

# Digital television in Brazil: the view from Manaus<sup>1</sup>

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**Abstract** This article looks at the impacts that digital television technologies have had and likely will have in Manaus, Amazonas from the perspectives of people involved in manufacturing and development. Located both centrally in terms of global manufacturing and peripherally in terms of digital television policy, this article explores the anxieties, uncertainties, and ambivalences that the introduction of digital television has evoked with those charged with producing these technologies.

**Keywords** digital television, Manaus, manufacturing, production

## A televisão digital no Brasil: vista de Manaus

**Resumo** Este artigo examina os impactos que a TV digital tem tido e continuará tendo em Manaus, no Amazonas, na perspectiva das pessoas envolvidas na manufatura e no desenvolvimento dos produtos. Localizando-se centralmente em termos da fabricação mundial e periféricamente em termos da política para televisão digital, este artigo explora as ansiedades, incertezas e ambivalências que a introdução da TV digital tem despertado naqueles que estão encarregados de produzir essas tecnologias.

**Palavras-chave** televisão digital, Manaus, manufatura, produção

“Globalization means going South. Capital knows no nation.”

—Emilia Santana Valente, 2004

Metalworkers Union Director of Manaus and former television set assembler

“All the major decisions are made in the South.”

—Factory director in Manaus, 2004<sup>2</sup>

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This work has been generously supported by the Stone Center for Latin American Studies at Tulane University and its Graduate School. It is a revision of a paper I delivered at the Second Intercom Binational Communication Colloquium, hosted in Rio de Janeiro, Brazil in 2006. I would like to thank Beth Rondelli and an anonymous reader for their suggestions on this revised paper.

## Introduction

The dust has barely settled after the national discussions over the selection of the Japanese standard for Brazil's digital television transmission when a new series of debates have begun over where these sets will be manufactured. The Informatics Law, if applied to the digital sets and their cheaper alternatives the "set-top boxes," would provide incentives to disperse the production of these new technologies to a number of Brazilian regions where computer and informatics technologies are currently assembled, including in Minas Gerais, Rio Grande do Sul, and Bahia. This article is written considering the perspectives of those in a region likely to be affected by this debate, but who have had little input in the policy process to date. It takes up challenges by political economists that in the debates over digital television, scholars have tended to ignore where this new technology will be produced and manufactured (SCHILLER 1999; PAREDES 2000).

Since the early 1970s, Manaus, Amazonas has been the central site for the assembly of television sets throughout Brazil. Initiated in conjunction with federal, state, and local policies to encourage the development of the city as a free trade zone, every major national and multinational corporation involved in television set production in Brazil opened a factory in Manaus' industrial districts (CAPARELLI & LIMA 2004). Gradiente, CCE, Semp-Toshiba, Philips, and others together assembled nearly 100 percent of the television sets purchased in Brazil. In the 1990s, the television set economy changed in accordance with the expansion of transnational capitalism and a new international division of labor (DREIFUSS 2001). Television set and set-part manufacturers relocated to Manaus and made the city ground zero for television exports both to North and South America. This meant that certain parts would be manufactured in Manaus, in addition to assembly work. At the same time, Manaus' factories entered competition both domestically and abroad, particularly with factories located in China (VALLE 2000). The current application of the Informatics Law to digital television sets is just the latest threat to Manaus' hegemony over television set production in Brazil, if indeed not in the Americas. As the quotes above suggest, Manaus' role in these policy decisions is frequently peripheral, first to the changes evoked by global capital from the Northern and Eastern hemispheres and second to the political decisions made in southern Brazilian cities, such as São Paulo and Brasília.

I began traveling to Manaus from my home country in order to better understand the changes evoked by the digital television transition in Brazil. Over the course of five months in 2004 and 2005, I interviewed three factory directors, eight representatives of scientific institutes, industry lobby groups, or labor unions, and over twenty workers in electronics factories, most of which contributed to the production of television sets in Manaus in some form, whether through assembly or through parts manufacturing. Their perspectives and voices, which indeed have been largely invisible and muted in the previous policy debates over DTV, continue to be obscured in the current national discussion of set manufacturing — an unfortunate event since it is on their backs that set production has so heavily relied until now. While there are other questions we might ask about Brazil's role in the international economy of digital television set production or the quality of national debates around new technologies, I propose that it is just as important to ask why the people who will feel these changes most immediately in terms of their material lives are not considered in any scholarly discussion of digital television. This article uses the perspectives of workers in Manaus to develop what I would call a regional "structure of feeling" (WILLIAMS 1978) around the national digital television policy. By understanding digital

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<sup>2</sup> In some cases, names have been withheld in accordance with provisions set by my Institutional Research Board for studies involving human subjects.

television in terms of a regional subjectivity, we may not only consider better how both global economic shifts and national policy decisions affect regional political economies and their constituents, but also develop a new politics around the object itself.

