pp. 158

¹⁷ Shapiro

¹⁸ Erickson, pp. 75

¹⁹ Piekkola, pp. 1

²⁰ *Fábrica do Gol instala maior complexo de reciclagem de água da América Latina*

Fuscas appeared in Brazil from 1950, when the Brasmotor company of São Paulo imported several. Volkswagen had looked around the previous year and decided that Brazil would be a good place to launch small-scale regional production. In 1953, it founded Volkswagen do Brasil, its second regional subsidiary (one year after Volkswagen Canada), and its first plant outside Germany. This small factory in the Ipiranga district of São Paulo employed 12 workers and assembled imported CKD kits from Germany. In four years of operation it assembled about 2,800 Fuscas (Beetles, sedans) and Kombis (buses, transporters).



Ipiranga assembly plant, 1950s²¹



JK celebrating the Fusca, 1959²²

When government policy obliged Volkswagen to expand and prepare for wholly local production, it established its headquarters on Via Anchieta in São Bernardo do Campo. This has been the subsidiary's main facility and largest plant since 1957; it was remodeled in 2002. In the Anchieta plant's heyday, it employed 37,500 workers (who went through 10,000 liters of coffee and 1.5 tons of sugar a day). Its design section, responsible for the Brazil-only models, was once the largest in Latin America, with 450 engineers. There are now 1,500 engineers on the site, but thanks to the parent's platform and top-down strategies, their creative leash is shorter.

The Anchieta plant now boasts 400 robots able to cut and weld steel panels. 2003 saw President Lula, who became famous as a worker for Scania in São Bernardo do Campo, attend Volkswagen do Brasil's fiftieth anniversary celebration there. Karmann-Ghia do Brasil, a subsidiary of Germany's Karmann, is

²¹ Volkswagen do Brasil

²² *História do Fusca*. Almost no convertibles were produced.

two kilometers towards town on Via Anchieta.

Established in 1976, the plant at Taubaté was Volkswagen do Brasil's second large facility, and the last opened until the wave of expansion in the 1990s. In 1997, it sported 167 robots, 69 of which worked on paint. Its peer in São Carlos pioneered the use of robots in engine construction. That plant achieved a quick productive cycle, allowing it to reduce stock parts and the space required to store them, and making localized delays less harmful. 1999 also saw the opening of the São José dos Pinhais plant near Curitiba. Operated by Audi, it produces the luxurious A4 platform cars for domestic sale and export.

The Resende plant is frequently cited as innovative for its implementation of the Modular Consortium model, a highly parallel, just-in-time style of manufacturing. This otherwise modern plant builds Type II vehicles, whose design is basically unchanged since 1950. In a more radical version of the “condominium” industrial model, the Resende factory is composed of seven “miniplants,” each staffed and indeed owned by Volkswagen’s suppliers. None of the carmaker’s own personnel participate in vehicle assembly; they are responsible only for the quality control stage, as complete units leave the production areas. Those which pass are purchased by Volkswagen. *The Economist* reported in 1998 that only two-thirds passed muster, giving the plant very low productivity. However, its defect rate was still declining as of 2000. In 2003, Volkswagen AG announced its intention to construct a plant in Mexico modeled on the Resende factory²³.

As of 2004 Volkswagen do Brasil operated five plants, three making cars, one trucks, and one engines. All were built or upgraded in the previous decade and are in São Paulo or a neighboring state. Their total capacity was 3,200 vehicles per day; three hosted many employees of partner firms as well as Volkswagen personnel. Several have also achieved certain ISO 9000 and ISO 14000 certifications²⁴.

Volkswagen’s network of dealers is the first layer in its demand chain. The predecessor of the *Associação Brasileira dos Distribuidores Volkswagen* (Brazilian Association of Volkswagen Distributors), Assobrav, was organized in 1968. Membership declined through the late 1990s. As of 2000, there were 620 distributors in the country, against 730 in 1997²⁵.

