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## **SER TÉCINO: TECHNOLOGY TRANSFER, EMERGING TECHNICAL ACTORS, AND BRAZILIAN OPEN-SOURCE SOFTWARE**

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In a statement issued as both a critique and a challenge, former Brazilian president Luiz Inácio “Lula” da Silva asserts, “While society has entered the digital era politics has remained analog.”<sup>1</sup> His opinion addresses the social divide between technological advancement and the state’s ability to tap into technology as a platform for effective political action. Introduced in 2005 as the first state-sponsored campaign to support legal practices of open-source software, Lula’s initiative introduces Brazilians to technology education with aims to engage in interactive, “participatory” politics within a networked democratic culture. Brazil does not have an ideological history, however, of associating technology’s generative qualities with democratic ideals or social utopia. In fact, the country is a relatively new democracy, and the first of its technology-oriented policy regarding computers emerged in the midst of a military dictatorship in the 1970s. Furthermore, the idea that open-source technology policy in Brazil allows the state to enter a “digital” era invites a rhetorical contrast that labels the country’s prior investment in computer-oriented technology transfer as outdated, or perhaps “merely” analog. The rhetoric concerning the local production of computer technology, its transfer between international markets, and the State’s protectionist role in the market during the dictatorship diverges greatly from the tone that the prior president takes in the present. Consequently, the contemporary climate of open-source software advocacy, followed by the ideologically charged rhetoric of democratic, non-proprietary, and participatory technology use owes its historical roots in Brazil to one of its most politically and economically restrictive eras: the military dictatorship from 1964-1985.

The initial steps Brazil made in regards to the technology transfer and local production of computers took place in the early 1970s, manifesting as state-driven technology policy emerging from a set of national security concerns. At the time, the Brazilian Navy was operating its ships using British Ferranti computers, a fact which triggered the military’s growing awareness of its dependence on foreign technologies, which according to sociologist Peter Evans “became thereafter a central justification for the national computer policy” (Evans, 69). Consequently, Brazilian policies issue standards on international technology transfer to open the market to Brazilian consumers, and

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<sup>1</sup> da Silva, Luiz Inácio Lula. “The Message of Brazil’s Youth.” *NY Times*, Jul. 16, 2013.

foster protectionist measures for local computer production to provide an incubating space for Brazilian innovators (Tigre 1983, Evans 1986, Schwartzman 1988). Without attempting to conflate the trend from proprietary hardware towards programmed software, I argue that Brazil's evolving technology policies, rotating cast of technical actors, and local computer production establish the premise for a robust software culture to take root in the present.

Nearing the regime's end in 1984, Brazilian social scientist Simon Schwartzman observes that a "national policy for informatives" got approved because it addressed the "dilemma between national autonomy and self-determination, on one hand, and control of the country's resources by international companies and their local associates, on the other" (Schartzman, 67). On the actor-level, conditions of technological restriction and economic dependency had thus far constrained individuals who would fit the mold as Brazilian technology producers—university researchers, technicians, engineers, among others—from finding state resources to contribute to the growth of a local computer industry. The protectionist policy enabled the state to safeguard local computer production enough to encourage the emergence of national computer products, but the policy alone was not sufficient to steer and sustain such technological developments into a state of self-reliant production and fiscal independence.

By the 1990's, the Economy Minister Zelia Cardoso de Mello charged such laws with hindering the country's economic growth into an international scale of technological competition. She claimed that Brazil was "effectively very backward because of this senseless nationalism" and argued that this "computer problem effectively blocked Brazilian industry from modernizing. It does not make any sense to retain this cyst, which is the computer market reserve" ("Brazil Backing Computer Imports"). In response, a São Paulo deputy named Fernando Gasparian spoke for the 60,000 people working in the domestic computer industry, "We are opening in exchange for nothing", and that the local technology experts would ally with nationalist lawmakers because an "opening could kill our computer industry" (Ibid). The moment of opening the technology market marks a series of conflicting interests. First, the State, which had been such an active proponent of market protectionism in the 1980's demonstrates a drastic volte-face, calling the local computer industry a "cyst" and a "problem" that holds the nation back from becoming a legitimate, international competitor. Second, the emergence of a nationalist body of technological experts, who had surfaced at first to negotiate very material and economic restrictions with the possibility for new political formations in a vanguard, insurgent light now appear regressive, "backward". Finally, the state portrays the national technology market as having outgrown its incubating stage, and to remain further in a protectionist state would not prove that a local industry is viable on an international scale but rather, evoke instead "senseless nationalism".

It is already clear that a reductive model of "trickle-down" adaptation does not accurately depict Brazil's historical engagements with technological development. I analyze Brazil's evolving computer technology policy to debunk notions of streamlined technology adaptation that neglect the larger historical, economic, and political frameworks of global North-South power relations and inequalities. In this work, I consider analyses of how international sites locally receive and adapt specific technologies and technological practices (Radway 1988, Appadurai 1990). I address a growing body of media studies

from both producer and user perspectives (Larkin 2010, Burell 2012) by looking specifically at the discourse produced by Brazilian local technical actors, emerging computer policies, and technology transfer. The advent of “indigenously designed” computers (Evans 1986), state-sponsored hybrid companies, “power brokers” (Castells 2009), and technical specialists create the local environment of computer production prior to FLOSS hackers and programmers, establishing historical precedence as an “emerging” technological culture in Brazil (Williams 1976).

This emergent culture reflects the trajectory of a transforming cast of technical actors, who I call *seres técnicos*—or, “technical selves”—because their positions within the Brazilian landscape of technological innovation are defined by the historical, ideological, and political positions they conceptually assume. To borrow from Julian Orr’s *Talking About Machines*, I assert that these *seres técnicos* express a human mental activity of labor as *situated practice* that is “socially and materially located” and that these “actions [as] practice must be understood with reference to the situation of their doing” (Orr 10,11). What defines a moment of situated practice for the Brazilian actors engaged in technical expertise and knowledge production as praxis changes within the country’s shifting technological, political, and economic terrain. First, the programmers, developers, and coders refute dependency theory that marginalizes Brazil’s capability to produce software to the economic, political, and cultural periphery. Second, this class of technological producers, or “frustrated nationalists” (Evans 1986) becomes enmeshed—and at times romantically conflated—with the already-existing creative class as “ideological guerrillas” through the state’s established technology and cultural policies (Alder 1986). Finally, this evolving class of technological actors involved in Brazilian computer production becomes ideologically political, as “insurgent experts” (Shaw 2011), thus setting the precedent for contemporary dialogues about the digital divide and the participatory promise of open-source software.

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