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Chapter 1. “Follow the Networks”

On February 27, 1994, three Costa Rican engineers took an afternoon flight from San José to Managua, Nicaragua. The timing for this trip was good in more ways than one. Little by little, more than a decade of war in the region was coming to an end. The trip had a single purpose: participate in Nicaragua’s connection to the Internet. In Managua, a group of collaborators who had worked for months to establish this link awaited them. For almost three years, they had been making plans together for Nicaragua’s Internet connection through Costa Rica via an analog microwave link built in the late 60s, a decade in which the concept of Central American integration had flourished. From Costa Rica, Nicaragua would be connected to Homestead, Florida through a satellite antenna. This goal was achieved the very next day and was celebrated enthusiastically. A public event was held at the Nicaraguan university that led this initiative. After a series of training and work sessions with their Nicaraguan counterparts, the Costa Rican engineers returned to San José on March 2. Only four months later, they would repeat this process in a different setting: the new site was Panama, but the purpose and procedures were almost identical.

This story has captivated me since I first heard it a few years ago for various reasons. First, because of its historical importance. Between 1993 and 1996, Central American countries established direct links to the Internet for the first time in history. Moreover, the Internet connection of one country through the infrastructure of another was a technological milestone in Latin America. Second, it reflects the creativity of a group of people from countries with few economic resources, in a region devastated by years of war and crisis. Peace agreements

negotiated at the end of the 1980s required lengthy processes of economic, political, and social reconstruction over the following decade (Pérez Brignoli, 2010). In most countries of the region, peace was only attained well into the 1990s. Thus, because of the historical context in which this occurred, connecting to the Internet was a political as much as a technological achievement. Third, the significance of the story also involves the actors in question: the network linked two neighboring countries with a complicated historical relationship marked by chronic controversies. Finally, this achievement matters for how it symbolizes a specific era in the history of computer networks in the southern hemisphere. Various actors in Latin America experienced similar processes in some way or another. Establishing new nodes of computer networks required these kinds of exchanges and flows, these twists and turns.

How and why did Central America connect to the Internet? What consequences did the link to early computer networks have in the region? This book sets out to answer these two research questions through an original analysis of the projects that resulted in the first Internet connections in countries of the region. These projects were characterized by the establishment of not only technological networks but also transnational collaborations between actors and organizations. In this way, Central American countries connected *to* and *through* computer networks such as the Internet. Drawing on archival work and interviews with the protagonists of these projects (including directors and collaborators of the networking projects, figures in politics, government and international organizations, representatives of telecommunications companies, and pioneer users, among others), this book examines how initiatives to connect to early computer networks unfolded and were developed from the mid-1980s to the end of the 1990s.

The following pages discuss the early development of the Internet in a region that has not received much academic attention. Consistent with the tendency to provide “hagiographic” descriptions of successful cases (Russell, 2017), historical research has primarily dealt with the most connected countries. As a result, we know little of how the Internet has been historically envisioned and implemented in less connected regions, such as Central America. Therefore, our understanding of the early development of computer networks in the global south is limited. Over the past few years, there has been a growing interest in studying the use and development of media technologies in Latin America (Chan, 2014; Kleine, 2013; Medina, 2011; Penix-Tadsen, 2016; Takhteyev, 2012). Together, these monographs seek to “move the story of invention and innovation southward; study forms of local innovation and use; analyze the circulation of ideas, people, and artifacts in local and global networks; and investigate the creation of hybrid technologies and forms of knowledge production” (Medina, da Costa Marques & Holmes, 2014, p. 3). However, these studies tend to focus on some of the largest countries in the southern continent. This book suggests that, because of its history and political, economic, and social configurations, the study of Central America can also offer important analytic lessons for interdisciplinary research on the development of media technologies, including research conducted in and about Latin America.

