

Connected and disconnected:  
ICTs, peacebuilding and aesthetic practices of  
peripheral communities in Colombia



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“The Internet is not a good thing,  
and it is not a bad thing.  
It is not a thing at all.  
The Internet is many things,  
and many of those things are far less pleasant than cat videos.”

Benjamin Peters  
How Not to Network a Nation

# Abstract

This thesis analyzes how Information and Communications Technologies (ICTs) have been introduced in rural regions of Colombia for peacebuilding purposes and strengthening democracy, and how these have had an impact on the aesthetic practices of local communities. This research discusses theories about the relationship between technology and society, and it provides a critical perspective from the idea that technology solves social problems. Case studies of ICTs projects from the Soviet Union, Estonia, France, Finland, Chile and Paraguay are introduced and examined, to give an account of how similar processes took place in different contexts. Two case studies from Colombia are analyzed (Vive Digital and Linternet), and suggestions that can improve future projects are shared.

## Key Words

Peacebuilding, ICTs, ICT4D, technoscience, digital culture, progress, technological determinism, aesthetic practices.

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# Preface

I write this research based on a personal interest in social and political changes that Colombia, my home country, has faced since the 2010s. This South American nation has been characterized by social struggles, political instability, violence, war on drugs, and the uprising of left-wing guerrilla and right-wing paramilitary groups since the second half of the 20th century. These problems are still present today, but since the 2010s certain changes and situations opened new opportunities, especially the 2016 Peace Agreement between the Government and FARC (the country's oldest guerrilla force). Previous attempts to achieve and consolidate peace agreements have failed in the past, and the one from 2016 is the most successful so far. Colombia is experiencing a slow transition into a post-conflict society where reconciliation must prevail over hate. My motivation with this research is to contribute with a critical view of the implementation and usage of Information and Communication Technologies (ICTs) for peacebuilding purposes.

It is not the intention of this thesis to explain, nor analyze, the legislative and military aspects that lead to the 2016 Peace Agreement, or the present political division between those who defend it and those who want to make severe modifications. This research examines the social dimension of how technology was introduced, what was the original discourse and the actual state, and how communities rejected or appropriated the new tools. The Digital Culture discipline is key to this research as it provides tools for studying societies that use ICTs for transformation, and feeds theories and critical perspectives for a better understanding of the relationship between society and technology.

This thesis is divided into the following eight chapters: **(1)Introduction, (2) Literature Review, (3)Methodology, (4)ICTs Socio-Political Institutions: The Soviet Union, Estonia, France and Finland, (5)Democracy, Education and ICTs in Latin America: Chile and Paraguay (6)ICTs and peacebuilding in Colombia, (7)Analysis and presentation of findings and (8)Conclusion.** The theoretical ground for the discussion is built on the first chapter, where

the research question and key terms are introduced. Relevant literature is presented in the second chapter, giving an insight of theories and ideas that other scholars have built and used when analyzing similar topics. The research methodology is discussed in the third chapter. Socio-political aspects of ICTs are analyzed in the fourth chapter, and examples from The Soviet Union, Estonia, France, and Finland are brought forward. The fifth chapter provides a historical account of how ICTs were introduced and expanded for democratic and educational purposes in Latin America, but most importantly: how these were resisted. The sixth chapter introduces Colombian case studies, with an overview of recent policies, peacebuilding initiatives, and local projects. The final analysis and presentation of findings are shared in the seventh chapter, and the conclusion is given in the eighth chapter.

This thesis is written by having in mind those who want to learn about projects that address social issues through the expansion of ICTs networks. It is intended for researchers within academia that have similar fields of study, as well as for non-expert readers that want to gain more knowledge and learn from theories that study the relationship between technology and society. Policy makers can also find this thesis useful, as it provides cues and suggestions about the characteristics that make ICTs projects perform better in social environments. Last, but not least, I thank the support of Scott Rettberg, my thesis supervisor, who guided and encouraged me throughout this whole process. His feedback was of great value for organizing the arguments and shaping the ideas that are presented and discussed in this research.

# 1.Introduction

Technology is never neutral. It is intertwined with and influenced by cultural, social, and political dimensions. This thesis builds upon theories and approaches that highlight the importance of the social and cultural aspects when analyzing and studying technology. Especially, because this research focuses on what it is not traditionally considered a developed western country: Colombia. This South American country is very slowly coming out of an internal armed conflict that has lasted for over 50 years, and ICTs have been introduced over the last few years in rural communities to promote democracy and reduce poverty. This thesis analyzes this phenomenon by answering the following research question: *How have the expansion of ICTs and peacebuilding strategies been combined in Colombia since the 2010s? And how have peripheral communities appropriated the new tools to foster their aesthetic practices?* But before tackling this question some considerations regarding technology and society must be presented.

The great majority of present-day technological design and developments come from western countries, especially when it comes to computation. Some were initially developed for warfare purposes and popularized later when civilians were included as end-users. Benjamin Peters, Associate Professor in the Department of Communication at the University of Tulsa, claims that: ‘Military and computing innovations were inseparable in the early history of computing’ (2016, 83). He also points out that computer innovations and other technological products (like sensors, GPS and Velcro) accelerated when introduced into nonmilitary industries (2016, 83). Since the 1950s western markets dictate how technology is directed and sold to the public, and how some developments are favored with constant upgrades and newer versions or thrown into oblivion if marketing strategies are not fulfilled. Research, development and mass production of technology is enframed by western needs and goals, and by their assumptions and crafted stereotypes.

One example of these issues is the Internet. First developments date back to the United States' military strategies during the Cold War, where a decentralized network of command that could resist and react to a nuclear strike was funded by the Department of Defense (the result of such a project was called ARPANET). Alexander Galloway, professor of Media, Culture, and Communication at New York University, points out that the origins of the Internet have been debated, but what is clear is that 'it was built to withstand a nuclear attack' (2016, 29). He points out that an attack as such is very centralized, so a non-centralized network solution as the ARPANET was needed (2016, 29). Cold War tension pushed the development of such information infrastructure. Benjamin Peters even points out that Soviet authorities were actually the ones that 'set into motion the events that led to the ARPANET' (Peters, 2016, 92), as their leading position in space, rocket and nuclear research posed a threat for the American counterpart. The Soviets managed to enforce fear by putting Sputnik into orbit, as nuclear warheads on artificial satellites were a threat that Americans considered possible (2016, 92). However, not all voices agree that ARPANET and the network that resulted from it was built originally for withstanding possible nuclear attacks. Some historians that have studied the Internet have claimed that this idea is a 'false rumor' (Leiner et al., 1997, 2). They explain that the emphasis on 'robustness and survivability' came actually at later stages (2).

The Internet's further developments were boosted when academic institutions and research centers were included in the following decades. In 1989, Tim Berners Lee wrote the first HTML protocols and URI schemes for the World Wide Web at CERN (the European Organization for Nuclear Research) to improve and facilitate the sharing of scientific data. His goal was to create a set of conventions that would allow scientists to communicate and exchange information with their peers over the Internet (1999, 29). However, 'early users were largely homogenous in terms of their demographic: young, white, male, Western, largely from middle-class socio-demographics' (Galloway, 2006, 29). Initial users shared many characteristics, and early developments and products were made to fit their needs and demands.

This is still the case today, where the proficiency to understand and develop for the Internet and the World Wide Web is still limited to a few compared to the vast amount of people that use and browse it (Galloway, 2006, 29). Alexander Galloway points out that the ones in



charge of establishing Internet standards belong to a 'self-selected oligarchy of scientists' that are part of a 'relatively homogenous social class' that operate in relatively close locations (2006, 123). However, this could be seen just as a practical consequence of how the Internet is developed and consumed, as most users just want the networks to work and are not really worried about the protocols or the code behind them (2006, 123). Nevertheless, this technological niche has created problems that are visible nowadays as, for example, very few users have a real understanding of how information is obtained, collected and presented on such networks, and even on how to check their authority (Bauchspies, Restivo, and Croissant, 2006, 5).

It is unfair to criticize the fact that the Internet was developed by a reduced number of scientists that worked together in a given organization and country; this is the result of social, political and economical reasons. What is troubling is that protocols and services that are developed nowadays still depend on needs and demands from a narrow group, that are then expanded and imposed upon users around the globe. One problematic example from this is "internet.org", an initiative that is promoted by Facebook's CEO Mark Zuckerberg. On the project's website it is explained that 'Internet.org is a Facebook-led initiative with the goal of bringing internet access and the benefits of connectivity to the portion of the world that doesn't have them' (Internet.org, 2020). The social media company's strategy for achieving this is to partner with mobile operators in countries where mobile data coverage is expensive and scarce, in order to offer a service called "Free Basics". This consists of an app that provides access to websites, information and other applications for free. However, it is possible to find dubious traits of this project when looking beyond the altruistic ideas. For example, internet.org is actually 'an enclosed digital domain that does not benefit the poor so much as it pads Facebook's bottom line' (Karr, 13, 2015). The users do not receive much benefit for accessing information when compared to the power that Facebook earns when harvesting the data of millions of new users (13, 2015). Internet.org does not advocate for Net Neutrality, but rather benefits sites and platforms that meet Facebook's standards and criteria (15, 2015). This project imposes and pushes a closed system upon users (without them even being aware of it), which is ultimately more beneficial to the ones developing the protocols and services. It is not a transparent

initiative. It creates the idea that social networks are equivalent to the Internet, or even further: that Facebook is the Internet.