²³ Lyne

²⁴ *ibid*

²⁵ Pimenta, pp. 73

Factories of Volkswagen do Brasil, 2006²⁶

Site	Operation	Cost	Product	Capacity	Employees
Ipiranga, SP	1953 - 1957	?	CKD I, II	2	12
São Bernardo do Campo, SP	1957 - 2002	?	I, II, Brasilia	?	37,500 at peak
<i>Remodeled</i>	2002 -	\$800M	BX, B2, II	1,600	15,000 VW + 5545
Taubaté, SP	1976 - 1999	?	BX, parts	?	?
<i>Remodeled</i>	1999 -	\$120M	BX	1,050	6,500
Resende, RJ	1996 -	\$250M	II, trucks	112	1,400 VW + 286
São Carlos, SP	1996 -	\$250M	motors	2,800	535 VW + 335
São José dos Pinhais, PR	1999 -	\$750M	A4, BX	550	3,000

Resende Miniplants²⁷

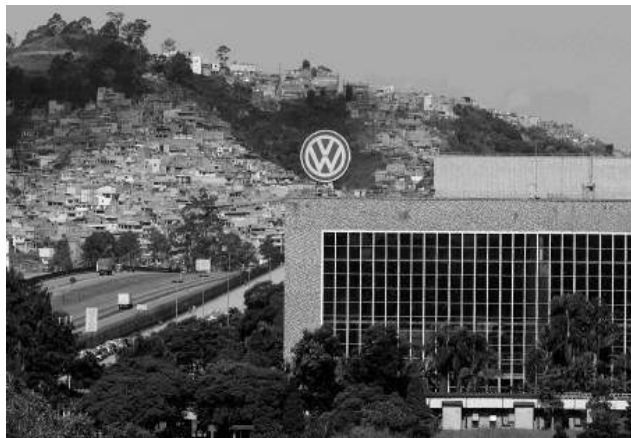
Company Responsibility

Iochpe–Maxion	Frame assembly
Rockwell	Axle & suspension assembly
MWM/Cummins	Drivetrain assembly
Eisenmann	Paint
Delga	Cabin assembly
VDO	Interior trim
Volkswagen	Quality control

Resende Defect Audit Scores²⁸

Date Audit Score

12/1996	3
12/1997	3.05
12/1998	2.5
12/1999	2.2
9/2000	2.05



Anchieta headquarters²⁹



Resende plant³⁰

²⁶ Volkswagen Sala de Imprensa

²⁷ *Pesquisa No. 29*

²⁸ *ibid*

²⁹ Volkswagen AG

³⁰ Reuters

4. Models

In the ISI period, Volkswagen was highly identified with particular models. Vehicles based on the Type I (Fusca) and Type II (Kombi) platforms were all the group made in the thirties, forties, and fifties. The two shared curves, anthropomorphically prominent round headlights, and aircooled four cylinder engines mounted in the rear. They were assembled at Ipiranga and, subsequently, the giant Anchieta facility in São Bernardo do Campo. As of 1961, production reached 95% local components by weight.

The Fusca, compact and economical, neatly prefigured the “global car” phenomenon. In Brazil as in developed countries, it successfully served the masses. An even cheaper variation was the spartan and chrome-free *Pé de Boi* (Bull’s Foot) edition. The 1970s Super Beetle was appropriately marketed with the Portuguese augmentative mode as *Fuscão*. Local manufacture of the Fusca began gradually in the late fifties and ended after a long decline in 1986. It was brought once again into production in 1993, again through subsidization, by Itamar Franco’s government. That administration sought to support production of popular global cars. The Fusca reappeared with three-point seatbelts, among other updates, but it was so outdated that sales were once again a failure. It was again retired from Brazil in 1996, after which January 20 was declared *Dia Nacional do Fusca* (National Beetle Day)³¹. The aircooled Kombi engine was retired with a commemorative edition in 2005, replaced by a watercooled “Total-flex” unit (see *Innovations*).

Volkswagen do Brasil embarked upon several tangents from its main business of selling Fuscas and Kombis. Using Fusca mechanicals, Karmann-Ghia do Brasil produced its eponymous sporty design from 1962 to 1975, as well as the stunning Touring Coupe more briefly. Rather than receiving the Type III or IV series from its parent, Volkswagen do Brasil designed and built its own next-generation aircooled vehicles. Notable among them were the Brasília, built for the newly important station wagon sector. It was a particular success, even being built in Nigeria for that market as the Igala. Two extremely sleek but unsuccessful sportscars, the SP-1 and SP-2, were also developed. In 1970 Volkswagen do Brasil produced its millionth vehicle and made its first exports, of Variants to Mexico and Fuscas to Bolivia. Car number ten million was built in 1993, and the fifteen millionth in 2005.