The possibility of establishing communication networks through technology has raised hopes throughout history. Mattelart (2000) traces this process back to at least the eighteenth century, when the network became “the emblematic figure of the new organization of society” (p. 15). Few concepts have marked the turn of the century more than the “network” (Boltanski & Chiapello, 1999; Castells, 1996). In a recent interview, Guy de Téramond, one of the architects and protagonists of the story of how Costa Rica and Nicaragua came to be interconnected, which

this book starts with, offered a terse but profound explanation of the motivations that characterized these types of projects: “Such is the nature of networks” (Siles, 2017a, p. 352). There are several ways to interpret this assertion. Seen strictly as a computational phenomenon, de Téramond suggests that networks require new nodes in order to acquire or enhance their value. A more radical vision would attribute networks with a natural potential for expansion. Taken together, these interpretations capture a common understanding of the capacity that was ascribed to the Internet at the dawn of Central America’s interconnection: networks have an intrinsic capacity to enhance integration and collaboration. In other words, integration would be a natural result of the construction of networks. This book transforms this assumption into an empirical question.

To that end, I propose to adapt actor-network theory’s classic tenet (“follow the actors”). Actor-network theory considers every “fact” as a network composed of human and non-human actors that assume identities through a multiplicity of negotiations and interaction strategies. “Following the actors” thus means “[catching] up with [actors’] often wild innovations in order to learn from them what collective existence has become in their hands [...] which accounts could best define the new associations that they have been forced to establish” (Latour, 2005, p. 12). Over the following pages, I show that the study of computer networks also requires “following the networks.” First, this means tracking the processes through which computer networks arrived in Central America in the mid-1980s. Second, this tenet invites us to understand how different nodes emerged in different parts of the Central American region; how flows of exchanges between these nodes were established; and through which actors, logic, and contexts these exchanges became possible. This is, in essence, an exercise in transnational analysis. That is the task set out for this book.

Comparative work about Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua has been frequent in academic research. However, deciding what counts as part of the “Central American region” is an exercise fraught with tensions. In this project, Panama was included in the analysis in addition to the five other countries, due to both its participation in the processes analyzed as well as to its historical connections with the processes described in the present work. For that reason, whenever Central America is mentioned, I refer to the aforementioned nations (i.e. *América Central*), despite the clear links of the study with the strictly delimited geographic region’s history (i.e. *Centroamérica*). In contrast, Belize was excluded from the investigation. Although it could be argued that geographically it is part of this region, and that there was some collaboration between the actors discussed in this book and their counterparts in Belize, their networking processes were somewhat different compared to the other cases examined here.

Networks, Integration and Development: Theoretical and Methodological Considerations

By examining the early process of the connection to computer networks in Central America, this book dialogues with different interdisciplinary fields of knowledge in order to develop three theoretical arguments. These arguments span technology research, integration processes, and perspectives on development.

A Transnational History of the Internet

First, I argue that transnational flows of knowledge, data, and technologies are not only an inherent feature of the Internet, but rather a constitutive characteristic of its historical development. This is crucial to understand the histories of the Internet, but it has been seldom recognized in scholarly literature. Most historical research has focused on the study of the

Internet mainly through national accounts (Goggin & McLelland, 2017, Brügger & Milligan, 2018). Transnational, regional networking efforts have received significantly less academic attention. This book makes visible the importance of transnational processes in the history of the Internet.

The study of transnational histories gained traction at the turn of the century, in the context of marked academic concerns about processes such as globalization. Transnational history is more an “umbrella” term than a field with established conceptual boundaries. As such, it tends to be defined more as an approach, “a way of seeing” things (Beckert, cited in Bayly et al., 2006, p.1454), “an angle, a perspective” (Iriye & Saunier, 2009, p. xx), rather than as a specific method or theory. The stream of studies encompassed by the notion of transnational history can be discussed in terms of three basic orientations.

First, transnational histories emphasize the study of certain *objects* or, more precisely, certain processes, namely, flows, circulation, movements, connections, and exchanges that “operate over, across, through, beyond, above, under, or in-between polities and societies” (Iriye & Saunier, 2009, p. xviii). What passes through and crosses borders are people, knowledge, technologies, ideas, practices, and institutions. Thus, Hofmeyr argues that “the key claim of any transnational approach is its central concern with movements, flows, and circulation, not simply as a theme or motif but as an analytic set of methods which defines the endeavor itself” (cited in Bayly et al., 2006, p.1444). Rather than abandoning the focus on political or geographical constructs such as countries, this approach complements it through a study of common processes that connect them and, thereby, redefine them. In this particular way, transnational history intersects with cultural studies and their interest in mechanisms of circulation.