Cultural aspects are not traditionally taken into account when building, spreading and even studying technology, especially when it comes to non-western countries. However, it can be utopic to develop technology by taking into account the vast number of different cultures around the world. Nowadays, companies create products on a massive scale (and for as many users as possible), in a globalized market where technology is designed and produced in different locations and consequently shipped and sold around the world. Nonetheless, this way of production and consumption should not be taken for granted. Cultural and social traits must be contemplated in the discussion, in order to have a critical understanding of technology and society.

On the design level new innovative methodologies regarding usability, universal design and accessibility are now added during the prototyping and designing processes of new technological products. Kat Holmes, inclusive design expert that has worked in companies like Google and Microsoft, claims that ‘these moments of technological transition are the ideal times to introduce inclusive design’ (Holmes, 2018, 138). Technology has the potential to reach more and more users nowadays, so different usability challenges that users face must be considered and solved to provide better services and experiences. Physical, mental and cultural traits are analyzed in order to avoid decisions based on biased opinions regarding ‘gender, race, ethnicity income, sexual orientation, and age’ (2018, 80). A similar approach is needed when discussing technology and society.

## 2. Literature Review

The Digital Culture discipline is relevant to analyze technology and society matters, as it provides inclusive and diverse theories regarding the development, production and consumption of technology within society. This chapter presents the following ideas and concepts that are discussed within this field, and that are useful for this research: technoscience, the technological other, the concept of progress, peacebuilding and ICT4D.

### Technoscience

The term Technoscience first appeared in literature in the late 1970s, and it was initially used to address the ‘complexity of interacting and mutually stimulating scientific practices and technologies’ (Andreev and Butyrin, 2011, 75). The Belgian philosopher Hottois was the one who coined the term (Kastenhofer and Schwarz, 2011, 61). This initially referred exclusively to the impact that exact sciences had on the production of technology. However, more recent approaches recognize that technological projects contain social prescriptions (Andreev and Butyrin, 2011, 75), reason for which social sciences were added to the discussion. Since the 2000s several scholars started to ‘focus on the cultural and material dimensions of technoscience’ (2011, 75), and social perspectives slowly became equally important as the scientific ones. Technology was framed before as a black-box, so social questions came at the end when analyzing issues regarding risks and impact (Macnaghten, Kearnes, and Wynne, 2005, 269). The updated Technoscience version reverses this, as it highlights that:

(...)social sciences should be an actor in technological progress. It should play a strategic role in the analytical provision of important aspects, such as development control, legal regulation, the projecting of adequate social institutions, and the creation of relations between agents of development and society as a whole (Andreev and Butyrin, 2011, 79).

The Technoscience concept seeks to include and acknowledge social and cultural aspects in the study of science and technology. The scholars that have nourished and expanded this term claim that cultural and social dimensions have been historically ignored when studying science and technology. The former were disregarded as they cannot be scientifically quantified, whereas the latter can be measured and evaluated under the scientific method based on facts (which leave no room for sociological explanations). The Technoscience approach opposes this divided approach. It studies the social components that surround science and technology, like the social institutions that allow certain developments to flourish or disappear, the reasons why certain economic groups make investments in them, and how marketing and private interest have an impact on their distribution and expansion.

Bauchspies, Croissant and Restivo are three interdisciplinary scholars who apply a sociological perspective to Science and Technology Studies (STS). Their book 'Science, technology, and society: A sociological approach' (2006) is an example of this. These academics use the term Technoscience to acknowledge the 'complex socio-cultural webs of sciences and technologies' (Bauchspies, Croissant and Restivo, 2006, 102), as they strive to point out that technology is always framed and molded by social and cultural contexts. They stress the importance of implementing a more critical approach regarding social aspects, as a better and more complete comprehension and understanding of science and technology can be achieved (2006, 111). They claim that science and technology 'can and should be considered as social institutions' (Bauchspies, Restivo, and Croissant, 2006, 10), and not as independent disciplines that are foreign to cultural elements.

It is recognized within Technoscience that social and power structure varies over periods and locations, meaning that the relationship between technology and society is never static. Bauchspies, Croissant and Restivo use the concept to 'highlight how technology affects social relationships, how social relationships affect technology, and how these change over time and space' (2006, 9). According to this, each context and culture crafts a 'technological reconstruction' (2006, 82), as users in specific locations can start giving different usages and purposes to technology, regardless of the intentions of policymakers, marketers and even

designers (2006, 82). Another crucial aspect within this concept is the analysis of how certain developments and devices are modified and rejected by cultural groups. These previous angles are highly relevant for this research, as they help to better understand technology's role in a specific context (Bauchspies, Restivo, and Croissant, 2006, 23).

New perspectives and ideas about gender and race have also nourished the Technoscience discussion in recent years. For example, Cecilia Åsberg, Professor of STS at KTH Royal Institute of Technology in Stockholm, and Nina Lykke, Professor Emerita of Gender Studies at Linköping University, point out that the Feminist Technoscience approach has revealed 'ways in which gender, in its intersections with other sociocultural power differentials and identity markers, is entangled in natural, medical and technical sciences as well as in the sociotechnical networks and practices of a globalized world' (Åsberg and Lykke, 2010, 299).

Technoscience keeps evolving as new questions and needs come forward. This concept is borrowed for this research due to all the previous reasons, and it is expanded in chapter 7.

## The technological other

Until this point the terms western societies, periphery, and the idea of the other have been mentioned. But to what do these refer to exactly? What and where are the western societies? What and where is the periphery? What and where is the center? Is it just a geographical reference? Or is it embedded with cultural references? From which point of view or perspective can or should words and concepts like these be used? Are these already outdated for the discussion regarding technology and society as they are embedded with stereotypes and hidden layers of meaning? And last but not least, who is the other?

This thesis opened with a strong statement, pointing out that a great number of computational technologies come from western countries (and the Internet was used as an example). This geographical limitation traditionally refers to national states such as Canada, France, Germany, the UK, and the USA, and it can also be related to 19th-century colonial European powers. However, one good place to start to clarify the discussion of what a western country is and what the others are is by revisiting the Introduction and Chapter 1 of Edward

Said's book "Orientalism" (2003), where he analyzes how the east was constructed to define the west.

According to Said, many authors have accepted and assimilated the division between "the Orient" and "the Occident" to start building theories (2003, 10), but such broad division can lead to misconceptions and superficial analysis. For example, he explains that what European powers have defined as 'the Orient' is radically different to the definition made by North Americans (US and Canada), as the latter associate it with the Far East (China and Japan) (2003, 9). The author describes as well that colonial powers crafted the idea and the discourse of "Orientalism" in 'dominating, restructuring and having authority' (2003, 11) over the orient. Said's intention with his book is to point out that the "orient other" is not a simple term that encapsulates just one geographical region. It actually encompasses a 'network of interests' (2003, 11) that helped 'European culture gained in strength and identity by setting itself off against the Orient as a sort of surrogate and even underground self' (2003, 11). Colonial powers were successful not only to exercise control, but also to define themselves by creating an external image of "the other". Such divisions between Orient and Occident are not natural, but are cultural constructions (2003, 12).

Said's ideas of the Orient and authority can be compared as well to ICTs and their protocols, as the latter are also apparatus of power that are spread over the world. The days where western political and social structures exercised control based on theory and institutions are fading out, as technological developments based on western markets and needs are reaching all the corners of the globe. Alexander Galloway explores these issues in his book 'Protocol: How control exists after decentralization' (2003) and sets the Internet as an example. He claims that 'the Internet is deceptive' (60), as it is presented by many as a decentralized structure that transfers information in a free and democratic fashion (60). Galloway opposes such a way of understanding the Internet as he explains that the Web is actually 'structured around rigid protocols that govern the transfer and representation of texts and images' (61). He stresses the fact that the Internet is not as open as it appears to be, because it is actually a 'highly sophisticated system of rules and regulations (protocols)' (69). Galloway recognized that the Internet has no 'centralized administrator or control' (138), but this does not mean that there is a lack of authority imposing regulations. He claims that the Internet is controlled by the protocols

which are established by organizations like the World Wide Web Consortium (W3C), that ultimately ‘represent the power and authority of millions of developers, researchers and users’ (138). Both the concept of ‘the Orient’ and the protocols are set to control and impose authority, and thus limit the freedom of subjects or users.

However, the apparent hegemony of western technological supremacy must be taken with a grain of salt, because the cultural aspects must be also considered. Such leadership did not happen out of the blue, as there are several reasons for which western societies are in the technological front. American historian Lewis Mumford explores the cultural reasons that made possible such dominance in chapter 1 of his book ‘Technics and Civilization’ (2010), as he explains preliminary periods and phenomena:

To understand the dominating role played by technics in modern civilizations, one must explore in detail the preliminary period of ideological and social preparation. Not merely must one explain the existence of the new mechanical instruments: one must explain the culture that was ready to use them and profit by them so extensively (2010, 4).

Mumford approach is a predecessor of the Technoscience approach, because he strives to explain the cultural reasons and social structures that gave Western European countries a technological boost, despite other cultures (like the Chinese and the Arabs) having the same initial instruments to do so (2010, 4). His interest in having a historical and cultural approach is based on his criticism of other writers of his time, who considered the ‘machine age’ (2010, 4) as novelty and ‘recent phenomenon’ (2010, 4). This is for him a baseless argument as ‘for the last three thousand years (...) machines have been an essential part of our older technical heritage’ (2010, 4). Mumford's cultural approach provides a perspective of how there were changes that prepared certain societies to be ready for technological revolutions, rather than just focusing on the moment when they happened.

The American historian explains that several cultural characteristics prepared Western societies to take advantage of the new technological developments, in order to become the frontrunners. For example, the measurement of time and space (with the clock and perspective), the influence of capitalism, and the increase of interest in the natural world rather than the heavenly one. The reason for bringing Mumford into the discussion is to highlight the

importance of understanding the culture where technology develops, rather than taking for granted that technological changes happen outside society; or that certain societies are naturally more technologically developed or gifted than others.

