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Insurgent Expertise: The Politics of Free/Livre and Open Source Software in Brazil

Aaron Shaw

ABSTRACT. Under the administration of President Luiz Inácio Lula da Silva, the Brazilian state has advocated the use of Free/Livre and Open Source Software (FLOSS) throughout the public sector. How did FLOSS adoption gain traction as a developmental strategy across a large federal bureaucracy that had embraced information technology policies supporting export-oriented growth and market liberalization during the 1990s? In a historical case study, I argue that the FLOSS agenda emerged as a result of the actions of a network of *insurgent experts* working within elite political, technical, and educational institutions. I trace the history of this mobilization and show how a dedicated network of experts brought about conditions for institutional transformation that contradicted prevailing neoliberal policy proscriptions. The Brazilian FLOSS insurgency offers insights into the means by which a group of elites endeavored to reframe debates about technology-driven economic growth around questions of state-led access to source code and knowledge.

KEYWORDS. Brazil, expertise, free and open source software, politics, technology

Profound inequalities characterize the global trade in informational or knowledge-based economic goods. Since 2000, \$97 of every \$100 in revenue from licenses and royalties has gone to a member country of the Organization for Economic Co-operation and Development; whereas less than \$0.05 of that same \$100 has gone to a country in Latin America or the Caribbean (World Bank, 2008).¹ Influence

over the intellectual property (IP) laws and governance arrangements applied to these intangible assets also remains grossly concentrated in the Global North (Shadlen, Schrank, & Kurtz, 2005). Critics describe a “second enclosure movement” whereby Northern states and multinational corporations have sought to expropriate the global knowledge commons (Boyle, 2003; Evans, 2005). Similarly, they

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contend that the situation presents obstacles to the use of informational goods to promote sustainable economic growth and improvements to human welfare in low- and middle-income regions (Benkler, 2006, pp. 308–320).

In search of knowledge-based economic equality, governments, firms, and social movements have pursued a range of strategies (Evans, 1995, 2005; Kapczynski, 2008; Ó Riain, 2004). A growing number of these efforts have turned away from export-oriented strategies and neoliberal IP rights to embrace the emergence of an economy in “nonproprietary” informational goods (Benkler, 2006).² Brazil has actively pursued this path under the presidency of Luiz Inácio Lula da Silva, advancing a series of “commons-based” strategies for industrial and human development.³ This effort has entailed the widespread promotion of nonproprietary information goods and regulatory reforms across state, national, and multinational levels.

As one of the most high-profile aspects of this agenda, the Lula administration has advocated the use of Free/Libre and Open Source Software (FLOSS) in Brazil’s federal bureaucracy and semi-autonomous state firms. However, the emergence of FLOSS adoption initiatives within the Brazilian state presents several historical puzzles. During the decade prior to Lula’s election, Brazil’s information technology (IT) industry and state IT policies had been dominated by export-oriented, neoliberal development policies designed to support the privatization of knowledge-based goods as well as the growth of multinational firms in the domestic market. Neither Lula nor any of his closest advisors entered office with the intention to advocate for alternatives to proprietary information technology production, and yet, within three months of the inauguration, they became strong supporters of the most ambitious commons-based development policy in the world. How did politicized support for commons-based strategies emerge and take root across the fragmented Brazilian state apparatus? Once in office, how did FLOSS supporters within the Lula administration seek to “mobilize the state” and the IT sector behind their agenda (Abers & Keck, 2009)? Which policy-making tools and organizational levers

made it possible for this agenda to gain traction among state elites?

I address these questions through a historical case study of the rise of the FLOSS agenda and the early years of its implementation. Brazil’s federal FLOSS agenda emerged when and how it did as a result of the actions of a network of like-minded elites, who I characterize as *insurgent experts*. Since the late 1990s, this group of technological and political experts has mobilized to promote FLOSS through the Brazilian state. In the process, they capitalized on the institutional structures and organizational capacities of the state and the Partido dos Trabalhadores (Workers’ Party, or PT) as well as their own shared history in the country’s leftist movements. They also benefited from the broader shift in the global IT industry away from proprietary knowledge and towards “open” technologies. Once in power, these FLOSS advocates sought to implement a variety of projects and initiatives. To do so, they utilized a radical discourse aimed at *repoliticizing* the role of the developmental state in the knowledge-based economy.

The long-term effects of the FLOSS mobilization (either as a set of policy programs or intra-state political shifts) remain uncertain and are not the focus of my analysis. Instead, I analyze the *process* of the FLOSS mobilization, and I argue that the Brazilian FLOSS insurgency offers insights into the means by which a group of elites endeavored to reframe and repoliticize debates about technology-driven economic growth around questions of state-led access to source code and knowledge. I therefore emphasize the conjunction of institutions, ideologies, and rhetoric around which the FLOSS advocates oriented their struggle. My account contrasts with existing analyses of the role of technocratic initiatives, which have focused exclusively on the depoliticizing effects of governmental expertise. In addition, the case also illustrates some of the challenges that the FLOSS advocates encountered in their attempt to implement state-led FLOSS adoption. In this, the FLOSS mobilization demonstrates how transformations in elite ideologies and networks may underlie comparable shifts in developmental and technology policy.

STATES, DEVELOPMENT, AND INSURGENT EXPERTISE

The significance of the FLOSS mobilization in Brazil stems from its status as a political project within the Brazilian state and the position of Brazil within the neoliberal informational economy. Previous sociological research into high-tech developmental policy-making and industrial transformation emphasizes institutional explanations for policy success or failure (Guillén, 2001). Within this paradigm, high-tech industrial transformation is the byproduct of ideal-typical institution-building undertaken by elites working within the state bureaucracy (Ó Riain, 2004). The state bureaucracy performs a managerial role vis-à-vis society, striving after desirable institutions and integration into global markets (Evans, 1995). Managed properly, developmental strategies bring economic growth and enhanced well-being for the population.

I extend these arguments by reintroducing a critical dimension to the analysis of developmental state bureaucracy: elite ideology. The politics of FLOSS in Brazil demonstrate how the mechanisms of policy agenda-setting are often driven by cultural forces beyond the scope of existing comparative institutional studies. Empirical analysis of these cultural forces and their articulation with the organizational, economic, and regulatory aspects of state bureaucracies complements existing scholarship by explaining how one set of ideas about developmental policy may enjoy greater support than another.

My argument also responds to a growing body of research on the dynamics of hegemony and counter-hegemony in the context of neoliberal globalization. By “neoliberal globalization,” I refer to the combination of economic and political processes brought about through the spread of finance capital, service work, free market ideologies, and improved communications and transportation technologies over the final 30 years of the 20th century (Fourcade-Gourinchas & Babb, 2002). These changes have provoked a shift in the thinking of scholars and policy-makers about developmental state politics and industrial transformation. The spread of

neoliberal ideologies among elites and policy-makers has drawn attention to the role of experts in the practice of governance (Mitchell, 2002). Furthermore, the institutionalization of neoliberal policies has inspired research on diverse forms of counter-hegemonic resistance.