³¹ *The VW Beetle and the Pop Art-Arte & Fusca*



Brasília³²



Karmann-Ghia Touring Coupe³³

Volkswagen AG acquired DKW-Auto Union from Daimler-Benz between 1964 and 1966, then picked up NSU, and rebadged the lot as its Audi division. From it, Volkswagen assumed technology and design which it used to make a radical design shift in its main product line. Water cooling was finally added to their engines, which were now transversely mounted in the front of the car, completely unlike the rear-engined aircooled design. The modern, angular Golf (Rabbit) and Passat (Dasher) were designed in the new “folded-paper” style by ItalDesign’s Giorgetto Giugiaro. Oddly for a developing market, the more upscale Passat would be built and sold in Brazil, but the Golf not. This latter was a rather explicit substitute for the aging Beetle, but as the old model still sold well in Brazil, Volkswagen was in no hurry to supplant it. The Passat was available for almost fifteen years and included two notable variations, the sporty TS and the Iraquiano, built for export to the desert with a beefy cooling system. 200,000 of them were shipped to Iraq in the late 1980s. Another major product line is buses and trucks such as the Titan.

The next generation of the Passat (Quantum), called Santana and built on the B2 platform, did not last long in the developed world. In Brazil it has been in constant production for twenty years, and is also still built in China. Santanas are very common as taxicabs. More recent Passats (on the B3 through B5 platforms) have been imported from Germany in much smaller quantities; they are regarded as luxury cars. Even the lowlier Golf, which finally arrived on the A3 platform, is understood to be fancy. The A4 Golf and its direct competition, the extremely similar (and misleadingly named) Audi A3, are built at Volkswagen’s factory in Paraná. Some of these cars are now exported to North America.

³² Photography by author, Rio de Janeiro

³³ *ibid*, São Paulo



B1 Passat³⁴



Audi A3³⁵

The BX platform, developed in Brazil, has been in use since around 1980. It has been the basis of successive versions of the *picape* (pickup) Saveiro, *station* (wagon) Parat, *sedã* (sedan) Voyage, as well as two other important models. The Fox, a high-trim version of the Voyage, was built for export to North America, becoming the only BX car in the United States.

The small Gol³⁶ is a wildly successful global car of Brazilian design, also on the BX platform. As of 2004 it had spent 18 consecutive years, in various iterations, as Brazil's best-selling vehicle. It accounted for 80% of Volkswagen do Brasil's sales in 1997 and outsold the Fusca when it passed 3.1M total units in 2001. The Gol is unquestionably Volkswagen do Brasil's greatest hit, being sold as far afield as Mexico and Russia; half a million have been exported to fifty countries³⁷.

Several other automobile firms constructed vehicles based to some degree on Volkswagen's sturdy, common mechanics. Independent carmakers could not compete against such cheap, well-built drivetrains, so leveraging Volkswagen's mechanical work was their tactic for bringing unusual vehicles to fruition. As such, it was an opportunity for diversification of both the firms and sectors of the automotive market. Principal among these efforts were firms building fiberglass bodies and rugged, simple interiors for a sort of dune buggy. These vehicles were usually convertible – among the very few convertibles on Brazilian roads – and based on Fuscas with 1100cc or 1300cc engines. Most

³⁴ Photography by author, Petropolis, Rio de Janeiro

³⁵ *ibid*, Rio de Janeiro

³⁶ “Gol” is a clever name, referring to both a goal in soccer and the larger Golf. The author thinks the logical next step is an even smaller car called the Go.

³⁷ *VW consolida sua posição de líder nas exportações do setor automotivo*

famous of the buggy manufacturers was Gurgel, who built several such variations in the 1970s and 1980s before embarking upon a project to sell the first car entirely designed and manufactured in Brazil. This unit was the BR-800, a minuscule two-cylinder city car ostensibly seating four. Despite benefiting from government incentives for extremely small car, it was not a great success – a Fiat model soon eclipsed its appeal – but Gurgel earned the distinction for which it set out. The BR-800 featured Gurgel’s “Plasteel” construction: fiberglass over steel tubing.

Puma was another aftermarket builder, producing sleek sports cars based initially on DKW mechanics, but switching to Fusca drivetrains in 1967 when Volkswagen bought out DKW. In the 1970s, the cars were marketed in the US in kit form, and even built in small numbers under license in Durban, South Africa. Their recessed headlights are reminiscent of the Datsun sports coupes of the day. Pumas were available in many variations, hardtop and convertible.