Second, transnational histories highlight the work of specific *actors* and how they obtain transnational agency. Thus, studies have focused on the work of international organizations (Iriye, 2002; Keohane & Nye, 1972). Van der Vleuten (2006) contends that the analysis of these actors allows us to understand “how transnational networks were built, how divisions of labor between international organizations, state agencies and private companies were negotiated, and even how transnational linking processes failed” (p. 305). These organizations are analyzed as sites of internal tension (van der Vleuten, Anastasiadou, Lagendijk & Schipper, 2007). Clavin (2005) also maintains that the role of these organizations should be understood in light of their interaction with government operations. To explain the agency of these specific kinds of actors, studies have highlighted some of their main organizational and coordination dynamics, most notably how these shape networks. Transnational histories are thus characterized by the study of networks made up of a variety of actors (Kohlrausch & Trischler, 2014; Snyder, 2011). Researchers have also stressed the role of so-called “network entrepreneurs,” individuals who work to bring together previously separated actors and groups (Burt, 2000). The premise that underlies this approach is that the transnational circulation and flow of people, ideas, or products requires flexible structures that endow this flow with vitality and reach.

Third, scholars have highlighted the specific *consequences* that can be associated with the study of transnational processes. Empirically, one of the main contributions of this group of studies has been to demonstrate the importance of these flows in the historical formation of the nation-state or regionalism processes. For Bayly, “the ‘nations’ embedded in the term ‘transnational’ were not originative elements to be ‘transcended’ [...] Rather, they were the products—and often rather late products—of those very processes” (cited in Bayly et al., 2006, p. 1449). For this reason, transnational approaches have been key in recent analyses of Europe’s

historical construction (Kohlrausch & Trischler, 2014; van der Vleuten & Kaijser, 2006).

Conceptually, scholars argue that a significant consequence of transnational histories is a renewed understanding of pre-established notions or, as Connelly puts it, a desire to “challenge ossified categories” (cited in Bayly et al., 2006, p. 1447). These categories tend to be replaced by notions that emphasize the “lived history” that infuses them (van der Vleuten, 2008, p. 984). More generally, what this approach allows then is “a new and more accurate perspective on existing themes in historical scholarship, a novel understanding of not only global or regional integration issues but also national and local history” (van der Vleuten, 2008, p. 987).

In the case analyzed in this book, a transnational approach makes visible the processes of network formation through which people, knowledge, and technologies circulated among Central American countries, and the role of specific actors (such as international organizations and “network entrepreneurs”) through which the Internet became a reality in the region during the 1990s. This book argues that this perspective is indispensable for rethinking the history (or histories) of the Internet as a technology.

By emphasizing the formation of exchange networks, I do not mean to suggest that these collaborations were devoid of controversy. Ambiguities, tensions, and conflicts are an intrinsic part of the establishment of networks and technological projects. This book thus recognizes and examines the differences which emerged between countries and organizations, as well as the disputes that emerged within each country in Central America that pursued networking initiatives. Clavin (2005) reminds us that, once established, networks are not perpetual; on the contrary, they can be replaced at any time. I also avoid hailing the establishment of transnational networks as an intrinsically positive process. Mattelart (2000) contends that “networks have never ceased to be at the center of struggles for control of the world” (p. viii). The cases of

“transnational states” and “transnational elites” demonstrate that the establishment of these types of networks has also limited, rather than enabled, the development of regions such as Central America (Bull, 2005; Sánchez-Ancochea & Martí i Puig, 2014).

Technology as a Political Integration Project

A second argument of this book is that as the Central American political and economic crisis of the 1980s came to an end, establishing computer networks brought about political projects of regional integration. In interdisciplinary fields such Science and Technology Studies (STS), several authors have shown that technology is not neutral, but rather materializes a political project in itself. In a classic essay, Winner (1980) pointed out that technology is political not only because it is designed for specific purposes, but also because its conception seeks to make certain forms of social organization imperative. Technology thus creates a social system that legitimizes certain world views (expressed through specific uses of that technology), while sanctioning others. The use of technology thus becomes a terrain of tensions. Users can accept the values inscribed in technology, but they can also “interpret, challenge, reject, and modify” the political script they contain (Gillespie, 2007, p. 89). This perspective has found fertile ground in contemporary studies that examine media technologies as more than mere carriers of symbolic messages.