The experience of FLOSS politics in Brazil demonstrates how a group of technology experts attempted to advance a counter-hegemonic vision of post-neoliberal development in the knowledge economy. Ideologies of the free market played a central role in empowering neoliberal policy agendas and the concomitant spread of IP rights laws around the world (Sell, 2003; Woods, 2006). Evans (2000, 2005, 2008) has depicted resistance to these efforts as examples of *counter-hegemonic globalization*. For Evans, counter-hegemonic globalization represents a backlash against the tyranny of the free market. As he describes it, this process frequently involves the participation of cultural, political, and economic elites, who can play an important strategic role in the elaboration of alternative governance arrangements and policy projects. The status of these elites and their relationship to hegemony is often complicated by power dynamics and the potential for movement co-optation. However, within this literature, few have analyzed the role of *technical* elites. The experience of FLOSS in Brazil shows how challenges to the neoliberal status quo can arise within elite spheres of power and bring about concrete institutional transformation in alliance with more traditional kinds of social and political movements, such as the PT. Indeed, I show how key FLOSS advocates drew on their experiences, resources, and social networks developed in the powerful Brazilian labor and democracy movements of the 1960s–1980s in order to bring a FLOSS agenda into the political mainstream.

Insurgent Experts

What, if anything, differentiates the group of technology-savvy elites involved in the FLOSS mobilization from other networks of technocrats promoting their preferred set of policy interests? In some ways, very little. In crafting a particular vision of domestic IT policy, the FLOSS mobilization drew heavily on the rhetoric and

ideas of an existing transnational community of technological elites. The individuals involved also capitalized on their personal and professional networks to advance their agenda. In these aspects, they resembled more famous networks of technocrats such as the Chicago Boys in Chile (Fourcade-Gourinchas & Babb, 2002). The difference, I argue, stems from their oppositional stance towards hegemonic, neoliberal ideologies of the free market and exclusive, proprietary informational goods. Drawing on the notions of the *insurgent architect* (Harvey, 2000) and *insurgent citizenship* (Holston, 2007), I therefore describe the group of people driving the FLOSS mobilization as *insurgent experts*. Like Holston's insurgent citizens and Harvey's insurgent architects, insurgent experts adopt an oppositional perspective relative to the hegemonic tenets about development, economic growth, and innovation that underpin the political project of neoliberalism. At the same time, insurgent experts take on the role of "double agents" within the state and private institutions, working inside bureaucracies, agencies, firms, and organizations (Roy, 2006, 2010: 191–208). In other words, insurgent experts work to create counter-hegemonic alternatives to neoliberalism from within the same institutions that drove neoliberalism's historic advance in the first place. They actively undermine the ideological orthodoxies that structure fields of political and economic power. Strategically committed to the exercise of authority, insurgent experts nevertheless resist the uncritical reproduction of capitalist structures of social domination. As a result, they occupy a contradictory position within social space, transcending the binary of hegemony and counter-hegemony (Evans, 2000).

I characterize the mobilization of the FLOSS advocates in Brazil as an example of *insurgent expertise* for two reasons. First, the term reflects the modes of self-representation and self-conception that many of the movement's participants communicated in interviews, publications, and public statements. This sort of self-representation is strategic and idealized, but it nevertheless forms an important characteristic of this group of FLOSS advocates as well as their efforts to frame their agenda. As I discuss below,

these framing efforts are consistent with the theoretical propositions I develop on the basis of previous literature (Harvey, 2000; Holston, 2007; Roy, 2006, 2010). At the same time, merely proclaiming yourself an anti-neoliberal insurgent does not make it so. Therefore, the second reason I use the term *insurgent expertise* derives from the FLOSS advocates' position as politically empowered experts utilizing technocratic governance institutions to *repoliticize* IT and informational capitalism. This effort to capture and refashion state institutions of technocratic development and technology policy in opposition to proprietary IT production represents a self-conscious reaction against neoliberal development policy agendas, which *depoliticized* the role of expertise in policy-making (Ferguson, 1994; Fourcade-Gourinchas & Babb, 2002; Woods, 2006). Yet, a number of theoretical and empirical analyses of neoliberal development expertise and governance either do not address the existence of such elite-led efforts at resistance or explicitly argue against their potential (Ferguson, 2006; Harvey, 2005; Li, 2007; Mitchell, 2002). As a result, the primary contribution of this article to the study of "actually existing neoliberalism" (Ferguson, 2006, p. 124) consists in an empirical analysis of a recent situation in which counter-hegemonic elites sought to use a neoliberal tool-kit to dismantle a neoliberal policy paradigm.⁴ In many ways, these insurgent experts share much in common with other thought leaders or "epistemic communities" of policy elites who are highly motivated to shape policy transformations (Haas, 1992). However, insurgent experts are distinct because they are themselves elite technocrats working against the grain of neoliberal technocracy. As a result, the case of the FLOSS mobilization in Brazil is neither a unique, nor representative example of *insurgent expertise*, but it facilitates a broader conceptualization of the phenomenon.

The FLOSS policy mobilization in Brazil offers an example of an elite insurgency against the foundations of the neoliberal knowledge economy. At its core, FLOSS represents a radical departure from traditional software production models as well as the restrictive forms of IP that dominated the IT industry during the 1980s and 1990s (Weber, 2004). The past

decade has seen the emergence of FLOSS alternatives to many types of proprietary software (such as a popular word processing program from Microsoft). Instead of hierarchical firm-based projects and “closed” IP, FLOSS is based on “open” licenses that allow sharing and collaborative, decentralized production over the Internet (Benkler, 2002). As a result, FLOSS has enabled some of the most sophisticated challenges to neoliberal IP regimes as well as corporate monopolies on knowledge-based goods (Lessig, 2004a; Sell, 2003). This has led a number of scholars to argue that FLOSS and other “commons-based” production models could enable high-tech development across the Global South (Benkler, 2006; Evans, 2005; Weber, 2004). The actions of the Lula administration and the FLOSS advocates in Brazil represent the largest state-led attempt to advance this agenda.

The emergence of FLOSS policies as well as the process of their implementation demand further consideration. Through a qualitative, historical analysis of the rise of Brazil’s FLOSS agenda, this article identifies two factors that contributed to the ability of a group of insurgent experts to promote widespread institutional transformation: social networks and discursive mobilization. The following account analyzes the experience of the FLOSS advocates within the Lula administration and demonstrates why these factors played such a central role.

Data and Methods

Methodologically, I use several qualitative techniques of data collection and analysis. My principal data source consists of 40 key-informant interviews conducted in São Paulo, Porto Alegre, and Brasilia during 2007 and 2008. The informants were selected to capture a variety of organizational affiliations and perspectives within the fields of Brazilian technology policy, IT industry, and FLOSS advocacy. First, I sought out a range of positions among organizations supporting and resisting the state’s FLOSS agenda. I did this by contacting individual leaders of key organizations identified through a preliminary literature review. My interviews focused on asking

informants about three distinct topics: (a) their educational history and professional trajectory; (b) their professional and personal activities related to FLOSS and/or technology policy and expertise—particularly from the late 1990s up to the present day; and (c) their attitudes and interpretations of the events, people, and trends that characterized the FLOSS mobilization and policy agenda during the same period. During the interviews, I also elicited names of additional individuals and organizations whose professional and political activities between 2002 and 2006 further spoke to my research concerns and the organizations involved in the FLOSS mobilization broadly construed. Using this process to identify additional subjects, I then pursued further rounds of interviews until the suggestions produced by interviewees did not add new individuals or organizations to my list. In this regard, my selection process reflects the logic of case-based sampling laid out by Small (2009), and was completed once I reached a “saturation point.”