In this thesis the concept of western societies follows geographical borders, meaning that it encompasses Canada, USA and Europe. However, it is considered throughout the discussion that this idea is a cultural construction, especially because such localized technological dominance will not withstand for long. There are new players that are blurring the hegemony. China and India have, for example, caught up with the race and are dominating local and foreign technological markets. These geographical divisions do bring along embedded stereotypes and hidden layers of meaning, but these are addressed and clarified along this research.

The intention here is to have a critical approach to how the development of ICTs is localized and then globalized. The west-east discussion is also brought to the fore to debate the idea of center-periphery, where the west is considered as the center and the east as the periphery. The aim of having this analysis lies in the fact that Colombia, as a South American nation with a history of colonization, does not fit into those categories. It could be argued that this country receives more western influence due to its proximity to the US, but it is neither west nor east, or precisely center nor periphery. Colombia could be considered as a middle income country that is aligned with and influenced by western standards. Nonetheless, within the country there are certain hubs (like the two largest cities: Bogotá and Medellín) where most of the ICTs are centralized. This means that internally there are centers and peripheries (in plural), being the cities the former and the rural areas the latter.

## The concept of Progress

It is commonly thought that providing access to technology is in itself a good thing. Modern social and political institutions have successfully crafted an idea of certainty around technology, where specific outcomes are assured through automation or machinery. This positive and altruistic approach must be reviewed as well, as many hidden cultural layers are not considered when trying to narrow technological gaps (and ultimately fail by ignoring them).



These are issues that are debated in Technoscience, as the apparent connection between technology and the idea of ‘inevitable progress’ (Bauchspies, Restivo, and Croissant, 2006, 17) is revisited. A critical view is applied to technological determinism, where a whole world of tools, devices, developments, and creations are thought to have only one possible outcome: progress (or alienation, if it is seen from the opposite end). This approach is shared by Sally Wyatt, Professor of Digital Cultures Technology and Society Studies from Maastricht University, as she explains that ‘the STS community cannot simply despair of the endurance of technological determinism and carry on’ (2008, 169). She stresses the relevance of addressing and facing such issues as it is something that will not disappear.

Bauchspies, Croissant, and Restivo refer to the concept of “Technological fix” when tackling the problem of technological determinism, to debate the idea that ‘more technology, or a piece of hardware, will solve a social problem’ (2006, 83). The authors explain that social problems can be rooted in material aspects (like the lack of resources such as land and food) and that technologies that are inserted to fix or solve these issues are encoded with assumptions or preconceived ideas (2006, 83). Madeleine Akrich, French scholar and director for the Sociology of Innovation at Mines ParisTech, addresses similar issues with the concept of ‘script’ (Akrich, 1992, 208). According to her, designers and technology developers impose certain scripts or scenarios over objects they create, in order to limit actions and roles (214). Therefore, the introduction of new tools do not usually go as smoothly as planned, and large investments that are made do not seem to pay off. Technology in society, for Bauchspies, Croissant, and Restivo, should not be viewed under the lenses of “determinism” or “fixation”, but rather as a social dialogue where people and communities can select the technologies that will help them achieve their objectives. With this in mind, they introduce the concept of ‘Technological intensification’ (2006, 83), where ‘a social process is intensified as people select technologies which allow them to reach their goals’ (83).

The examples the authors give to explain this idea are the car and telephone, specifically during the urbanization period in the US at the beginning of the 20th century. These two technologies ‘intensified’ the urbanization process, as they ‘alleviated the negative consequences of mobility’ (84). These devices did not determine or fixate the urbanization process, but rather

they made it easier. This means that urbanization was not caused by the new technologies of cars and telephones, but the urbanization process was rather intensified by such tools. These examples come from a transformation that North Americans were facing at the turn of the century. However, is it possible to address non-western scenarios with the same concepts? Is it possible to talk about the intensification of peacebuilding, democracy and aesthetic practices in contexts facing other types of transitions? And if so, how can these processes be intensified with ICTs? The answers to these questions are addressed in chapter seven.

Progress should not be seen as something neutral that societies undergo when in contact with technology. Progress is in itself a concept that must be tackled from different perspectives, and not only with positive narratives. The idea of progress does not necessarily lead towards improvement, as it can also bring problems that may cause stagnation, or even recoil. The German philosopher Walter Benjamin had a similar idea when he wrote ‘On the Concept of History’ (2020). He used Paul Klees’s “Angelus Novus” painting to point out what an angel of history would look like: ‘His face is turned towards the past. Where we see the appearance of a chain of events, he sees one single catastrophe, which unceasingly piles rubble on top of rubble and hurls it before his feet’ (6). The angel cannot close his wings even though he wants to, because a storm that is blowing from paradise is pushing him to the future. Progress, for Benjamin, is precisely that storm that pushes forward. This view ties the idea of progress with destruction, like a storm that creates catastrophes to move ahead. Progress, under this view, does not ensure an onward movement that goes peacefully and smoothly, as it may entail destruction and violence.

The cases that are introduced in chapters four, five and six address the problem of technological determinism, and explain how the introduction of technology was equated to progress. The political discourses behind the case studies are reviewed, and social and cultural aspects that were not taken into account are highlighted.

## Peacebuilding and ICT4D

The fields of Technology and Society have been seen by some as two independent realms, as explained before. However, disciplines like Digital Culture and theories and approaches such as the Technoscience seek to bridge the gaps between these two, to provide a holistic view of how they impact and influence each other; opposing the belief that technology is independent and that it determines society. This previous issue of separating two areas of knowledge is also present when it comes to the discussion regarding peacebuilding and ICTs, as these two have ‘long been viewed as separate’ (Tellidis, 2026, 75). Peacebuilding, according to the United Nations Security Council:

is aimed at preventing the outbreak, the recurrence or continuation of armed conflict and therefore encompasses a wide range of political, developmental, humanitarian and human rights programs and mechanisms. This requires short and long term actions tailored to address the particular needs of societies sliding into conflict or emerging from it’ (UN, 2001, 1).

Technology is not addressed explicitly in this definition, but it is broad enough to trigger initial interpretations; such as that ICTs could be used as tools to support the mentioned programs and mechanisms and moreover that technology could be tailored based on the “particular needs of societies”. So, why are peacebuilding and ICTs split apart?

Peace studies have become the core discipline when it comes to the academic analysis of violence, conflict transformation and peacebuilding. Johan Galtung, Norwegian sociologist and founding member of the Peace Research Institute Oslo (PRIO), points out that Peace Studies must be an expanded field in order to work properly and deliver significant research, where methodologies and knowledge from other ‘scientific disciplines’ must be drawn into (Galtung, 2010, 21). The disciplines he refers to are: Psychology, Sociology, Political Science, Economics, International Relations, Law, International Law and History (21). He even suggests that Peace Studies are the academic equivalent to Health Studies when it comes to conflict prevention and resolution analysis, as the latter requires further disciplines to understand the complexity of

human health; like for example physics, chemistry, anatomy, physiology and pathology (22). Galtung explains that each of the listed disciplines that enhance and foster Peace Studies is essential because they add elements for the pursuit of truth, as they give more tools and perspectives to verify and compare knowledge regarding conflicts (22).

However, Galtung's definition of 'scientific disciplines' is limited to the Social Sciences, and there is no discussion regarding technology nor the rapid digitization of culture. Why is this so? The answer to this question can be traced back to his paper 'Towards a New Technological Order' (1979). He points out here that technology is not neutral, as it is always accompanied by defined structures that are rooted in the West (1979, 299). This idea links back to 'The Technological Other' section of this research. His thesis is that the protocols embedded in technology may perpetuate structures of inequality, and thus increase the gap between 'center' and 'periphery' (1979, 277). These ideas can be related to other thoughts he expresses in his essay 'Information, communication and their future in postmodernity' (1998). He analyzes the idea of the "information society" and "information superhighway", and how there is a misconception of these. Information that is distributed among a network has protocols, and misinformation could be willingly distributed based on power structures (Galtung, 1998, 220). According to the Norwegian sociologist, the act of transferring structures of power and protocols through technology is a form of invasion which is more 'insidious than colonialism, because such an invasion is not always accompanied by a physical Western presence' (Galtung, 1979, 288). Other researches such as Ioannis Tellidis and Stefanie Kappler have also addressed the danger that ICTs can pose in these scenarios, as 'they can serve as a platform on which hegemony can be promoted and existing power imbalances be reinforced, shifting the balance towards powerful institutions if the latter are able to strategically use ICTs as legitimating tools' (Tellidis & Kappler, 2016, 83).

It may be argued Galtung does not include disciplines related to ICTs in Peace Studies as these embed structures and protocols that may enhance conflicts instead of cooling them. Nevertheless, it would be wrong to conclude that Galtung is categorically against technology. He is skeptical towards the idea that technology is good per se, and he actually advocates for a more balanced development and distribution of technology: one that is not only directed from North to

South and West to East, but rather developed and transferred in both directions (Galtung, 1979, 298). Here is precisely where the discipline of Digital Culture can play a major role, as its goals and methods seek to study and analyze the cultural and social perspective of technology, rather than focusing solely on the techniques, mechanics and hierarchical structures. Galtung claims that Peace Studies needs transdisciplinarity to build more truthful accounts regarding conflicts and peacebuilding, hence Digital Culture can add a valuable layer for understanding how ICTs can affect or benefit peacebuilding initiatives. For example, the problem of technological colonization may be criticized with the Technoscience approach, and ideas such as “technological intensification” can help to counter the “technological determinism”.