The premise behind this body of work is that technology and society are mutually constitutive and, therefore, are inseparable. Another way of expressing this idea is through the notions of “socio-technical” and “heterogeneous” engineering (Law, 1987; Law & Callon, 1988; Morris, 2009). These notions suggest that the development and establishment of technology is a process in which a variety of heterogeneous elements are woven through the formation of

“networks,” “seamless webs” or “systems” that are as technical as they are social (Hughes, 1983; Latour, 1991). Hughes (1986) summarizes this position: “The technological systems of the system builders, such as an electric-light and power system, interconnect components so diverse as physical artefacts, mines, manufacturing firms, utility companies, academic research and development laboratories, and investment banks” (p. 287).

In a similar manner, although it seems like a purely “technical” issue, implementing a technology such as the Internet (like projects examined in this book did) required the articulation of a heterogeneous network of elements, which included knowledge about matters related to the design and operation of computer protocols, but also the search for funds, negotiating with governments, academic authorities and state entities, interpreting telecommunication monopoly laws and regulations, building alliances with international organizations, recruiting and training collaborators, and working with counterparts abroad to enhance the reach of the network, among other issues.

To make sense of these processes, I draw upon the work of Eden Medina (2011) about the relationship between technology and politics in Allende’s Chile: “technology can help scholars understand historical and political processes” (p. 8). In the case of this study, one of these processes related to Central American integration. Integration is a multidimensional concept. It is both a project and its products, a context that provides logic, discourse, and orientations to processes. Integration is usually understood and studied in economic or political terms. At the economic level, integration is interpreted as a matter of intra-regional trade in the context of international markets and structural factors. In the political sphere, scholars typically stress relations of power and hegemony between governments: “integration arises primarily as a result of the convergence of preferences in the larger states of a region [...] [which] co-operate

and get involved in asymmetrical bargaining” (Sánchez Sánchez, 2009, p. 5). Integration is usually understood as a continuum of positions ranging from the definition of common goals, reforms, and agendas aimed at favoring some degree of convergence of preferences for the collective benefit--at one end--to the formation of a single political or economic entity--at the other end (CEPAL-BID, 1997).

Further to this, the present work develops an approach to integration that emphasizes the notion of interconnection. I argue that technology (as a political project) can materialize and enact specific notions of integration. Thus, both the implementation of computer networks and integration processes can be seen as products of heterogeneous engineering. The actors studied in this book envisioned integration as the formation of sociotechnical networks that could enable the transnational circulation of people, knowledge, and technologies towards common goal: the connection of Central American countries to computer networks as a means to foster development.

If “technologies are historical texts,” as Medina points out (2011, p. 8), then the analysis of networking processes allows for a better understanding of a relatively unknown part of Central American history. This book offers an original and inedited account of a key decade in the history of Central America seen through the lens of technology. It is difficult to find mention of technological projects in the literature on Central American integration, let alone analytical considerations of their significance. This book contributes to this body of work by arguing that technology is a crucial way of critically examining the notion of integration and the visions of Central America that were associated with it at the end of the 1980s crisis.

A similar project has been conducted over more than a decade in Europe. These studies posit a parallel development of technological systems and various definitions of Europe and its

integration (Kaijser, van der Vleuten & Högselius, 2016; Schot & Scranton, 2014; van der Vleuten & Kaijser, 2006). The main lesson that can be drawn from this body of research is that the definitions of technology (such as the Internet) and regions (such as Central America) should not be taken for granted but rather be seen as mutually constitutive. In this book, I argue that, while political and economic integration efforts since the 1960s made possible the networking initiatives of the 1990s, these initiatives also helped materialize or express an approach to Central American integration that has seldom been examined and recognized. In an era in which the need to protect borders has often been defended, remembering a historical moment that sought to overcome them is also, in essence, a political act in itself.

Sociotechnical Configurations of Development

A long-standing premise in the history of technological networks is that interconnection through communication infrastructures leads to development (Mattelart, 2000). The most significant integration efforts in Central America of the twentieth century (in particular the 1960s and 1990s) were devised to achieve that specific goal. International organizations that contributed funds to networking projects in the region did so with this objective in mind as well. The third theoretical argument of this book connects the analysis of networking projects with efforts to understand their implications for regional development. The analysis of the link between computer networks and development can be explored at the institutional level, in the sense of sociology's "new institutionalism." This perspective privileges the study of institutions, which are defined as those "regulative, normative, and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott, 2014, p. 56). In this way, I provide an alternative to studies that seek answers and explanations at

the level of access divides and that, in this way, “isolat[e] [technologies] from their much broader economic and social context” (Hoffmann, 2004, p. 1).