After the conclusion of the interviews, I reviewed the resulting interview recordings and transcripts. In order to confirm or reject factual claims made by informants and to supplement my understanding of the events they described, I also analyzed a range of primary and secondary sources, including newspapers, magazines, official statements, government documents, public financial records, academic publications and personal blogs (written by interview subjects), and industry reports. Wherever possible, I cross-validated factual accounts and interpretations of events across multiple documents or informants.

The rest of the article follows a chronological organization: The next section details the rise of the politicized branch of the FLOSS movement in Brazil by tracing the professional and political trajectories of a core group of the movement’s leaders. I also consider the reasons why the politics of this group enabled its members to integrate themselves and FLOSS technologies into the platform of the PT. In the fourth section, I examine the implementation of the FLOSS agenda during Lula’s first term in office and explain how social networks and discursive mobilization figured centrally in this process. Finally, I offer a preliminary assessment of the

impact of the FLOSS mobilization and consider its implications for the future of informational capitalism and developmental politics in the Global South.

THE RISE OF THE FLOSS ADVOCATES

During the same period in which Lula and the PT rose to power, FLOSS acquired a following among Brazilian programmers. However, the adoption of pro-FLOSS policies by the Lula government emerged from the experience and mobilization of a cohort of highly skilled individuals in a few of Brazil's largest industrialized cities. The members of this group shared a history of participation in leftist social movements, and many also had careers in the public sector. Leveraging these experiences, they built a network of associations and affiliates dedicated to the promotion of FLOSS across the country. Together with other movements allied with the PT, these FLOSS advocates coalesced around the time of Lula's election, facilitating the integration of a FLOSS agenda into the policies of the new administration.

Demographically, the programmers who became involved with FLOSS in Brazil had much in common with their peers around the world. Concentrated in urban centers of the country (particularly in the wealthier cities of the south and southeast), they tended to be highly educated, well-off, professional men who understood some English (Sociedade Softex, 2005). Many were employed in the IT industry, the state, or institutions of higher education. These settings provided easy access to technological infrastructure as well as to social networks of early adopters through which knowledge of new technologies spread quickly.

Within the global FLOSS communities, Brazilian FLOSS developers were also distinct in some important ways. Most of the contributors to large-scale FLOSS projects around the world lived in wealthy, Northern, and Anglophone regions (Ghosh, Glott, Krieger, & Robles, 2002). Brazil did not account for an especially large number of FLOSS contributions among the non-English speaking regions of the

Global South, but a disproportionate number of prominent contributors to some early FLOSS projects were Brazilian.⁵ As a result, FLOSS had visibility among the Brazilian programming community. In addition, many Brazilian FLOSS programmers had a distinctive political experience in comparison with other FLOSS contributors around the world. The computer-savvy men passing through Brazilian universities, technology firms, and public sector institutions during the mid-1990s had all come of age under the military dictatorship. The dictatorship had alienated and politicized millions of people, leading to the rise of massive, leftist movements, including the PT. These oppositional movements and their ideologies also had exceptional traction among the graduates of the country's elite universities. Leftist activism thus permeated the Brazilian FLOSS community more than most.

One prominent individual whose personal trajectory exemplifies the process by which FLOSS was absorbed by members of the Brazilian left is Mario Teza.⁶ Born in Porto Alegre in 1964, the same year that Brazil's military took over the state, Teza has spent his professional life working in state-owned technology firms. He locates the beginning of his identification with the left in the 1979 labor strikes that eventually led to the formation of the PT. Only 15 years old at the time, Teza went on to attend college in Porto Alegre, where he came into closer contact with the labor movement and acquired some technical training. In 1984, he joined a union, the *Federação dos Trabalhadores em Empresas de Processamento de Dados* (National Federation of Data Processing Workers, FENADADOS), in his first job at the state-owned software firm, SERPRO. Teza rose rapidly through the FENADADOS hierarchy. Following Lula and the PT's 1995 electoral defeat at the hands of liberal Social Democratic Party (PSDB) candidate Fernando Henrique Cardoso, Teza left his position in the national FENADADOS leadership out of frustration with the labor movement, returning to SERPRO.

A few years later, in November 1998, Teza first learned about FLOSS operating systems while browsing an airport newsstand on his way to a national SERPRO workers' salary negotiation in Brasilia (dos Santos, 1998). Upon

arriving in Brasilia, he immediately showed the article to Djalma Valois, the FENADADOS technical director and an old friend from Rio. For Teza (and Valois), the appeal of FLOSS lay in its technical and cost advantages, as well as its potential as a counter-hegemonic tool of anti-capitalist resistance. Looking back at his career, Teza explained the connections to me:

By 1989, the labor movement was in crisis—it's still in crisis! . . . It didn't subvert the social order after the creation of democracy, and for many of the activists at that time, this was not enough. We wanted to do more. And for many of us, *software livre* has enabled us to do more. We are able to take direct action, break paradigms. The labor movement is incapable of this—it raises salaries, but it's a whole corporatist thing, it's still very out of date . . . it doesn't overcome capitalism. In as much as *software livre*, without perceiving it, begins to transcend, at least challenge capitalism, the ownership society, and intellectual property. (Interview with the author, April 21, 2008)

The idea of transcending property, and with it, capitalism, was not new within the global FLOSS community. However, Teza's stance diverged from those of prominent North American and European FLOSS adherents. International Free Software advocates such as movement founder Richard Stallman employed rhetoric loaded with anti-capitalist implications.⁷ Yet, most of the North American and European programmers involved with FLOSS shared an apolitical or libertarian professional culture. Those among them that articulated explicit political views tended towards anarchist, libertarian, or liberal positions that, while explicitly political in a number of ways, did not always lend themselves to institutionalization (Coleman, 2009; Coleman & Golub, 2008; Evangelista, 2005, 2010). As a result, none had endeavored to create a formal, political mobilization around FLOSS.

By contrast, for people like Mario Teza and Djalma Valois, the talk of freedom and

autonomy permeating the global FLOSS community resonated with the ideologies of the anti-capitalist left. When I later asked Valois (interview with the author, July 24, 2007) why he thought the FLOSS movement in Brazil was so different from the United States, he told me about an encounter he had with one of the most famous North American Linux evangelists, Eric Raymond. Like the two of us, they had been discussing politics:

Raymond told me he had a gun to protect himself from the government. At this point, I smiled and asked him, "Eric, how big is your gun?" and Raymond spread his arms wide, like this. [pause] Then I asked, "and Eric, how big are the government's guns?!" [laughter] For me, who has worked in state agencies for years, *software livre* always had to do with politics and the public sector . . . possibly because of the history of the syndicalist movement here, it has also always had to do with socialist politics. (Valois, interview with the author, July 24, 2007)

Valois found the notion of single-handedly resisting the state absurd; for him, effective political action implied a larger scale mobilization of people and resources along the lines of the communist cells that formed the militant wing of the Brazilian anti-dictatorship movement.