Combining tools from Digital Culture and Peace Studies is becoming urgent nowadays, as in the last years projects that use ICTs for peacebuilding initiatives have emerged in different contexts; but still, the research has been scarce (Gaskell, Larrauri, Rieken, Ali, and Rigterink, 2016, 2). There is indeed ‘substantial literature that is being built on the role that ICTs can play for destructive purposes’ (Tellidis & Kappler, 2016, 75), but not enough when it comes to peacebuilding. There are some important articles that address the potential that technology has when concerning peace, like for example “As We May Think” (1945). The author of this essay was none other than Vannevar Bush, a prominent American Scientist that served as the Director of the Office of Scientific Research and Development during the Second World War, where he coordinated the work of almost six thousand American scientists in the application of science to warfare (Bush, 1945). He was even part of the Manhattan Project, which gave birth to the atomic bomb. Bush wrote the article after the end of the war to voice his thoughts about the role of science and technology in the postwar period. He explained that technology needed to serve other purposes rather than warfare, and it was time to empower the human mind rather than its capability of destruction (Bush, 1945). In order to accomplish this goal, he envisioned a device that he called “The Memex”, which consisted of a desk that had an intricate system of microfilms that would store and retrieve data for the user. This can be thought of as a mechanical version of the World Wide Web, as the principles of searching, retrieving, browsing and connecting data are similar. The idea behind “The Memex” illustrates a desire for how

technology could be applied for other purposes rather than warfare, although this device never saw the light of the day.

The UN sought to address issues regarding peacebuilding and ICTs in 2001, by creating the “United Nations Information and Communication Technologies Task Force” (UN ICT TF), which ran until 2006. The organization behind this pompous name intended to be a center of knowledge that would report, advise and give guidelines regarding ICT implementation and development. In 2005 Kofi Annan, former Secretary-General of the United Nations, wrote that:

ICTs can help address the root causes of violent conflict. By promoting access to knowledge, they can promote mutual understanding, an essential factor in conflict prevention and post-conflict reconciliation. ICTs also offer ways to reveal human rights abuses, promote transparent governance, and give people living under repressive regimes access to uncensored information and an outlet to air their grievances and appeal for help’ (Stauffacher, Drake, Currion & Steinberger, 2005, iii).

The Task Force’s goal was to foster society with the benefits that ICTs could offer. The intention was to close the gap of the Global Digital Divide (between developing and developed countries). Kofi Annan was aware though that ‘technology by itself is no panacea or magic formula’(2005, iii) for which ‘political will is required to respond to information, to share it widely and equitable, and to ensure global dissemination of ICTs’ (2005, iii). The Task Force published several documents and organized round tables in a span of five years. However, the written form and language of such reports reflect the bureaucratic political framework they belong to. There are extended paragraphs praising and thanking individual members, and a lack of a critical point of view of technology and its cultural implications. The results of the Task Force lacked real impact and long-term influence, as it produced merely informative reports with suggested guidelines to follow. The Task Force was replaced in 2006 with the Global Alliance for Information and Communication Technologies and Development (GAID) but no significant changes were introduced.

Nowadays there are other organizations (that are less bureaucratic and have fewer committees) that focus their efforts on combining ICTs and peacebuilding. These provide guidelines as well but have a more critical research approach. Organizations like ICT4Peace,

WOSCAP and BUILD UP strive to analyze and produce knowledge from case studies where technology is used in conflict resolution. The content and activities that these publish and arrange are frequent, and they address relevant topics such as AI, cybersecurity and social media. Thanks to these efforts, the research field has slowly gained more practitioners in the last couple of years (Gaskel, Larrauri, Rieken, Ali, & Rigterink, 2016, 5). Despite the fact that these organizations are mainly localized in the EU, cross-national research has been added in the discussions, and even in the production of knowledge.

One term that is relevant in this discussion is Information and Communication for Development (ICT4D), as it focuses on the use of ICT for fostering societies. Dorothea Kleine, Professor in the Geography Department at the University of Sheffield and Co-Director of the Sheffield Institute for International Development (SIID), points out that one relevant aspect of this concept is that it takes into account the ways in which ICTs can actually create more divisions and new types of dependencies; rather than just focusing on possible positive outcomes (Kleine, 2013, 2). This approach poses a critical view on how ICT is implemented in societies facing changes, rather than considering that the use of technology has only favorable outcomes. Klein points out cases of ‘techno-optimism’ (2013, 6), where ICTs were introduced in developing countries so that they could match standards of developed ones. ICT4D seeks to oppose ideas such as “Technological Determinism” or “Technological Fix”, which were introduced in the “The Concept of Progress” section of this thesis.

Kleine explains that in 2013 the ICT4D area of study was still not well defined, and not enough theories were built around it (2013,1); similarly, as Gaskel, Larrauri, Rieken, Ali, and Rigterink did when analyzing peacebuilding and ICT. The British scholar claimed that it was urgent to broaden the knowledge within this field, as technology permeated daily life in many aspects and the ‘intellectual endeavour’ of understanding and analyzing was running behind (2013, 1). Scholars heard the call and established theories and methodologies (e.g. Sein, Thapa, Hatakka, Sæbø, De’, Pal, Sethi, Reddy and Chitre). Some recent theoretical foundations are established based on discussing what development actually is (Sein, Thapa, Hatakka & Sæbø, 2018, 8). Development within ICT4D is not based on traditional and antique standards, where ‘the west is seen as the role model and in order to develop, people and nations need to become

more “western” (2018, 10). This outdated view claims that developing countries are in need of help to imitate other developed cultures, as they are not capable of advancing by themselves (2018, 10).

Ideas written by Arturo Escobar, Colombian-American Professor of Anthropology at the University of North Carolina, Chapel Hill, have a great influence on the critical perspectives on development within ICT4D; especially from his book ‘Encountering Development: The Making and Unmaking of the Third World’ (2012). Escobar embarks on a similar journey as Said did when writing *Orientalism* and discussing how the Orient was built to define the West. He analyzes how the discourse of the Third World was established after the Second World War in order to define the Developed Countries. According to the Colombian author, the concept of an underdeveloped world revolves around ideals and values established by dominant powers after the war. Strategies to fight poverty were based on capitalist ideas, ‘not only to create consumers but to transform society by turning the poor into objects of knowledge and management’ (Escobar, 2012, 56). He also addresses issues regarding the usage of technology under traditional development approaches, where it was thought that it could ‘amplify material progress’ (2012, 67) and the ‘extension of modernist ideals’ (2012, 68). Development, and the construction of the Third World, are discourses that still help developed countries to spread economic and political ideas. The ICT4D approach is, on the contrary, one that recognizes independent values that must be fostered (rather than foreign ones that are implemented). ICT4D even includes perspectives that center their attention on the usage of open data and education, and the non-proprietary flow of information (Sein, Thapa, Hatakka & Sæbø, 2018, 8).



### 3. Methodology

The main goal of this thesis is to analyze how and why ICTs have been introduced in rural regions of Colombia for peacebuilding purposes and strengthening democracy, and how these have had an impact on the aesthetic practices of local communities. Aesthetic practices are understood in this thesis as those expressions that refer to creations in music, literature, and visual and performing arts. This phenomenon has occurred in several countries. This thesis revises case studies where central Governments pushed for the introduction of ICTs in order to strengthen certain ideologies or political agendas. The selected case studies come from the Soviet Union, Estonia, France, Finland, Chile and Paraguay. These are chosen because they each give an account of how ICTs were implemented in societies that were undertaking social and political transitions (Estonia and Chile), how democracy and well-being are thought to be promoted and strengthened through ICTs projects (Finland and Paraguay), how a state perceives ICTs as essential for its citizens and provides tools for accessing them (France), and how poor decision from central authorities can affect the implementation of ICTs (Soviet Union). Different sources are reviewed for each case, and opposite angles are given respectively. The comparative approach balances the positive and negative interpretations from how the projects unfolded and from their results. This methodology chapter describes why and how each case is tackled.

Connecting citizens and broadening access to ICTs is not something that only democratic governments seek. Researcher Peter Benjamin dives into the Soviet Union, to understand how the creation of a network can be affected by bureaucratic structures. In his book 'How not to network a Nation: The uneasy History of the Soviet Internet' (2016) Benjamin focuses on how the ideal of a connected society conflicted with the establishment. The findings of this book are contrasted with 'Online in the Soviet Union' (1991), an article written by Sergei Mayorov and Leonid Polyakov months before the Soviet Union collapsed. These authors, as insiders, talk about the wonders, benefits, and limitations of going online in their context.

After the restoration of independence, and the fall of the Soviet Union, the Baltic country of Estonia moved forward to promote and develop an electronic Government that provides its citizens with access to public services (as a reaction to years of communist repression). Nowadays the state provides 99% of its services online, 46.7% of Estonians use internet voting, and 98% of the citizens have an electronic ID card (E-Estonia, 2020). The country is now even the first to offer e-citizenships on the Internet. Applying and receiving the Estonian e-citizenship does not precisely entitle the owner with the same rights as Estonian citizenship, but it promotes and facilitates creating companies and starting businesses. The success and reach of the Estonian digitization project is revised with Meelis Kitsing's 'Success Without Strategy: E-Government Development in Estonia' (2011), with the study of the influence and impact of the European Union by Tomasz Szopiński and Marcin W. Staniewski 'Manifestations of e-Government usage in post-communist European countries' (2011), and with Jovana Zoroja's 'Internet, E-Commerce and E-Government: Measuring the Gap between European developed and post-communist countries' (2011).