Gurgel buggy with Fusca motor³⁸



1974 Puma GTE, another Fusca derivative³⁹

38

Photography by author, Ilhabela, São Paulo

39

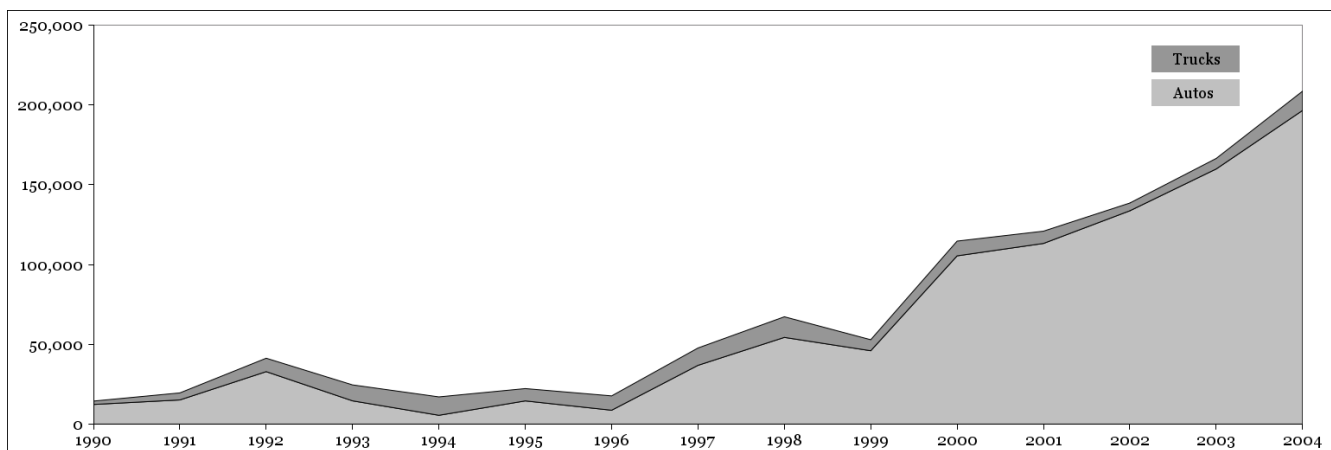
PUMA IMAGES FROM BRAZIL

5. Opening

Despite being predicated at its creation on the domestic market, the Brazilian auto industry has been slowly opening. Such changes were inevitable given the distorted market which the industry was originally provided. Automakers with an industrial base in Brazil have capitalized upon it to export across the continent. More imports have arrived and plants have been reformed. Brazilian operations and institutions have now spent half a century in the difficult process of making this artificial arrangement more efficient.

Containerization has made intercontinental shipping much cheaper in recent decades; São Paulo's port of Santos is Latin America's biggest. Brazil was a founding member of the free trade bloc Mercosur, and now imports many vehicles from East Asia which compete on both price (mostly South Korean firms) and quality (Japanese ones). Chinese vehicles can be expected to further increase competition at the low end of the market. Cars from these Asian countries have provided the first significant competition to the first-world auto firms established in Brazil in the mid-20th century. Nonetheless, Brazilian exports have also boomed despite a strong real; in 2004 Volkswagen do Brasil was Brazil's largest automotive exporter and fifth largest overall⁴⁰. In a reversal of its origin as an assembly garage, in 2004 Volkswagen do Brasil exported over a hundred thousand CKD kits⁴¹ to, among others, Colombia⁴².

Finished-vehicle exports of Volkswagen do Brasil, 1990 - 2004⁴³



40 *VW consolida sua posição de líder nas exportações do setor automotivo*

41 *ibid*

42 *Sala de Imprensa Volkswagen*

43 *ibid*

The nations developing Mercosur in the early 1990s agreed upon several joint Protocols. Two, signed at Colonia (Uruguay), specifically guaranteed intra-zone and extra-zone finance equal treatment, recalling Instruction 113 and facilitating continued integration. Mercosur deals made around the millennium established convergence of the four nations by 2006 on a common 35% vehicle import tariff, a minimum of 60% regional content, and utter internal free trade. Auto parts incoming from elsewhere were still to be subject to a range of tariffs.