### **The Manaus Free Trade Zone: Centers and Peripheries**

Manaus, located deep in the middle of Amazon rain forest, became the largest production site for television sets in Latin America thanks to a military strategy turned neoliberal project. First imagined by President Vargas in 1953 but financed in 1967, the MFTZ was a major part of the military government's plan to secure the Amazon largely by industrializing it. This was a response to neighboring countries, particularly Columbia and Peru, which had dropped import taxes for a zone located in their Amazonian borders. At first, the MFTZ consisted largely of a duty-free area for imports, but in 1968, the simultaneous establishment of a federal regulatory agency (SUFRAMA) and the reservation of lands dedicated to an industrial district began to attract transnational companies in search of cheap labor, free infrastructure and credit, and almost no import or export duties. Among the first factories, Springer da Amazônia and Sharp do Brasil, hired 771 local residents to assemble electronics in 1971 and 1972, respectively (GARCIA 2004). In 1974, nearly 20% of the Manaus Industrial District (MID) was dominated by electronics companies, including Semp Toshiba, CCE, Philips, and Evadin. By 1983, 39 electronics companies employed about 16,500 workers and had invested close to \$600,000 in the MID. In 1990, this number had grown to over 100 electronics companies with 45,283 workers (VIEIRA 2002). Serving these companies, 105 intermediary companies developed in the areas of packing, shipping, graphics, and wood, metal, and plastics (GARCIA 2004). In the meantime, Manaus had become the eighth largest city in Brazil in large part thanks to the MFTZ. Approximately 40,000 migrants per year came to Manaus first from the surrounding Amazon region and then from the Northeast, in search of work in the MFTZ's factories (CÔRREA 2004).

In 1990, the Faustian pact that fed the simultaneous growth and development of the MFTZ and Manaus fell apart when President Fernando Collor de Melo revised importation laws to open Brazil to global markets. The MFTZ reoriented from a fordist model based on import-substitution to a postfordist model based on global exports and flexible specialization, leading to the end of importation quotas and non-tariff barriers (PUGA FERREIRA 2001). From 1997 to 2003, exports grew 572%, from \$193.4 million to \$130 billion, with the majority of electronics destined for Argentina, the United States, Venezuela, and Columbia (PÓLO INDUSTRIAL 2004). In anticipation of an ultimately failed free trade agreement for the Americas (FTAA), the city opened its own customs office and has been negotiating a political agreement to open a port on the state's far west border to receive parts more directly from Asia. The changes initially reversed the past decade of growth in the labor market. Electronics factories cut 26,300 jobs between 1990 and 1993, or 58% of their workforce (SCHERER 2005). Attributing the layoffs to low internal demand and the need to compete with foreign producers based in Asia, electronics companies in the MFTZ slashed prices, invested in automated machinery, outsourced internal services in the factories (for example food and daycare), and adapted elements of a just-in-time production model to become leaner and more competitive (THOMÉ 2001; AGUIAR 2003; OLIVEIRA 2004; SCHERER 2005). Though the change benefited consumers — sales rose nearly 250% from 1990 to 1995 (GARCIA 2004) — Manaus' labor force never fully recuperated from the mass layoffs.

Of the more than 300 companies in the industrial district, no less than 30 today participate in the building of television sets, from molding plastic to soldering parts to the chassis, to making the screens and boxing the finished products for distribution. Among others, Philco, CCE, Sony, Samsung, Philips, LG, Thompson, and Semp Toshiba are based in Manaus. Although these companies have now returned to former levels of employment in 1990, approximately 45,000 positions in 2005, vast unemployment and abject poverty make Manaus a city of extreme disparities (c.f. SCHERER 2005). The crumbling buildings of the downtown contrast with the ultra-modern campuses of the factories in the industrial district. The high-rise, gated condos of the managerial and technocratic classes similarly overshadow the sprawling masses of simple, concrete slab homes where the majority of workers live. In a land of rich resources, it was not uncommon to encounter the lack of potable water in the workers' neighborhoods, as well as the more modern necessities of electricity, paved roads, and access to schools or health facilities. In 2005, Manaus and the Amazonian region suffered the worst drought in 60 years, resulting in widespread hunger and disease when rivers dried up.