Looking to promote FLOSS in the public sector, Mario Teza set about mobilizing within the state technology firms of Rio Grande do Sul. He contacted Marcelo Branco, an old friend from the student and labor movements who had recently become the Technical Director of PROCERGS, the data processing firm of the state government. Branco had entered the state administration with the election of Porto Alegre's popular PT mayor Olivio Dutra to the office of Governor in 1998. Branco liked the idea of a FLOSS adoption project and, together with Teza, he brought a proposal to the PROCERGS President, Marcos Mazoni, who happened to also be a childhood friend. Mazoni gave them preliminary support for the project.

Teza also started discussing FLOSS with his technician friends and public employees around the state capital. These included Clarice Coppetti, the PROCERGS Commercial Director as well as a former student activist with the PT, and Ronaldo Lages, a PROCERGS technical manager. In addition, Teza contacted Linux user groups and IT departments at local universities. Within a short time, he had generated enough interest that he organized several meetings to discuss *software livre* and how to implement it in the public sector. Teza, together with Branco and Lages, facilitated these gatherings, the first of which took place in the PROCERGS auditorium on July 30, 1999, with about 40 attendees. They called themselves Projeto Software Livre, Rio Grande do Sul (the Rio Grande do Sul Free Software Project) or PSL-RS.

In its early days, the PSL-RS focused on spreading information about FLOSS and conducting technical training sessions. Teza invited his old union friend Djalma Valois from Rio to lead classes every week at PROCERGS (Teza, interview with the author, April 21, 2008). Demand grew quickly, as did interest in the political philosophies behind the technologies, which resonated among the group members. One day during this period, Mazoni and Branco had planned a lunch with Walter Pinheiro, a fellow labor activist and former telecommunications manager who had gone on to become a federal representative (*deputado*) with the PT in the northeastern state of Bahia. After a conversation with Branco and Mazoni, Pinheiro expressed an interest in creating a national law based on the PROCERGS FLOSS experience and convinced Teza to draft language for bill (Teza, interview with the author, April 21, 2008). The proposed law (number 2.226/1999) called for preferential FLOSS purchasing in all public agencies and marked a turning point in the scope of the PSL movement. More than two years before the arrival of the Lula government, the personal and professional networks of the PSL-RS leaders had laid the foundations for a national legislative debate over proprietary software purchasing. While the federal bill would not garner enough votes in the congress, copycat legislation gained passage through the state legislature of Rio Grande do Sul in 2002 following additional

work by the PSL-RS to gain the support of Governor Dutra.

In 2000, the PSL-RS became a national organization. Marcelo Branco became PROCERGS Vice President and created a formal working group within the company to focus exclusively on FLOSS and PSL-RS initiatives. Branco and Mazoni hired Teza to join PROCERGS full-time, where he began planning a national FLOSS conference. In May of 2000, the first Fórum Internacional do Software Livre (International Free Software Forum, FISL) was held at the Universidade Federal do Rio Grande do Sul (Federal University of Rio Grande do Sul, or UFRGS). Over 2,000 people attended, including free software pioneer Richard Stallman and Governor Olívio Dutra. The FISL helped expand the PSL network by attracting participants from the wider Brazilian and global FLOSS communities. Several elite programmers brought connections to top international software firms and FLOSS projects. In addition to Stallman and the Free Software Foundation, these included the Debian Linux community, Sun Microsystems, IBM, Red Hat, and Curitiba-based Linux firm Conectiva, as well as several universities with strong computer science departments such as UNICAMP and Universidade de São Paulo (University of São Paulo, or USP).

The first large-scale Linux event in Brazil, FISL also brought international attention to Rio Grande do Sul's FLOSS adoption initiatives. The state claimed vast savings in licensing costs and increased technical stability thanks to FLOSS adoption (Teza, interview with the author, April 21, 2008). The positive attention helped the PSL-RS confirm Dutra's commitment, making him the first of the senior PT leaders to become a strong supporter of public sector FLOSS adoption. Information about the Dutra administration's programs also spread through the FISL network, and other public firms, such as the social welfare administration in the state of Paraná, soon sought to imitate their success. Within a couple of years, PSLs appeared in almost every state and also a number of the larger cities around the country. The movement developed a strong online presence, with numerous mailing lists and message

boards through which members continue to communicate.

Around the same time in late 2000, an unconnected FLOSS initiative emerged in the São Paulo government under the new PT mayor Marta Suplicy. There, Suplicy had appointed a young professor named Sérgio Amadeu da Silveira⁸ to coordinate several projects, including the municipal “electronic government” program. Silveira’s trajectory had significant parallels with Teza’s and the other PSL leaders. Silveira was born in São Paulo in 1961 and he had joined the PT during the “Direitas Já!” (Rights Now!) campaign of 1984 (Silveira, interview with the author, May 1, 2008). As an activist with more militant leanings during the dictatorship, he then worked with the PT’s São Paulo political offices from the mid-1980s into the mid-1990s. During this time, he developed personal ties with the highest echelons of the PT leadership. Like Mario Teza, Silveira also reduced his formal involvement with the party after Lula’s 1994 loss to Fernando Henrique Cardoso. However, whereas Teza had gone back to a career in technical management, Silveira pursued post-graduate studies in politics and journalism at USP, where he specialized in the politics of networked communications and the Internet. He also continued his work as an assistant and analyst for the PT in the state parliament.

Silveira learned of FLOSS through his research and, like Teza, he understood nonproprietary technologies as strategic tools for combating inequality in the network society. In his academic writing, he discussed how networked information and communications technologies (ICTs) reinforced social hierarchies, resulting in “digital exclusion” for the majority of the poor in a country like Brazil. Silveira claimed that a benevolent developmental state was needed to universalize access and to break the monopolistic grip of foreign software firms and products on low-income computer users. He wrote, “As happened with mass public education, digital inclusion will not be the work of an ‘invisible hand’” (Silveira, 2004, p. 24).

Following Suplicy’s inauguration in 2001, Silveira and his staff initiated various digital inclusion projects using FLOSS to improve

Internet accessibility for the city’s poor neighborhoods. The largest of these, the São Paulo municipal telecenter network, would eventually offer free Internet access in over 100 locations on computers running only FLOSS operating systems and applications. The project was the largest municipal FLOSS telecenter network in the country and possibly the world.

During the first year of Suplicy’s administration, Silveira remained unaware of the PSL and its activities in Rio Grande do Sul. However, the geography of the Brazilian left and the small number of state IT projects involving FLOSS quickly brought the two groups into contact. At the end of January 2002, the city of Porto Alegre hosted the second World Social Forum (WSF). Silveira had come to participate in the event, and there he met Branco and learned of the projects of the PSL as well as their annual forum. A few months later, in May, Silveira returned to Porto Alegre to participate in the FISL, which by then was in its third year. He gave a presentation on digital inclusion in the São Paulo telecenters and met the rest of the PSL leadership including Teza, Lages, Coppetti, and Mazoni.

Less than a year later, Silveira and the PSL leaders would be instrumental in the Lula administration’s FLOSS policies. By the time Lula won the 2002 election, a public sector FLOSS mobilization had become possible. The PSL-RS had become national and had membership numbering in the thousands. A group of executives and administrators at several state IT firms had experience managing large-scale FLOSS migrations. The federal congress included several senators and representatives who supported FLOSS adoption. The PT could even claim successful examples of FLOSS policy implementations in Porto Alegre and São Paulo.