Import tariffs for parts were previously reduced in 1995, and the resulting influx of goods upset local firms used to supplying similar products under tariff protection. Before this transition, ten of the top twenty parts manufacturers by sales were locally owned. By 1998, seven of those ten had been bought out by multinationals. Local ownership still prevails among the smaller firms. The local parts industry has stayed concentrated around São Paulo, with less than 20% of its firms in other states. The largest 35 firms each employ more than 1000 people. About half of these suppliers have reached Tier 1, dealing directly with carmakers. Many parts come from abroad nonetheless: Volkswagen do Brasil imports parts from Germany, Argentina, Spain, and Mexico. As in Leontief's paradoxical findings about the trade of the United States, all of these countries have higher labor costs than Brazil.

Size of Parts Manufacturers, 1999 ⁴⁴		Location of Parts Manufacturers, 1999 ⁴⁵	
Employees	Companies	Employees	Companies
1 – 30	63	São Paulo City	158
31 – 60	44	São Paulo Metro Area	97
61 – 125	103	ABCD Zone, São Paulo	90
126 – 250	100	Other São Paulo	103
251 – 500	84	Other states	102
501 – 1000	55		
1001 – 2000	25		
2001 – 4000	8		
4000 –	2		

Global cars were a major focus in the 1990s, as carmakers sought to expand the market downwards. They released smaller models (invariably keeping the minuscule rear seats) with engines around 1000cc. The transition coincided with the tariff changes and the supply chain reorganization they motivated. Parts market liberalization, cheaper cars, and the novel stable currency made consumer financing easy, boosting sales and industry investment. Of course, stormy weather soon returned: in

⁴⁴ *The Automotive Industry in Brazil*

⁴⁵ *ibid*

the next policy crisis, in 1997, Volkswagen do Brasil's sales fell 38% over just three weeks. The 1999 devaluation hurt both production and sales, and burdened the industry with overcapacity estimated at 30%⁴⁶.

Unfortunately for Latin American producers in general, the same trend towards opening is now playing out in China, where labor costs are so much lower that the greater linguistic and geographical barriers are worth overcoming. Car production there has ramped quickly; Volkswagen and Audi are at the forefront of this growth with heavy factory investment. China is now prominent in manufacture and export; these ventures will be competing globally in the near future.

⁴⁶ Rashid et al, pp. 124

6. Innovation

The intuitive compromise between product variety and productivity is explained by Rashid et al⁴⁷. Phasing out local models and emphasizing on platform compatibility, Volkswagen AG is concerned about productivity. The modern (re)organizations of its factories in Brazil emphasize long, intimate relationships with suppliers and attentive quality control. High degrees of integration with advanced Tier 0.5 and Tier 1 suppliers (which mostly means other transnationals) are now de rigueur as supply chains have become more complex. These partnerships practice “simultaneous engineering” and aim for long relationships. The increased parallelism of processing makes whole systems are less sensitive to incidental delay; however, it makes relationships with suppliers, especially those installed in the same factory, crucial.

The two plants Volkswagen do Brasil opened in 1996 especially exhibit these integrative patterns. They contributed to the firm’s impressive 127% productivity growth from 1990 to 1997 and stand in sharp contrast to traditional River Rouge-style vertical integration. Those cases are absolute responses to the classic make-or-buy question, which in turn begs that of identifying core competencies. Corrêa discussed at length the criteria⁴⁸ a carmaker might use to differentiate which areas are such competencies, and thus which others should be outsourced. As subsequent plants have not been built along the same lines, Volkswagen seems to have decided that its competencies are broader than previously apparent, at least in terms of passenger vehicles.

Volkswagen AG was among the first proponents of a vehicle platform strategy. This approach allows major components (“what the customer doesn’t see”) to be shared between various products, and suggests the phasing out of regional models. It also makes the aftermarket more liquid, as third-party products work on a larger range of vehicles. In 1994 the group declared its intention to reduce its active platform count from sixteen to four, even as it sold similar cars under four brand names (Volkswagen, Audi, SEAT, Škoda). Economy of scale savings from such a simplification are potentially huge, and cars of somewhat varying dimensions can even be built on a given platform. However, savvy consumers are also enabled to move downmarket, perhaps purchasing a Škoda and receiving a product of near Volkswagen quality.