The long history of uneven development in the Amazon region complicates paradigms of developed centers and underdeveloped peripheries that once animated discussions of technology development in Brazil in the latter half of the twentieth century (WALLERSTEIN 2004). Though the military developed the MFTZ under nationalist auspices, the majority of parts and capital came from foreign sources to the north, at first the United States, France, Germany, Holland, and Great Britain, followed later by Japan, and still later by Korea and China.<sup>3</sup> While for many Brazilians the stamp on their televisions — “produced in the Zona Franca de Manaus. Know the Amazon.” — became a symbol of pride in national production, the sets were hardly national. In the words of a national newspaper editorial, “The country has forged a very peculiar concept of ‘national industry’ whose only criteria is production inside the borders, regardless of the origin of the capital” (from *Jornal do Brasil* cited in MATTELART & SCHMUCLER, 1983). The very development of the MFTZ reflects the paradoxes of development encapsulated in a long literature on the continued imperialism of South America by a series of multinational companies based in the Northern hemisphere (c.f. SCHILLER 1969; DORFMAN & MATTELART 1975; MATTELART 1976). At the same time, the Amazonian North continues to be captured by the political economy of the South. That is, despite the influence of multinational capital in Manaus, the region's future is tied as much to national policies passed in Brasília and business and labor headquarters in São Paulo as to the global economy.

Brazilians express Manaus' dependency on Southern centers culturally.<sup>4</sup> Brazilian and foreigners alike still imagine the Amazon as a largely open frontier to be civilized by outside capitalists (CLEARY 1993). In the South of Brazil, many locals still frequently characterize Manaus and manauaras as jungle and Indians (TORRES 2005; SLATER 2002), though the importance of the MFTZ to the national GDP has forced shifts in this narrative. Manaus is now the fourth most important city to Brazil's internal production receipts, following São Paulo, Rio de Janeiro, and Brasília, and registered the largest industrial growth from 2004 to 2005 (BRAFMAN 2005). Yet to outsiders, the city, and its people, still suffer from their inferiority. A sociological study found that bureaucrats working in federal agencies saw the industrialists in the MFTZ as “pariah capitalists,” able to generate capital in the Amazon, but not good enough to survive in Brazil's Southern regions (MOTTA 1995). Similarly, despite the growth of a technical class of engineers, Spindel characterizes the labor force behind the MFTZ as “a new caboclo proletariat,” indicating

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<sup>3</sup> The exception to this trend was Gradiente, a Brazilian company supported initially with military contracts. The company has bought out several competitors in their market, including the British Garrard and the German Telefunken.

<sup>4</sup> My use of the term “South” is a purposeful adaptation of the language of manauaras, who frequently characterize everything South of Bahia as the “South,” despite distinctions that Brazilians elsewhere may make between the states and sub-regions in this enormous geography.

a racialized group able to do the most monotonous work for hours on end in comparison with the more-advanced Southern labor force (SPINDEL 1987; see also FERREIRA MOURA, ET. AL. 1986; VIEIRA 2002).

In this context of being in-between, the MFTZ is both central and peripheral to the DTV transition. Charged with making the television sets and the set-top boxes, the factories located in the MFTZ and their supporting labor, from the electronics assemblers to the high-tech engineers, will be crucial to providing Brazilians with access to the digital future that so far has been defined by people outside of the region.

### **Seeing Digital Television from the Middle**

In the context of Manaus' uneven position in terms of capital and status, the local groups that operate in the MFTZ also have their own positions on the production of DTV in Brazil and its effects. Although their influence in the political process has been limited, if even considered at all, their voices provided alternative views of what a mass technological change might look like to the region that produces the technology. Neither optimistic nor pessimistic, the structure of feeling around the transition could be better characterized as anxious, uncertain and ambivalent. These feelings do not seem to embrace nor reject DTV and the claims frequently made by its supporters of its revolutionary potential.

Across the spectrum of managers, labor leaders, and scientific researchers, the sense of being ignored in the policy process leading up to the selection of the Japanese digital standard was palpable. One factory director told me, "They'll decide in São Paulo and tell us about it later." This sentiment, repeated almost verbatim by the director of the Manaus Confederation of Workers' Unions (CUT), pointed to the obvious hierarchy that placed policy negotiations in the hands of Southern business and labor elites. For business leaders, the exclusion of the lobbying group for Manaus industrialists (CIEAM) and the inclusion of the lobbying group for paulista industries (ELETROS) from any official negotiations in Brasilia were indicators of their peripheral role in making decisions that would transform their operations. For union leaders located in Manaus, the decisions about DTV would trickle down to them from the central leaders of the Metalurgic Union in São Paulo, which oversees the electronics workers in Manaus, and from SUFRAMA, the federal agency overseeing the MFTZ. Although SUFRAMA claims to represent workers in its executive board, the representative is not elected by workers, forcing the unions to rely on their on leaders located outside of the region.