In this early period of the mobilization, ideological and political currents had brought an experienced group of technicians and activists together around a vision of state-led FLOSS promotion. In this way, the PSL-RS and the FISL lay the groundwork for a national project by institutionalizing a network of persons and ideas oriented towards the use of FLOSS in the public sector. Among the group’s founders, involvement in the labor movement and the PT as well

as executive experience in multiple public IT firms provided the basis for a shared political vision. A number of the early leaders would go on to play central roles in the FLOSS mobilization under Lula. The conjunction of leftist social movements in Porto Alegre and São Paulo at the end of the 20th century also catalyzed the process by which these persons and ideas coalesced.

FLOSS ADVOCATES IN POWER

For the PSL, Lula's 2002 electoral victory brought a unique opportunity to take its agenda to the federal level. However, the FLOSS advocates needed to "mobilize the state" from within if their agenda was to succeed (Abers & Keck, 2009). In order to do so, they adopted a multi-dimensional strategy divisible into three areas: network mobilization, discursive mobilization, and institutional transformation. To the extent that they were successful, the first two of these (network mobilization and discursive mobilization) facilitated the third (institutional transformation).

Network Mobilization

Lula's victory in the 2002 elections meant that he needed to fill thousands of appointments in the federal bureaucracy, and his local staff and affiliates got first priority for these jobs (see also Evans, 1995, pp. 60–66). Many of these hiring decisions fell to José Dirceu, Lula's most trusted aide and co-founder of the PT. Dirceu was known as Lula's "Superminister," and in his new role as the chief of the Casa Civil (comparable to the United States' White House Chief of Staff), Dirceu oversaw the executive branch. Among the dozens of agencies under Dirceu's authority, the Institute for Information Technology (ITI) was a low priority. The Cardoso administration had created the ITI to manage the state cryptographic and certification systems. As such, it was one of the many unelected posts through which the administration exercised influence over the semi-autonomous ministries and public-owned firms. Without a clear idea of what the job entailed

and short on time, Dirceu called Sérgio Silveira. While Silveira had no cryptographic training and less than two years of experience in public administration, Dirceu offered him the presidency of the ITI.

A few days later, Silveira traveled to Porto Alegre, where the World Social Forum was again taking place. In Porto Alegre, he met with Marcelo Branco and Mario Teza. According to Branco, Silveira told them, "They've offered me a position as President of the ITI. I don't know exactly what the ITI is, but I'm going there to implement *software livre*" (interview with the author, April 28, 2008). Silveira wanted help locating competent personnel for the ITI and crafting a national FLOSS strategy. According to Branco, "We decided to put all our support behind him" (interview with the author, April 28, 2008). Silveira then returned to Brasília, where he offered Dirceu and Lula a deal: "Both of you support me with the *software livre* implementation, and I'll make sure this thing, the ITI, works out" (Silveira, interview with the author, May 1, 2008). The party leaders agreed.

Dirceu then created a high-level Committee for the Implementation of *Software Livre* (or CISL) to form a national FLOSS action plan and named the President of the ITI—Silveira—to chair it. When it met for the first time in mid-2003, the CISL served an explicit agenda-setting function and helped to activate the network of FLOSS advocates. The meetings gathered representatives of over 40 government offices, firms, and agencies as well as a handful of participants from the PSL-RS community, including Teza and Branco. Following several meetings, the CISL issued a strategic planning document (CISL, 2003), which Lula officially endorsed in October (da Silva, 2003). The first item on the list addressed FLOSS adoption across state agencies and created a federal committee headed by Silveira to implement the plan.

As Silveira set out to implement FLOSS-based reform, the PSL network served as a crucial resource. Many of the PSL members had extensive experience in the IT industry and in state-owned technology firms, and Silveira appointed some of them to join him at the ITI, in state-owned firms, and on various interagency committees. For example, Renato

Martini, a PSL ally from Rio, became the ITI Vice President, and Djalma Valois was hired to lead the ITI's new FLOSS training programs. Silveira also brought most of his staff from the São Paulo e-government programs to join him in his new agency. In addition, the growing need for FLOSS expertise in government IT departments increased demand for administrators and programmers familiar with FLOSS. Many of these individuals were drawn from the PSL community's ranks.

Several of the core PSL-RS leaders also received appointments in other federal agencies. The former PROCERGS executive Clarice Coppetti became Vice President in charge of technology at the second largest national bank, Caixa Econômica Federal. Prior to her arrival, a few mid-level managers and technicians had experimented with FLOSS. Under Coppetti's guidance (and in response to the explicit agenda set in motion by Silveira and the ITI), these experiments were expanded. In addition, the Caixa migrated thousands of workstations and the technical backbone of the national lottery system to FLOSS platforms (Maia, interview with the author, July 23, 2007).

Some participants in the government's FLOSS-adoption projects did not share the politicized views of Silveira or the PSL leaders. In the largest state-owned bank, the Banco do Brasil, a small group of high level technicians had initiated the firm's FLOSS migrations independent of the PSL. For them, FLOSS had more to do with technical stability, security, and flexibility than national sovereignty or a critique of multinational capital. They described how the PT's new initiatives had created an opportunity for them to promote ideas they had been pursuing for years (Pena, interview with the author, July 25, 2007).

Other members of the IT industry without public sector affiliations also played an important role in the mobilization process. FLOSS advocates held positions in multinational tech firms, small local consultancies, and NGOs; in many cases, the rise of FLOSS within the federal government presented an opportunity for them all. Consequently, the PSL drew larger and larger numbers of participants to the annual forum, its regional conferences, and numerous

e-mail lists. These new participants did not necessarily accept the ideology of the leadership of the PSL or of the PT. One IBM executive told me he had begun attending the FISL in 2005 because of its significance for the company's FLOSS initiatives. With a wry smile, he added that he always made sure to wear his oldest jeans, "the more holes the better," and did not shave for a few days prior to the event so that he could blend in with the crowd (Hoffman, interview with the author, August 3, 2007). Integration into the PSL community was a profitable tactic in the new political environment.

Together, the mobilization of personnel behind the FLOSS agenda enabled Silveira and the other advocates within the administration to consolidate support for their projects. The shared commitments and existing social ties between these individuals (through the PT, the PSL, or the state administration itself) reinforced the organizational capacity of the FLOSS mobilization as a whole. They were also able to use the existing PSL network and infrastructure to recruit new members and spread information. The election of Lula created political conditions within which networks of FLOSS sympathizers could activate, advancing the government's agenda indirectly.

Discursive Mobilization

The mobilization of the network of FLOSS advocates encountered resistance and outright opposition among some of the state elite. A number of Lula's senior ministers did not agree that nonproprietary production was an effective economic strategy. In particular, Luiz Fernando Furlan, the Minister of Industrial Development, defended the proprietary, export-driven model of growth pursued by the previous administration. In this context, Silveira looked to convince federal administrators and politicians that the switch to FLOSS offered sufficient political and economic benefits to offset the costs. To do so, he pursued an aggressive discursive mobilization, depicting the national ICT policies in normative cultural and political terms.