⁴⁷ *ibid*, pp. 124

⁴⁸ Corrêa, pp. 3

Platforms of Volkswagen do Brasil

<u>Platform</u>	<u>Vehicles</u>	<u>Production</u>
Type I	Fusca, K-G, SP-2, Brasilia	1959-1989, 1993-1997
Type II	Transporter, Kombi	1957 -
B1	Passat	1974 - 1987
B2	Santana	1984 -
BX	Gol, Parati, Saveiro, Fox	1981 -
A4	Golf, Audi A3	1996 -
Trucks	Titan	1980 -

The company has made several technological innovations. Three cars powered by alcohol were released in 1979; during the 1980s alcohol cars dominated the Brazilian market⁴⁹. It later built Brazil's first cars with electronic fuel injection, ABS brakes, and catalytic converters. Alcohol as a fuel fell from and returned to favor, and in 2003 led to the much-hyped "Flexfuel" or "Total Flex" technology, which allows a car to run on any given combination of gasoline and alcohol⁵⁰. The company made early investment and all its domestically-manufactured engines are now available in this configuration⁵¹. Volkswagen is, along with General Motors and Fiat, now a leader in the "bicomcombustible" market⁵². Brazil leads the world in the deployment of fuel ethanol, owing to its efficient production of sugarcane.

Volkswagen also tinkers constructively with its own operations. In 1986 it implemented the *Sistema Integrado de Qualidade de Assistência Técnica* (Integrated Technical Assistance Quality System). A stochastic auditing methodology, necessitated by the radical decentralization of the Resende plant, checks product quality (see *Resources*).

In several cases Volkswagen has collaborated with its competitors for market placement or economy of scale. First was an ISI-era deal with Daimler-Benz, in which the German two carmakers cut a deal to split the market, Mercedes building heavy trucks and Volkswagen passenger cars. Volkswagen began building light trucks immediately and eventually also produced heavier ones. Mercedes did not build small cars in Brazil until 1999, but never tried to enforce the agreement. In the late 1990s a deal was made with Toyota to share technology for navigation and traffic information systems.

⁴⁹ *Auto industry drives the Brazilian economy*

⁵⁰ *Volkswagen do Brasil comemora três anos de pioneirismo e liderança de mercado na tecnologia bicomcombustível*

⁵¹ *Volkswagen é a primeira montadora a equipar 100% de seus motores nacionais com a tecnologia bicomcombustível*

⁵² *ibid*

Most significant of Volkswagen do Brasil's joint ventures was its 1987 merger with Ford Brasil, called Autolatina. Under this accord the two companies developed some cars together and even constructed them for each other. It resulted in Ford-origin cars with the Volkswagen badge (Apolo, Logus, Pointer) and vice-versa (Royale, Verona, Versailles). Eventually wishing for more competition with each other, the carmakers' split amicably in 1994. Many functionaries of each stayed with the other, producing a lasting cross-pollination. The two even agreed to continue to support cars they had already built together. However, one side effect of the Autolatina venture was Volkswagen's sudden lack of truck and small engine production. This led to construction of new plants at Resende and São Carlos, both profoundly reliant on partner firms (see *Resources*).

Like other auto manufacturers, Volkswagen sponsors development and modification of their cars for racing, which is a big business in Brazil. Their participation includes "stock" car racing and dirt road rallies. Heavy trucks with locally-made parts have been raced in Europe.



Bora Stock Car⁵³



Titan Tractor racer⁵⁴

53

Volkswagen Sala de Imprensa

54

Volkswagen vence pela primeira vez na Super Truck Européia

7. Conclusion

Volkswagen do Brasil benefits from the intersection of the reputation of German design with the relatively inexpensive skilled labor available in Brazil. This relationship is both symbiotic and parental and exists because all players expect to benefit. Brazilians earn and learn; the state collects taxes on sales and income; and Volkswagen AG earns returns on its investment. All these effects take place on a massive scale through Volkswagen do Brasil, making it an important successful case of globalization. The venture has continued to be worthwhile despite the interventionism of both sides. Brazil continues to practice import substitution, and Germany maintains a legislated 20% ceiling to ownership of Volkswagen shares (this lately under fire from EU regulators). The subsidiary has been able to maintain local goodwill and loyalty despite its foreign ownership and repatriation of profits. Figures are private – Volkswagen AG is not obligated to report the finances of its subsidiaries separately – but in 1997 the Brazilian firm accounted for 9.5% of its parent's sales. In 2005, it delivered 382,787 vehicles in Brazil, some 24% of the market⁵⁵. Access to a complete historical set of annual reports would illustrate sales trends, if not reveal how long it took for the subsidiary to become profitable.