In the 1980s the French Post, Telegraph and Telephone organization started to unroll a device called the "Minitel" in order to connect French citizens over a network. This was a predecessor of the World Wide Web, and it allowed different users to access services such as online shopping, phone directories and databases. This project provides an example of how a central institution pushed policies to open ICTs towards the general public for improving connectivity. A brief historical perspective of this project is introduced with Maillands and Driscoll's 'Minitel: Welcome to the Internet' (2017). The report called 'The Computerization of Society' (1980), written by Simon Nora and Alain Minc, is also revised in this section as it outlined the project's original intentions and needs. This report was commissioned by president Valéry Giscard d'Estaing to assess how the French State could undertake a digital experiment of such scale. The way this project surpassed its initial intentions and was modified by users is addressed with Tamara Chaplin's 'Lesbians Online: Queer Identity and Community Formation on the French Minitel' (2014). This case study helps the debate regarding how Technological Determinism is eclipsed by Technological Intensification, meaning that the usage of technology is not defined by strict policies but rather by the goals and needs of communities.

Finland is nowadays a country that leads in terms of democracy, citizen participation and technology. The Nordic country has been the birthplace of companies such as Nokia and open-source operating systems such as Linux. The Welfare State seeks to use the advantages of ICTs to foster the well-being of its citizens and promote innovation. The technological and democratic phenomenon has been previously studied by scholars from two perspectives, one that praises the existing model and others that criticizes it. Literature from these two perspectives is reviewed for this case: Manuel Castells and Pekka Himanen book 'The information society and the welfare state: The Finnish model' (2002) and Heikii Patomaäki's article 'An Optical Illusion: The Finnish Model for the Information Age' (2003).

Chile was a frontrunner in Latin America when it came to plan digital strategies for creating a more efficient government. The Cybersin project that was proposed under Salvador Allende's presidency sought to use the power of networks in order to strengthen the economy under a socialist model. Two books from Eden Medina, Associate Professor of Science, Technology, and Society at MIT, are vital in this discussion, as these are two of the few pieces of research that deal with democracy and digital culture in Latin America: 'Cybernetic Revolutionaries: Technology and Politics in Allende's Chile' (2011) and Beyond Imported Magic: Essays on Science, Technology, and Society in Latin America' (2014). Medina's books provide an overview of Cybersin, and they help us to understand the political and social turmoil that took place in Chile before and during the military coup of 1973 (that established a dictatorship that lasted for seventeen years).

The One Laptop per Child (OLPC) project was created by Nicholas Negroponte, former director of the MIT Media Lab, in order to bridge the digital gap in the world. The goal was to distribute cheap (but yet efficient) laptops in low income countries. Ames Morgan, assistant professor at the Center for Science, Technology, Medicine and Society (CSTMS) at the University of California, Berkeley, analyzes how the introduction of the OLPC project in Paraguay did not go as planned in her text 'Translating Magic: The Charisma of One Laptop per Child's XO Laptop in Paraguay' (2014). She discusses how digital tools that were developed and built in technological hubs (such as the MIT) can fail when introduced in different social and political realities.; even though it was their original goal. The mismatch between expectation and

reality is further discussed in the article ‘One Laptop per Child: Vision vs. Reality’ (2009), written by Kraemer, Kenneth, Jason Dedrick, and Prakul Sharma.

The methodology of introducing, discussing and comparing the previous examples and sources provide a background for the analysis of the following two case studies in Colombia: Vive Digital (VD) and Linternet. Four core elements are reviewed within these: (1) how ICTs are introduced in a society that is undergoing major political and social transitions and transformations, (2) how a central Government deals with the expansion of ICTs for democracy and citizen participation, (3) how are the ICTs tools provided by and authority, and how (4) the development and implementation of these technologies can be affected by social and political structures.

The VD project was designed and implemented during the Government of Juan Manuel Santos (2010-2018). The goal of this was to introduce ICTs and connect remote areas of Colombia that were historically neglected. The intention was to provide Internet service to rural communities and foster peacebuilding initiatives that came with the Peace Agreement. Three VD locations were visited (Santa Marta, Cali and Mocagua), and interviews were conducted with the local project managers. The following four questions were asked during the conversations with them: (1) What was the project's origin, and which were the initial goals? (2) How were users included during the planning process? (3) How did users react and respond to the digital tools that were offered by the program? (4) Were there any unexpected results of how ICTs were used and appropriated by the communities? Four former users that were taking their internship at the Santa Marta center were also interviewed. This took place as a round table, where they were able to share thoughts and discuss with each other. The following questions were asked to them: (1) Was the community involved in the planning process? (2) Were the program’s goals shared? (3) Did the ICTs that were offered fit your personal interests? (4) Did you use the digital tools for achieving personal interests outside the project’s scope?

Linternet is a project run by Camilo Herrera, which initially aimed to close the gap of what is called “energy poverty” in Colombia. The goal was to bring cheap light sources to regions where there was scarce or complete lack of street lighting. The project was initially called “A Liter of Light”, and it provided public lighting by using cheap materials like plastic

bottles, bulbs and chlorine. Linternet (a combination of lantern and internet in Spanish) is a spin-off of this initial program. The project provides wifi through routers that are attached to lamp posts (powered by solar panels) that stand on the streets of rural communities. Camilo Herrera was interviewed, and the same four questions that were asked to the project managers of VD were asked to him.

Qualitative interviewing is the main method by which information is collected for analyzing these two cases, as this is a fundamental method for understanding experiences (Weis, 1994, loc.108). It is critical for this research to have a personal encounter and conversation with the communities, rather than reaching them online and conducting quantitative research based on surveys, as access that may facilitate this type of methodology ‘remains stratified by class, race, and gender of both researches and respondents’ (Murthy, 2008, 839). Qualitative interviewing allows as well to understand how events are interpreted, and not only how events take place (Weis, 1994, loc.293). This method provides an understanding of how ICTs projects succeed or fail.

Ethical components are considered in this research, especially since the subjects of study belong to regions that have been historically neglected by the state (causing environments of poverty and inequality). By doing so, this thesis does not establish a division between “them” and “us”. The research does not seek to make judgments on how communities use ICTs or social media. Rather it focuses the debate on how efforts combining ICTs and peacebuilding take place, how this has an impact on cultural practices, and the role of social media in these processes.

## 4. ICTs' Socio-Political Institutions

The introduction, literature review and methodology have explained the goals and scope of this research. It is time to dive into case studies that help to understand how specific social, cultural and political characteristics have an impact on the implementation and development of ICTs, and how the processes and results vary depending on the location. This chapter intends to highlight examples where political, social and cultural aspects played a major role in the implementation of ICTs. The cases that follow belong to the former Soviet Union, Estonia, France, and Finland.

### USSR: The Soviet Internet

The Internet's early days were used as an example in the introduction of this thesis to point out how present-day technology has origins in western countries, and how these were the product of military needs and research. The Internet had several phases, and just a brief account of them was given (as these in themselves can be a matter of other theses). The underlying issue is that the expansion of the networks that resulted in the Internet were shaped by social, political and cultural aspects from the 1950's American society. However, this does not mean that there were no other efforts around the world to create computer networks. Scientists from the former Soviet Union had also planned to connect the country through computers, similarly to what the American counterpart did with the ARPANET. Nevertheless, it was the American model that boosted the development of networks, to the extent that it became the base of today's World Wide Web. This section analyzes the Soviet Internet, and it gives an account of how the pursuit of computerization failed due to political, social and economic models, and not necessarily because of a technological backwardness.

Benjamin Peters explores these issues in his book *How Not to Network a Nation: The Uneasy History of the Soviet Internet*. He analyzes the reasons for which a Soviet Internet never

took off, even though the Soviet Union was the front-runner in space, rocket and nuclear research. One assumption that he strives to debunk is the idea that networking on a large scale did not become a reality in the USSR because of the communist and socialist models. The fall of the iron curtain has been used to prove the success of capitalist economic models, or even to imply that this is better than other systems. This is not the case with Peters' arguments, as he points out that 'network projects without political and economic liberal values are not condemned from the start (Peters, 2016, 192), and that the 'Soviet networks projects did not fail because they did not possess the engines of particular Western political values' (2016, 192). He claims that these were not feasible for 'their own reasons' (2016, 192). According to him, networks are not just a matter of connecting cables, nor of implementing techniques and devices, but are rather 'arrangements of social relations' (2016, 206). The success or failure of networks is not a matter of technological limitations, but rather of human decisions and interactions.

The main project that sought to connect the Soviet Union was called The All-State Automated System (OGSA), which ran from 1959 until 1989. Scientist Viktor Glushkov, leader of the team's project, wanted to create a computerized network for supporting the Soviet economic model by improving communication and management. His ambition was to 'network, store, transmit, optimize, and manage the information flows that constituted the command economy' (Peters, 2016, 2). This aspiration seemed, at the beginning, aligned with communist ideas of how to distribute work and resources. It was envisioned as a network in service of the State. This marks a difference with the American side of the story, as in this latter case the networking efforts were aimed for military purposes. Networking, in the Soviet Union, was not planned as a survival mechanism for standing and reacting to a nuclear attack, but rather to overcome the slowness of bureaucracy. However, the relationship between the civilian and the military was one of the key aspects that lead to the failure of the Soviet Internet.