Silveira became a charismatic spokesman for the FLOSS agenda within the administration,

articulating a grand, radical vision of the developmental politics of software, knowledge, and digital networks. Drawing on the ideas of scholars such as Boaventura de Sousa Santos, Manuel Castells, Yochai Benkler, and Lawrence Lessig, he defended the government's preference for FLOSS:

Brazil has more than the right, it has the need to utilize technologies that enable the growth of its technological autonomy, its participation as a developer of solutions in the information society, the reduction of costs and the expansion of its independence in the face of international monopolies. ("Para Sérgio Amadeu. . .", 2004)

From Silveira's (2001, 2003) point of view, state-led FLOSS adoption was not at odds with the logic of the market, but rather a tool that could enhance the distributive function of the market and promote national economic growth. In this way, Silveira argued that the licensing royalties charged by wealthy Northern firms (like Microsoft) represented an exploitative tax on knowledge-based digital goods. According to him, state-led FLOSS adoption would enable the Brazilian economy to wean itself off these expensive technologies and, in doing so, promote national education, economic growth, autonomy, and development. The adoption of nonproprietary technologies within the public sector would (in theory) reduce foreign IP dependencies, and catalyze innovation and industrial upgrading among domestic firms. Not only would the resulting savings on licensing costs enable Brazil to spend more on closing the digital divide, but the preference for FLOSS would prevent lock-in to proprietary products, the costs of which would rise over time. The state and its citizens would benefit from the enhanced transparency and security provided by programs written with nonproprietary code. Furthermore, by embracing collaborative knowledge-production over the Internet, Brazil's citizens would benefit from and contribute to the information commons. FLOSS would thus serve as the foundation of a competitive ICT economy in the global market;

an educated, digitally connected citizenry; and a well-ordered and sovereign nation-state. It would facilitate comparative advantage without compromising national security. Furthermore, the spread of FLOSS would strengthen Brazil's terms of trade as well as its nonproprietary trade agenda.

Silveira's efforts to spread such a grandiose vision generated some political leverage for the FLOSS advocates. He attracted domestic and international press attention to the PT agenda. The idea of a state-mandated FLOSS migration caught the eye of editors in Washington, DC, New York, and London, who characterized Silveira as the latest radical Latin American politician to reject multinational corporate influence (Benson, 2005; "Brazil to advocate . . .", 2003; Clendenning, 2003). These articles disseminated an image of Silveira (and Lula) as the leaders of an anti-imperialist, anti-corporate vanguard governing on behalf of the poor (Anderson, 2011; Braga, 2011). This image reinforced the PT's efforts to position itself at the forefront of the Latin American left at the same time as it brought global recognition to Brazil's FLOSS stance.

Silveira argued against the inherent benefits of the market or technological progress. Instead, he situated the political economy of networks in a broader history of global capitalist hegemony. According to this view, information technologies could produce repressive *or* egalitarian social orders—the outcome depended on the relations of knowledge production within a given society. The state, Silveira claimed, had the responsibility to promote citizens' access to public goods. By relentlessly connecting the arcana of operating systems to the circumstances of children in *favelas*, Silveira framed the digital divide as a moral and political problem, rather than a technical one.

Silveira did not act alone in spreading this politicized vision of the knowledge economy. In the national congress, Walter Pinheiro (2005)—the representative from Bahia who had attended FISL years earlier—argued in favor of new legislative measures on the basis of the digital inclusion agenda. Sérgio Rosa (2004), a Vice President of SERPRO, likewise undertook to revitalize the aging firm by offering increased

FLOSS services. Similar events occurred at DATAPREV and Cobra Tecnologia (Cassino, interview with the author, July 23, 2007; Teza, interview with the author, April 21, 2008). Silveira's rhetoric provided a shared language for justifying these initiatives.

Silveira's sheer vehemence contributed to his prominence. Frequently, he characterized Microsoft as a rapacious, anti-democratic, corporate villain. Representatives from Microsoft-Brazil usually responded to these attacks indirectly, defending the quality of their products and asserting the importance of "free choice" for all software consumers. On one occasion, however, the verbal sparring between the two parties escalated. A March 2004 article in the popular Brazilian magazine *Carta Capital* quoted Silveira accusing Microsoft of "drug dealing practices" for distributing software at no cost to poor Brazilians (Marques, 2004). In response to this provocation, Microsoft-Brazil sued *Carta Capital* and Silveira for defamation. The defamation case increased Silveira's international status, as FLOSS supporters (and Microsoft detractors) from around the world rallied to Silveira's support (for example, Lessig, 2004b). Brazilian courts eventually dismissed the charges.

The "digital drug dealing" incident illustrates how Silveira's discourse produced concrete impacts on the political environment. He gave the FLOSS agenda a recognizable public face and popularized the issues at stake. Influential technologists, executives, and politicians felt obligated to justify themselves on Silveira's terms.⁹ At the same time, members of the PSL and the PT recognized that Silveira's strength lay in his ability to shift public debate. Renato Martini, Silveira's successor at the ITI, said:

Sérgio did not come here to make his career in the government, to stay here forever. He said to me when he arrived and we were talking, "I'm a professor. I came here to create confusion, create a tumult, and go home." . . . in truth, the *Software Livre* project in that era was the discourse of Sérgio Amadeu, and it was successful. (Martini, interview with the author, July 24, 2007)

Other FLOSS advocates echoed this sentiment (Cassino, interview with the author, July 23, 2007). Martini's statement, however, underscores the extent to which Silveira intentionally pursued discursive mobilization as an end in itself and not only a means to more tangible reforms.

Institutional Transformation

Expanding on Silveira's efforts, the FLOSS advocates promoted institutional transformation in three primary arenas: domestic legislature, public agencies, and state-sponsored "digital inclusion" programs. Overall, these efforts met strong opposition. The domestic legislative agenda failed to get very far during Lula's first term. FLOSS supporters within the congress sought to replicate laws from Paraná and Rio Grande do Sul (Mazoni, 2003). In both of those states, the local legislature mandated the use of FLOSS in all levels of public administration. The proposed federal measures likewise sought mandatory FLOSS adoption in public agencies as well as state-run schools and hospitals (Kaminski, 2007; Pinheiro, 2005). For some skeptics, these proposals resembled the market reserve policies of the 1980s too closely (Evans, 1995). The new measures would have also posed technical challenges to decrepit legacy systems still handling much of the state's computing. Faced with such high political and economic costs, congress rejected the proposals.

In public agencies, ministries, and firms, the FLOSS advocates promoted FLOSS migrations and training. The most extensive migrations occurred in the state-owned technology firms where FLOSS supporters already held (or acquired) influential positions. Among these, the Previdência Social (social welfare administration) and its IT management organization DATAPREV led the way, migrating many databases, servers, and Web platforms onto FLOSS (DATAPREV, 2004; Teza, 2004). These migrations involved core PSL members such as Mario Teza. A similar pattern unfolded at SERPRO, the Federal Data Processing Service firm affiliated with the Ministério da Fazenda (Ministry of Finance). There, Vice President Sérgio Rosa championed the FLOSS agenda as

SERPRO migrated many of its systems, beginning with thousands of servers and workstations (Kuhn, interview with the author, July 23, 2007).