Brazil's large and established auto industry could have been yet more successful. If the carmakers which set up local operations under JK had planned for the gradual opening and increasing exports under globalization, or been coerced into doing so, their position today would be stronger. Japanese and South Korean car firms, also built up under ISI, have successfully developed exportable brands despite their higher labor costs. Brazil would be an even lower-cost auto producer, and much less vulnerable to the approach of Chinese competition if export-led growth had been its intention all along. Instead, dedication to the domestic market produced a somewhat insular culture, less ready to compete globally. Compare this strategy to the long-term intention to export of the Asian countries; their carmakers were willing to assume a poor reputation in the 1970s and have been able to since shed it.

The Fusca was an explicitly mass-market car, simple, small, with a solid design, and a low price. This venerable product made Volkswagen do Brasil an immediate market leader. Since then, Volkswagen AG has been moving its global brand upmarket. It now owns the luxury brands Bugatti, Bentley, and Lamborghini. The company's flagship Golfs and Passats have gained pounds and inches with each new generation, putting them outside the mainstream of cars for the Brazilian market, still dominated by

⁵⁵

Volkswagen AG Annual Report 2005

small, spartan global cars for poorer consumers. Volkswagen has been able to address both markets. The locally designed Gol, heir to the Fusca, is one of the company's most important products the world over, ranking sixth by volume in 2005⁵⁶. The German entity has leveraged its capital investments around São Paulo to produce massive quantities of these vehicles for faraway countries, perhaps the truest sign of the Brazilian subsidiary's success and value.

⁵⁶ *ibid*

8. Bibliography

Abreu, Marcelo de P., Bevilaqua, Afonso S., and Pinho, Demosthenes M. *Import Substitution and Growth in Brazil, 1890s-1970s*. Pontifícia Universidade Católica do Rio de Janeiro and Fundação Getulio Vargas, São Paulo, 1997.

Auto industry drives the Brazilian economy. Brazil-Arab News Agency, 2003.

AUTOCARSITE. <http://www.autocarsite.hpg.ig.com.br/>

The Automotive Industry in Brazil. Consulate General of Switzerland in São Paulo, 2000.

Automotive Intelligence. <http://www.autointell-news.com>

Bastos Tigre, Paulo, Laplane, Mariano, Lugones, Gustavo, and Porta, Fernando. *Technological Change and Modernization in the MERCOSUR Automotive Industry* Integration and Trade Journal, 1999.

Best Cars Web Site. <http://www2.uol.com.br/bestcars/>

O BNDES e o Plano de Metas. Departamento de Relações Institucionais, Banco Nacional de Desenvolvimento Econômico e Social, Rio de Janeiro, 1996.

Büchner, Andreas. *Social Cohesion in Brazil: The Volkswagen Group's Three-Track Approach*. Volkswagen AG, Brussels, 2003.

de Carvalho, Enas G. *A Comparative Study on Product and R & D Strategies of Majors [sic] Assemblers of Brazilian Car Industry*. Permanent Group for the Study of the Automobile Industry and its Employees, Paris, 2002.

Corrêa, Henrique Luiz. *The VW Resende (Brazil) Plant Modular Consortium SCM Model After 5 Years of Operation*. Fundação Getúlio Vargas, São Paulo, 2001.

Di Serio, Luiz Carlos. *Tecnologia e Competitividade: O Caso Volkswagen do Brasil*. Fundação Getulio Vargas, São Paulo, 2000.

The Economist. <http://www.economist.com/>

Erickson, Kenneth Paul. *The Brazilian Corporative State and Working-Class Politics*. University of California Press, 1977.

Fábrica do Gol instala maior complexo de reciclagem de água da América Latina. Assuntos Corporativos e Imprensa de Volkswagen do Brasil, São Bernardo do Campo, São Paulo, 2003.

Gromow, Alexander. *The VW Beetle and the Pop Art-Arte & Fusca*. <http://www.fuscabrasil.net/>

Humphrey, John, and Memedovic, Olga. *The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries*. United Nations Industrial Development

Organization, Vienna, 2003.

História do Fusca. <http://www.nenessr.hpg.ig.com.br/historia.htm>

A História do Fusca. <http://turmadoremo.v10.com.br/FUSCA.htm>

História do Volkswagen. <http://www.vw.com.br/vwbrasil/historia.htm>

Johnson, Harry G. *Tariffs and Economic Development, Some Theoretical Issues*, Journal of Development Studies, 1965.