The link between technology and development connects the discussion of the history of computer networks in Central America with a variety of disciplinary fields. Studies in Information and Communication Technologies for Development (ICT4D), for example, have provided numerous contributions to theorize this link from an institutional or systemic perspective (Bass, Nicholson & Subrahmanian, 2013; Hoffmann, 2004; Kleine, 2013; Silva & Figueroa, 2002). They have sought to transcend the discussion of development based on measures of economic growth, to focus instead on people-centered processes and the possibilities they have to “lead the lives they have reason to value” (Sen, 1999, p. 3). However, the studies associated with this tradition have been limited in two main ways. First, they tend to conduct research into specific technology implementation initiatives rather than the general dynamics that can enable (or limit) development through technology. Second, these initiatives are studied mainly at the country level, and thus development at the regional level (entailed by processes such as integration) is usually not considered.

This book situates concrete networking initiatives within the context of a field, ecology, or wider sector, which makes it possible to understand how favorable conditions are created to achieve longer-term development at national and regional levels. To this end, I propose to analyze the historical development of computer networks such as the Internet through three related dimensions or levels:

- *Sociotechnical systems and networks*: This level privileges the study of computer networks as cultural artifacts. As noted above, the development of these artifacts requires articulating different elements through sociotechnical networks that give

support and political value to systems and infrastructures. As this process takes shape, these systems and infrastructures become essential for actors. The articulation of these networks also involves putting into action specific and mutually constitutive views of technology and society (Gillespie, 2007; Latour, 2005; Law, 1987).

- *Institutional arrangements*: This level emphasizes the study of how institutional fields such as telecommunications are formed, maintained, diffused, and debilitated. These fields are comprised of organizations, norms, laws, knowledge, politics, and forces, as well as types of discourse and logic. This level allows computer networks to be envisioned as part of organizational, legal, and regulatory frameworks that, through the establishment of certain arrangements and provisions, can be difficult to modify (Hoffmann, 2004; Mansell, 2001; Silva & Figueroa, 2002).
- *Sociocultural configurations*: This level stresses the study of computer networks as cultures in themselves where contents, symbolic texts, appropriation and creation practices circulate. Users of these technologies are seen as having historically and culturally situated agency. These practices and contents lead to the emergence of “media cultures” or “digital cultures.” Privileging the study of computer networks as media technologies also invites an assessment of how meanings and notions emerge around them that become fundamental parts of culture (Couldry, 2012; Hepp, 2012; Sassen, 2017; Siles, 2017b).

This book examines the trajectory of computer networks in Central America by considering them simultaneously as sociotechnical systems, institutional arrangements, and

sociocultural configurations. Thus, it does not focus on specific technologies, public policies, or the uses of these technologies as isolated phenomena. Instead, it analyzes how these three dimensions converge in specific conceptions or views of development, while also examining development issues from the field and sphere of influence that have formed around technologies such as the Internet.

Another contribution of this book is to incorporate the formation of theories as a vital part of this institutional field. Thus, I provide an archeology--in the sense given by Michel Foucault, that is, an analysis of the conditions that have made it possible for certain discursive elements and forms of knowledge to emerge (Davidson, 1986)--of one of the first theories devoted to the implications of technology for development, which took shape in Latin American at the turn of the century.

Finally, I situate the process of the privatization of telecommunications in the 1990s as part of the realm in which computer networks took off in Central America. I thus explore the institutional tensions that privatization processes brought about: on the one hand, they created conditions for the formation of an incipient industry in some countries, and facilitated the emergence of early “digital cultures”; on the other, they hampered the pursuit of the integrationist dream, and limited the scope and potential of computer networks for regional development. I argue that the implications of networking projects to foster the development of Central America must be understood in the context of this tension.

A Note on Method

The analysis presented in this book comes mainly from two sources of data. First, archival research with primary sources was carried out over several years. Numerous documents

related to the historical implementation of the Internet were collected in Central American countries. Most of these documents were preserved by the protagonists of networking initiatives or in the archives of organizations such as NIC Internet Costa Rica. It is important to point out that, despite the fragmentation involved in studying a process ranging over six countries, the digitization of some of these documents made tracking, consulting, and analyzing these files possible.