Approximately a dozen other federal entities followed these early-adopters. Among them, Petrobrás, the state-owned energy giant, and the Ministry of Culture invested most in FLOSS. Security concerns also led the Brazilian Armed Forces and Intelligence Services to transition onto Linux systems. Additional migrations occurred in the Ministry of Science and Technology and the Ministry of Industrial Development and Commerce, as well as the national postal service. The pace of migration moved steadily between 2003 and 2006. The transitions focused on “back-end” IT operations, with a smaller number involving systems in use at employee workstations.

The administration promoted “digital inclusion” and FLOSS-based IT education through market-based incentives and state-sponsored programs (Silveira, interview with the author, May 1, 2008). These initiatives derived from the CISL’s strategic recommendations and targeted different socioeconomic strata of the population. Among them, the PC Conectado, Casa Brasil, and Centros de difusão da tecnologia e conhecimento (Technology and Knowledge Diffusion Centers, or CDTCs) programs had direct support from the ITI and the FLOSS advocates. However, opposition from the finance and development ministries limited the CISL’s ability to implement all three proposals effectively (“Incentivos a PC . . .”, 2005).

CONCLUSIONS

Early in Lula’s third year in power, a series of political scandals led the “Superminister” Dirceu to resign as Chief Minister of the Casa Civil and returned to his previous role as a São Paulo state representative (Ribeiro, 2005). The FLOSS agenda had lost one of its most powerful allies. Even before Dirceu’s departure, Sérgio Amadeu da Silveira had expressed frustration with the glacial pace of government procedure and wrangling over funds. With Dirceu gone, things only got slower. After the delay of the PC Conectado program, Silveira had additional

funding requests for digital inclusion programs held by the Ministry of Planning. Fed up (and perhaps discouraged in Dirceu’s absence), he resigned in the middle of August, 2005 (Cesar, 2005). Dilma Rousseff, at the time Dirceu’s replacement as Chief Minister of the Casa Civil, announced that the administration would continue to promote FLOSS in ministries and state-owned firms as before. Nevertheless, the sudden personnel changes were a setback for the FLOSS mobilization, and that marked the end of its progress during the first Lula administration.

In interviews, many of the FLOSS advocates recognized numerous challenges and uncertainties that constrained their efforts. At the same time, they offered divergent views as to why the grand vision of a state-led transformation of the IT sector articulated at the outset of the Lula administration has proven so elusive. Silveira (interview with the author, May 1, 2008) maintains that a combination of proprietary firm lobbyists and ideologically motivated opposition within the government ministries prevented him from executing FLOSS migrations and digital inclusion projects on a broader scale while at the ITI. He reflected:

Where is the instrument that legally enforces technological policy? It doesn’t exist. The proposal [for a mandatory FLOSS adoption law] exists—the proposal is there. It’s waiting. . . . But that is where the barrier remains because that is where the issue ceases to be a conversation, a voluntary idea that the agencies adopt . . . and becomes a norm within the government. (Interview with the author, May 1, 2008)

Absent the force of law, Silveira believed that FLOSS opponents would never relent.

In contrast, Marcelo Branco argued that the shortcomings of Lula’s first term stemmed from the personnel decisions made by the PT leaders—specifically the choice of the inexperienced Silveira to coordinate the agenda. He emphasized how, “Some people . . . that had political experience and administrative experience were not considered during the formation of the first Lula government” (Branco, interview

with the author, April 28, 2008). Indeed, among the original PSL leaders from Porto Alegre, only Clarice Coppetti was immediately offered a high-ranking position in Brasilia. Branco himself worked as a consultant on some of the FLOSS implementation committees during the first two years of the administration, but then left the country for a temporary position in the regional government of Cataluña, Spain. Only some of the wisdom accumulated in the agencies of Rio Grande do Sul made it into the federal FLOSS mobilization.

Arguably, the most substantive achievement of the FLOSS advocates was the institutionalization of the movement itself. An extensive social and professional network of FLOSS advocates remains inside the state bureaucracy. This network continues to grow through events such as the Fórum Internacional do Software Livre and groups such as the PSL. The FISL now enjoys support from the federal government and numerous private sector firms. New leaders and initiatives have also emerged since 2006, following Lula's election to a second term in office. Of particular significance for the old PSL leaders, Marcos Mazoni was appointed to be the President of SERPRO at the outset of Lula's second term, signaling that the FLOSS agenda may have entered a new phase focused on further institutionalization.¹⁰

Brazil's FLOSS mobilization does not provide a generalizable example of how to transform developmental states or implement FLOSS across the Global South. Instead, the case of the FLOSS advocates in Brazil reveals key factors and strategies that shaped this process in a specific context. The case has theoretical as well as comparative implications. The ability of Brazil's FLOSS advocates to promote their agenda resulted primarily from their collective mobilization in state and civil society organizations. Built on the strength of a social and professional network of experts, the FLOSS advocates drew strength through affiliation with the PT as well as the federal government, disseminating ideas and projects across a fragmented bureaucratic field. From this position, FLOSS advocates challenged dominant ideas about the nature of the knowledge-based economy through a radical, politicizing discourse.

The discursive component of the agenda transformed public debates about IT. At the same time, the FLOSS advocates met with resistance in many of the federal bureaucracies as well as from some private sector groups.

The FLOSS advocates positioned themselves as counter-hegemonic, insurgent experts in several different ways. These correspond to the two criteria of insurgent expertise I elaborated earlier: self-representation and practical action aimed at dismantling neoliberal policy from within the state. More than any other individual, Silveira promoted a radical discourse aimed at repoliticizing IT and the role of the state in setting industrial development policy. From his position in the ITI, Silveira and his colleagues also performed a coordinating role between several of the state agencies and state-owned enterprises, promoting a series of policy initiatives across the federal bureaucracy. At the same time, people such as Marcelo Branco and Mario Teza worked outside of the formal structure of the state to expand the social and professional network of FLOSS supporters through the FISL and other PSL projects. Finally, individuals with positions in key state-owned technology firms, banks, and enterprises (including, among those mentioned or cited in this article, Marcos Mazoni, Clarice Coppetti, Paulo Maia, João Cassino, Ulisses Pena, Sérgio Rosa, and Deivi Kuhn) sought to establish FLOSS in the core operations of their organizations. In aggregate, these efforts altered the ideological and organizational landscape of technology policy-making, reframing subsequent debates around questions of access, freedom, and openness, in addition to questions of export and profit. Consistent with personal experiences in the labor and student movements under the dictatorship, many of these individuals saw their actions as a continuation of political struggles for national development, economic equality, and access to informational resources.

At the same time, the FLOSS advocates' position as insurgents was neither uniform, nor constant, nor entirely consistent with the conditions of the global IT industry. On some occasions, as in the case of the cooperation between several federal agencies and IBM, strongly politicized FLOSS advocates capitalized on

alliances with the private sector while downplaying the ways in which these alliances contradicted some of the anti-corporate rhetoric employed by Silveira and others.¹¹ In addition, the alliances between the FLOSS advocates and large IT firms such as IBM and Intel were also indicative of the fact that the mainstream of the global IT industry had embraced FLOSS during the early 2000s. These realities complicate the idea that FLOSS constituted a pure alternative to multinational capital accumulation. In addition, the fact that FLOSS had already grown so prominent among large multinational technology firms suggests that the ability of the FLOSS advocates to gain any political traction whatsoever rested in part on exogenous factors beyond their control.