Peters explains that the Internet in the USSR was a matter of constant disagreement between different civilian and military stakeholders and powers (2016, 193). The military was not interested in undertaking joint ventures with civilian counterparts, even less when it came to the management of the economy (2016, 191). The military industry in the USSR 'consumed resources and hoarded innovations from the civilian economy' (2016, 198), so they were not

interested in any technological reform that could change the status quo. Peters points out that this was an advantage in the network development stateside, as the ‘military-industrial-academic complex (...) allowed for cross-sector knowledge exchange and innovation transfer’ (2016, 197). The public scope increased due to this complex, whereas in the USSR the ‘military, the corporation and the state compelled (...) into using their private economic (...) interests’ (2016, 194), rather than venturing into opening to technical changes that would have crossed several sectors of society. The bureaucratic establishment and the strict military model made it impossible for OGSA (and other networking attempts) to flourish.

In 1991, months before the collapse of the USSR, scientists Sergei Mayorov and Leonid Polyakov (from the Moscow Institute for Automated Systems) wrote an article called “*Online in The Soviet Union*”. They acknowledge in this text that, to the surprise of many, an online industry existed in the Soviet Union, though it was not as developed as in other western countries (Mayorov & Polyakov, 1991, 105). These authors focus on the existence and development of databases, and how different stakeholders could access them online. They address the technicalities behind how soviet users could connect to foreign databases and how foreign users could connect to soviet databases. Their analysis focused specifically on database access, and they predicted that online solutions were going to face many difficulties in the future. They concluded that information and databases were going to disseminate better on ‘disk, tapes, and CD-ROMs’ (1991, 108) rather than online systems, as networking hardware was too expensive and that there was little management experience (1991, 108). This issue, according to them, was a barrier for fostering online services inside the USSR.

New efforts for connecting networks in Russia arose after the fall of the iron curtain. One example of this is the SOVAM Teleport program, a joint enterprise between Russian and American enterprises (in fact SOVAM stands for Soviet-American). Viktor E. Teremetsky, former Co-Director General of SOVAM Teleport, explains that there were favorable situations for the development of telecommunications services in the 1990s (Teremetsky, 1994, 68). There was an increasing interest in the Russian markets and in creating alliances with foreign companies (1994, 68). SOVAM managed to provide ‘more freedom of communication to different groups in society’ (1994, 68), to the extent that engineers and researchers were able to



communicate easily with colleagues abroad (1994, 68). This joint venture showed that providing online services was more efficient with a less bureaucratic structure.

## e-Estonia: going digital after liberation

‘We have built a digital society and so can you’ (e-Estonia, 2020), is the opening header of e-estonia.com. E-Estonia is a brand that focuses on promoting Estonia as a digital forerunner, and it showcases the benefits of prioritizing technology for democratic and social development. The government of the Baltic country explains and invites people to join the digital journey on their official website. It is mentioned there that ‘The Estonian dream is to have as little state as possible, but as much as is necessary’ (e-Estonia, 2020), and it is explained that their goal is to provide easy communication and access to state services through digital tools, rather than through cumbersome channels and procedures. The days where a central authoritarian and bureaucratic government stood in the way of the citizens are gone. So far the numbers show that Estonia’s Government has managed to keep up the pace, and plan for the future. The country’s national narrative changed with the use of the digital tools, and it has become an example of successful digitization.

As mentioned before, the State provides 99% of its services online, 46.7% of Estonians use internet voting, 98% of the citizens have an electronic ID card, and there are even ongoing innovative projects to protect their data with the Data Embassies. This last is, in short, an attempt to place servers owned by the state in foreign countries, where the most critical and confidential data can be stored (e-Estonia Digital Embassy, 2020). The goal is to have more control over the information, rather than with other services (like cloud computing), and by also ensuring ‘protection and immunity as with traditional embassies’ (e-Estonia Digital Embassy, 2020). With this, the Estonian Government keeps shifting the perception of citizenship and even diplomacy in the digital age, for the sake of improving their e-governance.

However, succeeding in improving and maintaining good services by introducing e-governance is not a general rule, as these initiatives have a failure rate of 85% (Gil-Garcia, 2006, 1). Nevertheless, governments around the world keep investing money in these types of

initiatives (2006, 1). Estonia is seen as a successful case of a former socialist country that is today associated with the wealthiest countries worldwide and is rather associated with Nordic countries rather than with European ex-socialist countries (2006, 1). It is seen as a beacon when it comes to social transformation through technology. The stories behind the Estonian case can help to better understand how a country in social and political transition used ICTs to intensify such changes, rather than to impose technology to push results.

Professor Meelis Kitsing, from the Estonian Business School, describes in his text "Success without strategy: E-Government Development in Estonia" how such usage of ICTs took place originally, and how it was initially introduced by private stakeholders. Kitsing's approach is valuable as he doubts a plain and monolithic version of success, as he analyses projects that failed, and as he distances himself with the official e-Government rhetoric. However, before diving properly into the case it is relevant to clarify the terms: e-democracy and e-Government. These have gained popularity over the last few years, and they have been used interchangeably. Nevertheless, there is a difference that must be pointed out: E-democracy means how ICTs are used by a state to provide access, information and knowledge about political processes, whereas E-Government refers to the usage and application of ICTs for providing state services (Lee, Chung-Pin, Chang & Berry, 2011, 444). In Estonia, there is both E-democracy and E-Government.

Kitsing claims that the history of ICTs behind Estonia's democracy and governance is "more heterogeneous" than considered before, by explaining the role of certain policies that date back to the Soviet era and the post-soviet private sector (specially banking institutions) (2011, 1). For example, he explains that computer programming was fostered as a profession since the 1960s due to Soviet regulations (whereas math and engineering were primarily fostered in other Soviet countries) (2011, 5). Soon after independence, in 1993, the well-formed IT community in Estonia outlined the strategy for establishing the base for the E-Government, and a Governmental special IT department with its own budget was created (2011, 5). Kitsing's research explains that the concept and development of an e-Government establishment found its way into the political rhetoric of the time, where right-wing politicians sought to encourage progress with technology, whereas left-wing forces were more skeptical and cautious (2011, 6).

This means that there were two major forces that made e-Government possible: the high amount of IT professionals, and politicians willing to vouch for the need of ICTs in the new country's model, where 'the IT community was interested in putting its knowledge into practice, while political leaders viewed IT as a means to achieve an efficient and minimal Government' (2011, 9).

## Minitel: A Network for the People

The Minitel was a state funded project that ran from 1980 till 2012 in France. The goal behind it was to modernize the central government and create a network to benefit hundreds of citizens with access to online public services. The Minitel was also created as a response to the unstable politics of the period and the oil crisis in the 1970s. The French state wanted to gain independence from the networks built by the UK and the US, especially from the dominance of IBM in the computing market. President Valery Giscard d'Estaing was concerned about these matters, therefore political advisors Simon Nora and Alain Minc were hired in order to make an assessment on how the Government could create strategies for fostering computation in France.

The result of their research was the "The Computerization of Society" report (first published in 1978), which analyzed the state of the art regarding technology and communication within French society and politics. The authors encouraged the president to take actions in order to stimulate local development in the field of computers and telecommunications, which they coined as Telematics (Nora & Simon, 1980, 4). According to their counsel, the State needed to take two roles: on the one hand as an agent for establishing a network, while on the other as a computer terminal distributor. The authors discussed how the computing power had grown exponentially over time while the manufacturing prices had dramatically dropped to a fraction of what they cost before (1980, 16), therefore they strongly encouraged the government to legislate for fostering the Telematics and the tech industry in order to 'develop domestic hardware and software' (1980, 106). They pointed out that the state would benefit directly from a technological revolution, as it could extend 'its fields of action' (1980,100). The ideas from Nora and Minc

were well received, and the government decided to follow the guidelines for stimulating local development and distribution of computer terminals from which users could access a net.

However, such ideas and policies challenged the centralized French political tradition, as they addressed a duality between two types of strategies for centralization and decentralization at the same time. The project was supervised by a central authority, the French Postal, Telegraph and Telephone Service (PTT), while it sought to allow ‘local municipalities more freedom’(1980, 5) and it reinforced ‘the competitiveness of the small and mid-size business vis-a-vis the large enterprises’ (1980, 5). This special characteristic differentiates this case with how ICTs were introduced and implemented in Estonia after the democratization. The French political tradition of control and centralized power shaped how the Minitel project was implemented (with regulations and the dichotomy between centralization and decentralization as mentioned before), whereas the Government in Estonia took a more liberal approach of limiting the state’s role (‘as little state as possible’ (e-Estonia Solutions, 2020) and allowing less regulated participation from private companies. The Minitel project depended on a strict bureaucratic structure, where the Estonian Government sought ‘to build a fully functioning country from scratch’ (e-Estonia, 2020), while they were aware that they could not ‘afford the bureaucracy of a developed democracy’(e-Estonia, 2020). The ways these two projects were designed and developed reflect the difference of their political and social contexts.

The French Government unveiled the Minitel project in 1980, following the guidelines provided by Nora and Minc, with the initial task of replacing the printed phone book with a digital service. The Government improved the country’s network and financed and distributed thousands of Minitel terminals over the years. France became, with this approach and project, one of the best-connected countries in the world. It must be pointed out at this point that the French network was a closed net, only accessed in France by those who had the adequate devices. However, the Minitel network is indeed a predecessor of the modern World Wide Web. It was also a predecessor to online marketplaces such as the App Store or Google play, where third parties provide, create and sell services over the network. The Minitel network had its own marketplace called “Le kiosk” (which was under strong state control), from where different

services could be purchased (ranging from online tickets, subscriptions to newspapers and magazines, and even chat rooms).

The Minitel quickly became part of the French public life and popular culture, and many citizens were dragged into the network as the services expanded (Mailland & Driscoll, 2017, 97). The digital offer increased rapidly, to the extent that sexual and explicit content started to be offered and distributed over the network. Not even the ones who opposed this outcome could match the benefits of the revenues, as Mailland and Driscoll explain: ‘sexy chats may not have been part of the original plan for Minitel, and not everyone was happy about the emerging culture, but Télétel administrators did not want to stanch this new stream of revenue’ (2017, 99). It is for this reason that French authorities developed a double moral standard, where publicly they wanted to ban certain content, but privately they were satisfied with the profit.