Second, a total of 80 interviews were conducted. These interviews were carried out in two different stages. I held an initial group of 44 interviews between 2005 and 2006. These interviews focused primarily on the Costa Rican case. Costa Rica was the first Central American country to connect to the Internet, and it also played an important role in the expansion of computer networks in the region (Siles, 2008). These conversations were thus intended to obtain a clearer picture of the local networking process in this country. Building on that first stage of data collection, a second round of 36 interviews was conducted between 2017 and 2020. This stage concentrated mostly on networking projects in other Central American countries. It sought to better understand the dynamics through which networks such as X.25, BITNET, and the Internet acquired regional nodes and users.

These interviews reflect the systemic or institutional approach described previously. In other words, I interviewed a multiplicity of actors with different roles in networking processes. I talked to engineers, coordinators, and collaborators of these projects, but also to promoters and early users, representatives of state telecommunications companies, actors from international, state and non-governmental organizations, and to some of the academics who first became interested in the Internet as an object of study in the 90s.

The Nodes of This Journey

Before delving deeper into the evidence that supports the arguments developed in the book, it is necessary to more carefully consider the context that made it possible for Central American countries to connect to computer networks. To this end, Chapter 1 discusses political, economic, and social processes that took place in the region in the second half of the twentieth century. It examines regional integration initiatives developed in the 1960s (i.e., the creation of the Central American Common Market) and in the 1990s (i.e., the Central American Integration System). This chapter argues for understanding the mutual configuration between regional integration processes and technological projects (such as roads, microwave analog links, and computer networks).

Chapter 3 begins the empirical analysis of the networking experiences and efforts that preceded access to the Internet in the region. The notion of “founding networks” allows for discussion of two important processes. On the one hand, the chapter analyzes projects for connecting to early computer networks in the region. These projects promoted political visions that became reality by means of the use of different technologies (i.e., X.25, UUCP, and BITNET). On the other hand, the term “founding” is used in the chapter to discuss the formation of transnational networks of collaborative efforts between people in a number of the region’s countries. In some cases, these networks had a longer-lasting effect in the region than did early computer networks.

Once these “founding networks” were implemented, the next goal was to actually connect to the Internet. This required enabling technological access points in the Central American region. Chapter 4 examines the “regimes of alliances” (Gillespie, 2007) between a variety of organizations that were formed to make this happen. These organizations included, for

example, the National Science Foundation (NSF), which sought to facilitate the use of the Internet outside the United States. The emergence of PanAmSat constituted a crucial development in the formation of this “regime of alliances.” Actors such as the Organization of American States (OAS) and the United Nations Development Program (UNDP) mobilized their political leverage to promote the connection to computer networks in the region.

Chapter 5 analyzes in detail how each country of the region connected to the Internet: Costa Rica (1993), Nicaragua (1994), Panama (1994), Honduras (1995), Guatemala (1995), and El Salvador (1996). The discussion follows two parallel processes. On the one hand, the chapter explains the singularities of local connection projects in each country. On the other hand, it focuses on the transnational flows of people, knowledge, and technologies that traversed the isthmus to make local projects possible. Rather than departing from a transnational approach, the discussion of each country individually seeks to demonstrate how transnational flows and exchanges between countries materialized in specific ways at the local level.

As these networking initiatives unfolded, telecommunications markets—owned by state monopolies and controlled by the military in many countries of the region heretofore—were opened for private intervention. In this context, new Internet access providers emerged. This profoundly modified the conditions under which the first networking initiatives operated and the ways in which computer networks evolved in Central America. Chapter 6 discusses how privatizing telecommunications took place in each country of the region as well as privatization’s implications for considering development issues.

Finally, chapter 7 discusses the implications of the evidence presented in the book. It first emphasizes the significance of transnational approaches for examining the history of the Internet. Specifically, it shows how a transnational approach invites a reconsideration of established

traditions in the historical analysis of the Internet. Second, it argues that the processes of technological integration examined in the book remain an unfinished project. The book concludes by showing how the history of the Internet in Central America relates to current issues, such as uneven access to computer networks and its implications for understanding the development of the region.

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