In this way, the context of the domestic and global IT industry played an important role in enabling and shaping the FLOSS mobilization, as the FLOSS advocates enjoyed the support of key multinational and domestic IT firms. This alliance appeared somewhat contradictory at times, but generally worked to the advantage of all involved. Politically and financially, IBM and other FLOSS-friendly multinationals lent support and credibility to the FLOSS adoption efforts. While they rejected the radical terms in which some FLOSS advocates framed the agenda, they also recognized this as just another cost of doing business with the PT. In exchange, several firms (but IBM in particular) reaped large, long-term contracts with government agencies; public relations support for FLOSS; and a strong, vocal critic of Microsoft, one of their largest competitors in the marketplace. It is impossible to say whether private sector support was a necessary condition for the FLOSS agenda to advance as far as it did, but it does seem unlikely that the case for federal FLOSS adoption would have been taken seriously in the absence of a viable marketplace for FLOSS services and support.

It is important to underscore that, while the FLOSS advocates identified as members of the PT, the PT party leaders were not the source of these initiatives. Linkages between the FLOSS agenda and the PT's policy programs had to be actively constructed and maintained over time—they were neither inherent in the nature

of FLOSS nor the politics of the PT. The FLOSS advocates' ability to integrate their agenda into the Lula government hinged on their collective experience in the workers' and student movements as well as within the state. Individuals used their professional and personal connections to bridge the relatively narrow gap between their own networks and those of the PT party hierarchy. Framed as radical responses to the neoliberal technology and development policies, the mobilization for national FLOSS adoption reinforced the leftist, progressive image of Lula and the party. However, the work of the FLOSS advocates was, for some, a frustrated response to what they saw as PT leaders' lack of vision when it came to IT and post-industrial social change (Branco, interview with the author, April 28, 2008; Teza, interview with the author, April 21, 2008). Reflecting the interests of both groups, the resulting FLOSS agenda took on a shape broadly consistent with the public image promoted by Lula and the PT, as well as the vision promoted by the FLOSS advocates.¹²

Reflecting the interests of both groups, the resulting FLOSS agenda took on a shape broadly consistent with the public image promoted by Lula and the PT as well as the vision promoted by the FLOSS advocates, despite persistent internal tensions that contradict many of the movement leaders' stated aims (Evangelista, 2010). First, the FLOSS advocates' creation of a network across state agencies and civil society groups implies a model of mobilization in political fields dominated by expertise. In this case, national elites with prior connections to public institutions established a coalition that mitigated the fragmentation of Brazil's state bureaucracy. Other studies of expert networks intervening in the knowledge-based economy show similar characteristics (Kapczynski, 2008; Saxenian, 2006). Taken together, these cases suggest that expert communities can and do use their skills to promote economic equality and growth in the Global South. The extent to which the collective participation of elites determines the success or failure of such strategies should be the topic of comparative studies in the future. Subsequent research should also explore the factors that predict these differences in FLOSS-related policy

agenda-setting as well as variations in policy impacts.

In more general terms, the history of FLOSS in Brazil provides a reminder that technocratic governance institutions are vulnerable to appropriation and transformation. These conclusions should not seem surprising in the wake of the neoliberal revolution that swept through the post-Soviet states and much of the Global South during the 1980s and 1990s. While national socioeconomic conditions played a key role in determining the impact of neoliberal policies (Fourcade & Babb, 2002; Harvey, 2005), global diffusion of such policies largely took place through an epistemic community of individuals with similar training and values (Woods, 2006). Expert reactions against the logic of the market are the inverse of these processes and complement other forms of counter-hegemonic struggles (Evans, 2005, 2008).

As the importance of policy-making arenas dominated by technocratic experts has grown since the mid-20th century, the question of how to make public debate over complex issues more accessible and democratic has emerged as a major political and scholarly concern. Both the experience of the FLOSS advocates in Brazil as well as the A2K mobilization described by Kapczynski (2008) suggest that the possibility of opening up a public debate around IP rights may hinge on reframing technical topics so that their moral and political implications become more transparent. This is a suggestive finding that merits substantive follow-up. Comparative research should analyze mechanisms and techniques of mobilization in the context of development politics and technology policy. The resulting insights can, in turn, facilitate an enhanced understanding of how low- and middle-income countries might create policy space to bring about enhanced growth, innovation, and equality in the information age.

NOTES

1. The data collected for this paper consisted of open-ended interviews, field notes, and textual sources. Methods of data collection and sample selection are discussed in greater detail below. The author does not have the permission of the interviewees to publish audio files, transcripts

of the interviews, or the field notes based on personal communications and interactions. All textual sources are listed in the bibliography.

2. A thorough discussion of IP rights and their application to IT is beyond the scope of this article (see Benkler, 2006, pp. 1–35). In general, I use the term “nonproprietary” to refer to informational resources that are shared in some nonexclusive manner. In the case of software, this usually entails the release of source code under a “free” or “open” license (See Coleman & Hill, 2004; Kely, 2008).

3. By “commons-based,” I refer to models of informational production and exchange rooted in the construction of a “knowledge commons” (Benkler, 2006; Evans, 2005).

4. I use the term “elites” here (and elsewhere) somewhat loosely to describe individuals with access to the intellectual, economic, political, and social resources to participate in organizational decision-making, policy creation, and other activities characteristic of many institutional fields of power. In this regard, I draw on Pierre Bourdieu’s use of the term (1996).

5. The most well-known projects with Brazilian programmers in leadership roles were Conectiva (Arnaldo Carvalho de Melo), Java (Bruno Souza), and Debian (Fernando Ike). For a recent ethnography of the culture of Brazilian programmers, see Takhteyev (in press).

6. This biographical account draws on Teza (2000, 2004, 2006; interview with the author, April 21, 2008).

7. See Stallman’s arguments on freedom and property in “The GNU Manifesto” (1984/2007). Stallman may or may not have intended his arguments to be anti-capitalist, but they can be (and have been) read that way. Thanks to Johan Söderberg for pointing out this distinction.

8. Throughout this narrative, I follow the bibliographic conventions of Brazilian Portuguese and refer to Amadeu da Silveira as “Silveira,” despite the fact that he is known colloquially as “Sérgio Amadeu.”

9. This was emphasized in several interviews (Hoffman, interview with the author, August 3, 2007; Martini, interview with the author, July 24, 2007; Valois, interview with the author, July 24, 2007).

10. For analysis of the dynamics and tensions that have grown within the Brazilian F/LOSS movement and the communities that take part in the FISL, see Evangelista (2010).

11. Linux-based services facilitated a rapid expansion of IBM-Brasil’s workforce and profits around the time of the FLOSS mobilization (Capek, Frank, Gerdt, & Shields, 2005; “Serviços podem duplicar . . .”, 2004). According to Haroldo Hoffman (interview with the author, August 3, 2007), the executive in charge of IBM-Brasil’s Linux strategy from 2003–2007, this had also meant lobbying the state for Linux adoption and legal support several years prior to Lula’s election (interview with the author, August 3, 2007).

12. In the words of one anonymous *JITP* reviewer, “As a result this article addresses both how IT influenced politics (and policy) and how politics influenced IT.”

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