Sexuality was explored within the new digital tools in different ways, not only limited to pornographic or x rated content. American scholar Tamara Chaplin researched the lesbian community within the French Minitel, where she points out that the combination of network and terminals opened the possibility for connecting the lesbian community in a digital arena regardless on location and proximity (Chaplin, 2014, 452). However, her findings show that the conformation of a lesbian community online was not very successful, due to the way Minitel and the Kiosks worked. Users had to pay per minute of connection, meaning that they were charged depending how long they spent online. Chaplin explains that the activist group “Les Goudous Télématicques” (the GTs) tried to keep the digital community alive, but it never grew big enough to be kept online as “only seventy-five to ninety lesbians actually subscribed to the service between 1985 and 1988 (2014, 469). The community did not attract enough paying users, so it was not financially viable. Chaplin mentions that ‘despite their enthusiasm, the GTs never managed to convince their audiences that the Minitel offered women a vital service’ (2014, 469), therefore the project did not live long enough as other services.

## Finland: ICTs and the Welfare State

The previous case studies in this thesis have pointed out how networks were built and introduced in countries that were facing particular challenges, and that had different economical and political models. These previous examples can be framed within capitalist or communist models. However, this discussion is not limited by these two. Manuel Castells and Pekka Himanen analyze how ICTs were promoted and expanded under a Welfare state model in their book *The information society and the Welfare State: The Finnish model* (2002). This case is presented in this research at this point to balance the ideas, and to avoid giving the impression that ICTs will flourish with more ease depending on one economic model of the other.

Castells and Himanen introduce their book by discussing the idea of the ‘information society’ (2), by explaining that information is the motor that moves modern society and economy. Their focus on Finland seeks to explain that the rise of information societies ‘can exist (...) in a plurality of social and cultural models (...), and even antagonistic, models of modernity’ (2). Their goal is to tackle these matters based on research, and not on ideology (4). The core issue that the authors point out about the Finnish model, and that separates it from others, is how the well-being of society was the starting point for the decisions made by the authorities. They claim that the general information society is driven by the need of connecting the ones who are valuable to the economic model and disconnecting those who are considered as valueless (6). This increases, according to them, ‘inequality, polarization, and poverty’ (6). The ‘distinctive feature of Finland’ (12) was that the government managed to combine the information society and the welfare state (12) successfully in the 90s and early 2000s. The Finnish model made possible the thrive of companies and programming projects, such as Nokia and Linux.

The Finnish government invested specifically in two areas in order to build and promote an equal information society: higher education and innovations funds. On the first hand, education in Finland is focused on research, and is ‘very technology-centered’ (51). All Finnish nationals have the right to access free and high-quality education programs under the Welfare State, which has made the country one of the most educated ones in the world. On the other hand, the State provided grants for research and development through the Tekes and Sitra

programs. The former focuses on helping to transform research onto ‘exportable products’ (52), and it has a ‘business-oriented approach’ (52). The latter serves as a venture capitalist grant that supports the establishment of start-up companies (53). This shows that the Welfare State has a holistic approach towards research and innovation in technology, as it starts with providing education and later supports the researchers to step out of academia and into the realm of market.

Universities in Finland began to be connected by national networks in the 1970s; Sitra funded the first national university network in 1971 (65). These networks facilitated the flow of information, as researchers from different cities in the country could easily communicate with each other. This environment, according to Castells and Himanen, fostered the hacking community within the nordic state. Hackers, in this case, are not considered as ‘computer criminals’ (46), but rather as experts that are driven by a ‘creative passion’ (46). Having a functional network that works efficiently is important in this hacker culture, as ‘development work is kept open to a degree in which others can join in the realization of the idea’ (46). Hackers in Finland, according to the authors, used the available networks as a creation environment where a community was able to back the development of projects.

However, the road to the information society and the attention paid by authorities to the importance of networks did not come out of the blue. Finland leapfrogged in computer communication networks in great part because of the influence of other Nordic countries, and from the alliances that were made between these. Norway was actually the first country that was connected to the American ARPANET network in the 1970s (Lehtisalo, 2005, 8). The collaborative work between American and Norwegian scientists was initially targeted to gather and monitor data from the ‘Soviet Union’s nuclear arms testing (2005, 10). Nevertheless, Norwegians were experimenting with internal protocols before they connected to the ARPANET, but these efforts were purely academic and not open to the general public (10). Similar endeavors were taking place in other Nordic countries (Sweden, Finland, Denmark and Iceland), so scientists and authorities worked on a joint networking program to connect these five. The result was NORDUNET, which started to operate in 1985. Castells and Himanen point out that American authorities saw Finland as an ally to the Soviet Union, so there was initial resistance and skepticism of connecting the NORDUNET to the ARPANET (Castells and

Himanen, 2002, 66). Nonetheless, Finland managed to broaden its national network and become one of the European network forerunners.

Castells and Himanen have a very optimistic tone in their book. It ultimately gives the impression that Finland has an almost perfect model for how to network a nation and combine the benefits of the Welfare State with the information society. However, not all voices are satisfied with the positive approach. Heikki Patomäki, Professor of International Relations at the University of Helsinki, takes a more critical stand than Castells and Himanen in his book review 'An Optical Illusion: The Finnish Model for the Information Age' (2002). He claims that the authors of the Finnish Model misrepresented developments in Finland, and furthermore, that they framed 'the question in a misleading way' (1). Patomäki points out that the researchers did not attempt to explain 'long-term economic developments' in the Nordic country, but rather were interested in very concrete examples. Castells and Himanen oppose Finland to Silicon Valley, where they claim that information society creates social divisions, with the goal of portraying the Nordic country as a 'success story' (2). Patomäki argues that Castells and Himanen are biased and that they direct their examples to exalt the wonders of the Finnish Model, instead of having a critical approach. He claims that the book's major flaw is that it shows one side of the story, and therefore creates an illusion that presents Finland as an ideal model. The Finnish professor points out that inequality in the country increased during the 1990s, when the idea of the information society was taking place. Patomäki claims that Finland, in the long run, is 'rapidly moving towards the state of affairs that exist in California' (4), which ultimately affects the welfare system. He explains that capital and income shares grew dramatically in the hands of a few, resulting in an 'unjust, exclusive and violent society' (5) as 'liberalization, deregulation and privatization are in fact undermining the conditions for further growth in Finland' (5). Patomäki suggests that the resulting products and projects the Welfare State promoted for networking and fostering the information society model can after some time turn against it, to the point of potentially breaking it.



## 5. Democracy, Education and ICTs in Latin America

Latin American scholars have studied science and technology within the region with an independent and critical approach since the 1980s. The emergence of Postcolonial studies and Latin American studies served as a basis for analyzing local phenomena with more autonomy, in order to understand processes not only under the scrutiny of ‘foreign control’ (Medica, Marque & Holmes, 2014, 4). The scientific and technological products are not seen any longer as elements that are developed in western countries and later introduced with no resistance in the territory. The book *Beyond Imported Magic: Essays on Science, Technology, and Society in Latin America*, edited by professors in Latin American Studies Eden Medina, Ivan da Costa Marques and Christina Holmes, is a testimony of such academic efforts. They point out in the introduction that, in the 1970s, brazilian students at the engineering school (Universidade Federal do Rio de Janeiro) ‘referred to computers as a form of “imported magic”’ (2014, 1). This notion stressed the idea that there was a transfer of superior technologies from North to South that appeared magical on its arrival, while ignoring how the different traits in users and contexts (2014, 2).

*Beyond Imported Magic* provides alternative accounts to this previous perception, and it serves as a guide ‘on local innovation and use(...), the creation of hybrid technologies and forms of knowledge production’ (2014, 2). Furthermore, the editors and contributors acknowledge that Latin America in itself cannot be contained under one Latin-American identity, but that is ‘rather an open one, linked to global flows of labor, capital, and cultural hybridization’ (2014, 2). Therefore, the discussion needs a ‘regional focus’ (2014, 2), as the territory cannot be seen as homogenous. This poses a challenge, as each country in itself (and perhaps it could be argued that any other in the world) is a result of a ‘cultural hybridization’. This must be considered during the discussion in order to have a critical view on how technology is introduced and used in specific contexts. This chapter examines two case studies of technologies that were introduced in Latin America with the goal of fostering democracy and education, which began with

momentum and later faded into disuse: Cybersyn in Chile and One Laptop per Child (OLPC) in Paraguay.

## Cybersyn: ICTs for the Socialist State

Salvador Allende's arrival to power in 1970 in Chile marked a milestone in the hopes and dreams of a peaceful transition towards a socialist state in South America, especially during the cold war tension between the United States and the Soviet Union. The former sought to influence internal affairs of Latin American nations in order to counter the revolutionary sentiment that sprouted during the Cuban Revolution of 1959. While the latter did the same to support anti-American movements around the region. Allende's presidency pledged independence from these two fronts (Medina, 2011, 219), and was not short of promises for changing the Chilean social, political and economic structures. Some of which included the use of technology. Eden Medina, Associate Professor of Informatics and Computing at Indiana University, studies thoroughly the relationship between technology and Politics and her book "Cybernetic Revolutionaries" (2011). She presents an historical account of project Cybersyn (cybernetics + synergi), the network that was supposed to support Allende to regulate the economy under a socialist model, while analyzing and discussing the challenges and reach.