Despite their invisibility in the policy process, each of the interviewees recognized the central role of their factories in producing the new DTV technologies, creating their mass consumption, and responding to shifts to the new market for television sets. The perceived inevitability of digital television would bring, on one hand, a bright lining to an otherwise cloudy television market. Market analyses reveal that the Brazilian market has been saturated in the 14" to 20" range, the most popular sizes (BRUNO 2004). Although the market showed growth in flat screens and models with DVD players, the vast majority of Brazilians traded their television sets in only every five years. With 98% homes already outfitted with television sets, only DTV might create a future mass market in this area. "The people who don't make the transition to digital sets will go out of business. This is a history we have already seen with the transition to color television," said José Renato Sátiro Santiago, industrial director of Itautec Philco in Manaus. He cited the ill fate of three television set manufacturers who went bankrupt after delaying their

decision to produce color television sets until after the 1968 World Cup games. “This is a turning point,” he added.

In anticipation of this turn, scientific institutes quickly sought to capitalize on DTV through federally funded studies and the development of intellectual property that then could be marketed throughout Brazil and the rest of Latin America. Of the four institutes competing in this area, Instituto Genius had received the lion’s share of funding in Manaus, though still only a fraction of what scientific institutes and research universities received in the South of Brazil. Begun as a joint venture of Nokia and Gradiente, the largest Brazilian-owned television set manufacturer, Genius modeled itself after Bell Labs in the U.S. by using federal funding and private contracts to generate its own profits. For managers at Genius, DTV represented the next big boon, an opportunity to develop both technological standards for the federal government and more advanced products for high-end consumers, where the biggest profits would be made. “My idea is that we do the middleware basic version for free, but later we can capitalize on later versions, technical support, agent access to e-commerce, etc. In our business model, the government pays for the freeware and we do the upgrading ourselves,” said a Genius representative. Founded by and funded directly by the corporations involved in the manufacturing of DTVs and set-top boxes, scientific institutes treated DTV, much like pioneers in the city’s 19<sup>th</sup> century rubber boom, as an object to be commodified in as many applications as possible.

Yet the process of manufacturing these technologies would have its own obstacles as well. The manufacture of DTV would be similar in some respects to the manufacture of computers, which require imported machines to assemble the motherboards and imported parts, in particular semiconductors, which are not yet made in Brazil. The machines, part of a larger trend towards automation in the factories in Manaus (VALLE 2000), would become a necessary part of the digital transition as the set pieces are too small to be assembled by human hands. At the same time, MFTZ managers cited importation as the single biggest expense in their over-leveraged budgets. More like a computer than a television set, DTVs have both more numerous and smaller parts, requiring new machines both to make the integrated circuits and to attach the components to them. “Look it’s going to be harder at first to make digital televisions. The pieces are much smaller and can’t be put together manually. We’re going to have to find a machine to do it,” explained Miguel Reis, managing director of Semp-Toshiba, who led me on a tour of the factory floor. He estimated he would need several machines, which would involve decades of debt, to even consider making digital television sets, much less satisfy potential demands. In the meantime, workers I spoke with told me of the poor state of their current equipment. Joint operating agreements frequently sent second-hand machines to Manaus, where they often broke down or injured workers attempting to make them function properly. One woman, a former assembly line worker in a television picture display factory, spoke of burning herself regularly when the machine that rolled coils for her broke down. “We’re trying to make the most modern products with the most antiquated machinery,” she commented.