Laplane, Mariano, and Sarti, Fernando. *Profit Strategies in Mercosur: Adaptability to Changing Conditions as a Key Factor for Competition in Unstable Markets*. Actes du Gerpisa, Paris, 2000.

Laplane, Mariano, and Sarti, Fernando. *Profit Strategies and National Growth Mode in Developing Countries: The Case of Mercosur*. Actes du Gerpisa, Paris, 2003.

Lung, Yannick. *Is the Rise of Emerging Countries as Automobile Producers an Irreversible Phenomenon?* in *Global Strategies and Local Realities: The Auto Industry in Emerging Markets*, Humphrey, J., Lecler, Y., and Salerno, M., eds., St. Martin's Press, New York, 2000.

Lyne, Jack. *VW Announces New Mexican Truck/Bus Plant, Doesn't Disclose Location*. Site Selection, Norcross, Georgia, 2003.

Marcolin, Neldson. *The history of a brand: How Gurgel managed to make totally Brazilian cars*. Revista Pesquisa FAPESP, São Paulo, 2004.

Nascimento, Benedito Heloiz. *Política e Desenvolvimento Industrial em uma Economia Dependente: Formação da Indústria Automobilística Brasileira* History doctorate thesis, Universidade de São Paulo, 1972.

Pesquisa No. 29. No author or title given. Fundação Getúlio Vargas, São Paulo, 2001.

Piekkola, Aino. *Sustainability Leader: Volkswagen AG*. SAM Research, Inc. Zurich, 2004.

Pimenta, Luiz José. *A Crise na Rede de Concessionários de Automóveis no Brasil*. Master of Regional Analysis thesis, Universidade Salvador, Bahia, 2002.

Prebisch, Raúl. *The Economic Development of Latin America and its Principal Problems*, 1950.

Pries, Ludger. *Accelerating From a Multinational to a Transnational Carmaker: The Volkswagen Consortium in the 1990s*, in Freyssenet, Michel, Shimizu, Koichi, and Volpato, Giuseppe, ed., *Globalization or Regionalization of the European Car Industry?* Basingstoke, New York, 2003.

PUMA IMAGES FROM BRAZIL. <http://wj2d.100megsdns.com/brazil2.html>

Rachid, Alessandra, Donadone, Julio C., Bento, Paulo E. G., Eid, Farid, Bueno, and Fernanda F. *Localização Industrial e Ação Sindial: A Nova Planta da Volkswagen - São Carlos*. Universidade Federal de São Carlos, São Paulo, 2000.

Sala de Imprensa Volkswagen, Volkswagen do Brasil. <http://www.imprensavw.com.br/>

Santos, Angela M. Medeiros M., and Burity, Priscilla. *O Complexo Automotivo*. Banco Nacional de Desenvolvimento, Brasília, 2004.

Shapiro, Helen. *The Mechanics of Brazil's Auto Industry*. The North American Congress on Latin America, 1996.

Unger, Roberto Mangabeira. *Democracy Realized*, Verso, London, 1998.

Ventura Dias, Vivianne. *The Motor Vehicle Industry in Brazil: A Case of Sectoral Planning*. Master of City Planning thesis, UC Berkeley, 1975.

Volkswagen AG Annual Reports. Wolfsburg, Germany, 2003 and 2005.

VW consolida sua posição de líder nas exportações do setor automotivo. Assessoria de Imprensa de Volkswagen do Brasil, São Bernardo do Campo, São Paulo, 2005.

Volkswagen do Brasil Celebrates 50th Anniversary. Volkswagen AG, Wolfsburg, Germany, 2003.

Volkswagen do Brasil comemora três anos de pioneirismo e liderança de mercado na tecnologia bicombustível. Assuntos Corporativos e Imprensa de Volkswagen do Brasil, São Bernardo do Campo, São Paulo, 2006.

Volkswagen é a primeira montadora a equipar 100% de seus motores nacionais com a tecnologia bicombustível. Assuntos Corporativos e Imprensa de Volkswagen do Brasil, São Bernardo do Campo, São Paulo, 2006.

Volkswagen vence pela primeira vez na Super Truck Européia. Assuntos Corporativos de Volkswagen Caminhões e Ônibus, São Bernardo do Campo, São Paulo, 2004.

Westney, Eleanor. *A Note on Sequential Models of Internationalization*. MIT OpenCourseWare, undated.