The tensions around automation for DTV further strained other tensions around labor in Manaus electronics factories. Upfront costs for equipment and a technical and scientific class of workers to develop and repair the equipment reduced budgets for other laborers. The just-in-time production model, which could slot manual workers for brief periods of high production, such as before Christmas, was less flexible in terms of the technicians and managerial labor force that frequently came from outside of Manaus. Top managers in the South frequently refused to go to Manaus, seeing the move, with reason, as a demotion. Managers more typically came to Manaus early in the careers and with hopes to leave as soon as they could. The expense involved in importing the highest paid employees could have been offset by developing educational opportunities for local employees, but as of 2005, these programs were still only in their beginning phases. The University Foundation for Qualifications and Research (FUCAPI), a

private non-profit that primarily serves SUFRAMA with lab work, data processing, and training, had begun conducting classes in engineering and technology management: two areas that, in addition to operating equipment, feed future technocratic managers. Yet, aside from specific initiatives funded by SUFRAMA and the corporations themselves, for example a school operated by Nokia, the educational gaps between local workers and those hailing from the South of Brazil or abroad remains an obstacle. Manaus' poor educational system reflects decades of its historical reliance on untrained and undereducated factory labor (OLIVEIRA 2004). The labor market that will produce DTVs in Manaus reflects these inequalities, between a larger technical class hailing almost exclusively from the Brazilian South and the foreign North, and a more flexible, less regularly employed worker class that hails largely from the poorest regions of Brazil in search of jobs with virtually no upward social mobility.

For the majority of workers in electronics factories in Manaus, the combination of automation and a growing technical class (as one worker put it, "There a lot of chiefs for a few Indians around here,"), means new forms of occupational stress and the continuous threat of unemployment. Most workers I met were employed only seasonally through human resources agencies. Their wages have been stagnant in real terms since the 1990s, though factories offered the most generous benefits in the absence of those that would be guaranteed by the state in other parts of Brazil. Most importantly, the production of DTVs would further a trend towards technical training that increasingly was a prerequisite for even the most menial assembly line jobs. Multinational companies, in accordance with international ISO9001 standards, required basic computer skills and often a second language, skills tested in the factory or at the human resources agencies. From the point of view of many workers, DTV symbolized further dependency on the factories themselves, because they had to invest so much of their salaries and time into private vocational schooling to maintain their positions or get a promotion. One female worker, who worked and studied from 5:30 a.m. to midnight six days a week, explained her own desire to be promoted:

LG offers the means for you to grow inside with courses, but many just work and go home. Look, I when I came in, I made R\$350. Then I made R\$617. But now I want to be a machine operator that makes R\$800-900. Eventually I want to be a technician. But most people don't think that.

Although this particular interviewee was optimistic and motivated, the odds that she would achieve her goals were not in her favor. She herself had been fired months earlier from another factory where refused to sleep with her manager. Given her experience, and the majority of others, the words "Digitally Yours" stitched in English on her uniform seemed incredibly ambivalent towards the future of electronics work.

This ambivalence and uncertainty extended throughout the institutions gearing up for the introduction of DTV in Brazil. Even at the scientific institute most involved in studying and developing DTV technologies, one executive confided that he was disappointed with their marginal role in the process. "In the beginning, we thought we might have some influence in developing a DTV system that was highly mobile and universally accessible," he said. "But that wasn't really the goal as much as the corporations and universities preserving their resources and power."

## Concluding discussion

The scope of a transition to digital television in Brazil is immense given the diffusion of television sets in a country where some 30 percent of the population lives below the poverty line. The political process surrounding this transition has been dominated by policy makers and interest groups located in the country's Southern cities in concert with multinational corporations headquartered in the hemispheric North and East. Looking at the transition from below, that is, in the North of Brazil, the transition to digital television will be complicated by the production of the digital television sets and other technologies. In this process, the research institutes seem to have had more input than the factories or the labor unions, which will be responsible for orchestrating the models developed by the researchers. This may have serious consequences down the line when the increased mechanization of the labor process straps Brazilian companies for cash and further debilitates union power with mass layoffs. Although for some the "information economy" may bring advantages to Brazilians later (MARQUES 1999), there are no guarantees that these changes will benefit the vast majority of Manaus' labor force, and indeed, all workers outside of a small nucleus of research and technology experts.

DTV in Brazil is enmeshed with global processes and yet globalization does not erase the feelings of centrality or marginality that the people involved in DTV production in Manaus have. Far from the "new spirit of capitalism" (BOLTANSKI & CHIAPELLO 2006) that supposedly suffuses workers in the new economy by creating an identity that internalizes capitalist demands as their own, workers' own sense of marginality in DTV policy debates prevents completely embracing the new technology as either necessary or revolutionary. Rather, the policy debates revive old classificatory schemas in which Manaus is either a utopian experiment in the positive construction or a jungle outpost in the negative construction (c.f. SLATER 2002; CLEARY 1993). In other words, the place of Manaus as center and periphery in political economic terms translates to ambivalence when considering what the production of DTV will mean to local people, their livelihoods, and their communities. This ambivalence opens the door to a potential resistance not envisioned perhaps in our debates about DTV and its future.

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