Medina explains that Fernando Flores, an engineer who worked for the new government, saw the opportunity of creating a computational system and network that would support the socialist state, and help it become more efficient. He was familiar with concepts and authors that discussed how to implement technology for backing institutional changes. The foremost author in his list was Stafford Beer, a British professor and consultant who theorized about the role of Cybernetics in organizational and management transformations. Beer's writings and concepts were aligned with Allende's ideals of distribution, and they fitted quite well with the political discourse of democratic socialism (835). Beer stressed the importance of balancing the forms of communication and control (816), and he envisioned a system that would help organizations to become more efficient with 'horizontal and vertical forms of communication and control' (816). He proposed a system that avoided a strict top to down hierarchy, but that was rather composed by subsystems that had independence to perform without risking the system as a whole (816).

The British consultant claimed that Cybernetics could be used and applied to industrial organization management (593), as it was a field that gathered different professionals with the goal of using science for developing effective organizations (594). For these reasons, Flores invited Beer in 1971 to come to Chile to lead the development of a cybernetic system. The goal was to support the governmental ‘management on a national level during a moment of political transformation’ (489). The British consultant accepted the invitation, as it was hard to resist an opportunity to apply his ideas on the real world (489).

Allende’s government was in need of networking the country through computational systems for one reason in particular: the main industries were forced to be under state control under a strong nationalization process. The government structure was very bureaucratic, so a better and more agile command of the national industry was required for Allende’s socialist model to work. Technology was perceived as the key element for solving the challenges that nationalization of industries created. For example, the number of state employees grew (as an effort to reduce unemployment), but the number of qualified professionals to run the industries was very low (251). It was thought that a Cybernetic system would allow a reduced number of workers to manage and control efficiently the industries as a whole.

However, such a nationalization process was strongly resisted inside and outside Chile, and it faced many challenges the first year (1138). Popular opposition grew in 1971, just after Beer’s arrival to Chile, as Fidel Castro himself flew to the country as a guest of honour in order to support ‘Chile’s revolutionary process’ (1212). The US government under Nixon’s administration, reacted to Allende’s arrival to power, and efforts to steer the country into a socialist model, with a financial blockade and a reduction of aid funds (242). These posed a challenge not only to Chile’s exports and imports of goods and raw materials, but also on the work that Beer and his colleagues were undertaking.

Their goal was to network the country with edge technology, but the blockade stopped them from updating the country’s technological resources. The British consultant and his team were forced to ‘engineer a new approach to computer networking that differed from the approaches used by other nations’ (429). The Chilean state had, in 1971, access to only four mainframe machines, three from IBM and one from Burroughs. Only one was given to Beer and

his team. It became a difficult task for the government to increase the number of machines, not only because of the blockade but also because these companies decided to withdraw and decrease operations in Chile as they saw a risk of ‘government expropriation’ (1625). Chile had a very limited computed power, so Beer and his team were pushed to build an entire network with no more than five computers (1636).

The project prototype was unveiled to the public in 1973, and it was quickly criticized. Both British and Chilean press accused the government of developing the Cybersyn network in order to have more control over society, acting as a ‘Big Brother’ that would be able to observe and surveil citizens. It was perceived by public opinion as a tool for sustaining an authoritarian and totalitarian regime rather than for managing the economy in a democracy. However, as explained before, Allende’s government did not have the intention of monitoring society, but rather creating a distributed network of communication (1751). The project was, from Beer’s point of view, a ‘weapon against state bureaucracy’ (3955), instead against democratic institutions. However, these critics did not stop the project from becoming a reality. The project was stopped by the abrupt changes on the Chilean democratic system.

Cybersyn depended completely on ‘the fate of Chilean socialism’ (4805), and this came to an end after the military coup d’état led by Augusto Pinochet in 1973. The military government saw no use for using a networked system that sought to control the ‘nationalized economy’ (4833), and by 1975 they had dropped all Cybersyn efforts and shifted to a neoliberal economic model (4833). At the end, ‘Chile was not able to implement its political dream of democratic socialism or its technological dream of real-time economic management’ (457), but this case study shows how communication technologies and networks were used to foster ‘social, economic, and political change’ (457). Eden Medina points out that Cybersyn also helps to show that technological innovations in computing and networking have happened in different geographic locations that are usually recognized (475).

## OLPC in Paraguay: Technology as a Charismatic Object

The One Laptop Per Child (OLPC) is a non-profit project led by Nicholas Negroponte, founder of the MIT Media Lab. It started in 2005 with the goal of creating ‘educational opportunities for the world’s poorest children by providing each child with a rugged, low-cost, low-power, connected laptop with content and software designed for collaborative, joyful, self-empowered learning’ (OLPC, 2020). These machines, the XO laptops, have special design and manufacturing characteristics. On one hand, they are carefully produced to be dirt and moisture resistant, so that they can endure different weather conditions (Roberts and Zamora, 2012, 802). On the other hand, their low price of 100 USD makes them cheap enough for purchasing and distributing in developing countries. OLPC works with partner organizations in different countries in order to introduce the initiative and provide children with the computers.

In 2008, Paraguay Educa (a local NGO) partnered with local and national governmental institutions with the goal of bringing OLPC to the country (Ames, 2014, 207). The project and the program had good intentions at the beginning, but the development and results proved to be problematic. Morgan Ames, assistant professor at the Center for Science, Technology, Medicine and Society (CSTMS) at the University of California, Berkeley, has analyzed the impact of the OLPC project in different contexts, including Paraguay. She explains that one of the reasons for which OLPC faced issues in this country was that Paraguay Educa adopted the ideals that OLPC designed at MIT without a critical approach (208). The underlying issue was that users had different hopes, and these ‘often did not coincide with those of either OLPC or Paraguay Educa’ (208)

Ames describes the XO laptops as a ‘charismatic objects’ (208), as these have the ability to ‘evoke nostalgic and often individualist stories that many in the technology community tell about their own childhood experiences with computers’ (208). The designers and supporters are involved in the project based on emotions and personal memories, on how computers helped them to discover and explore in their own childhood. Their goal is to replicate such experiences in children facing poverty and difficult conditions. This seems right, but the problem can be thought of as a ‘expectation VS reality’ meme: reality quite often differs from expectations.

Paraguay Educa introduced OLPC in different schools around the country, and training sessions were offered to the teachers. Initially the focus was on how to use basic operations, like for example on how to use the programs, web browser and the built-in camera (211). However, there was no discussion on how to integrate the new tools with the existing curricula that they were following (211). Teachers did not understand how the computers could be useful for learning on a regular basis, and there was little follow-up after the training (211). Ames points out that this confusion was due to the following issues: ‘only one in four teachers had a computer at home, only one in eight had Internet access, and less than half had any access to or experience with a computer’ (211). Teachers were unfamiliar not only with the practicalities of laptops (use software, camera, web browsers), but also with the concepts on how to plan educational activities with them. For this reason, teachers and students used laptops differently than they were originally initially intended. Ames explains that during her research she was told that the XO laptops were seen as ‘brightly colored plastic plaything’ (211) rather ‘than as a useful tool for learning’ (211). These were seen as toys and devices to play games with. The laptops were not properly taken care of during the first years, as there was no follow up from Paraguay Educa nor the government, and as these were seen barely as toys (212). The different stakeholders had different expectations from the laptops: Paraguay Educa and OLPC saw them as ‘education machines, the students as ‘media machines’ (212), whereas the teachers did not find them attractive (212).

These issues posed a problem for the Paraguay Educa team. They changed their approach and started to invest more on training. They hired and trained members of the community, so that they could help the teachers and students find ways on how to implement the laptops within the curriculum (213). After this, computers were used more actively during classroom activities. However, according to Ames, the project in Paraguay did not accomplish the ideological goal of fostering education. Teachers and students were more drawn to the laptops by their charismatic traits and because they granted access to games and the Internet (220).

By 2010 the OLPC project started to phase challenges on a worldwide level. Many countries cancelled purchases and decided to buy products from other companies such as Acer, HP and Asus which were offering similar products (Kennter, Dedrick and Sharpe, 2010, 1).

OLPC began to face financial difficulties and ‘ideological disillusionment’ (1), as they were not able to fulfill the educational goal. For this reason, the project again changed its approach. They started to motivate the PC industry to develop low-cost laptops for education, instead of doing it themselves (1). However, the project did not anticipate the ‘social and institutional problems that could arise in trying to diffuse that innovation in developing-country context’ (1). The computers were properly designed and manufactured to resist different weather conditions, as explained before, but the cultural aspects of appropriation or resistance were not considered. The project had flaws when it came to the deployment. It was marketed as a low-cost laptop, but the actual cost was not transparent. It did not include the training of teachers, the creation of digital content, and the maintenance and support (5). The initial plan was that governments and local institutions were going to do this part of the job, but this was not efficient, and it did not work as expected (5). The project’s main problem, in Paraguay and in other countries, is that it did not consider local challenges, and cultural, social and political aspects. It was a project driven by the idea that a device can produce educational changes, but the cultural aspects of the impact of introducing and using laptops were not fully analyzed.

## 6. ICTs and Peacebuilding in Colombia

Different case studies where ICTs were involved in social and political transformation processes have been presented so far. These show how distinctive social and political characteristics in Europe and Latin America had an impact on developing and implementing ICT programs and policies. The importance of studying and evaluating technology from a cultural perspective has been stressed in this paper. This chapter addresses these discussions within the Colombian context, in order to answer the research question: *How were the expansion of ICTs and peacebuilding strategies combined in Colombia since the 2010s? And how did peripheral communities appropriate the new tools to foster their aesthetic practices?*

### Vive Digital: Narrowing the Digital Gap in Colombia

Vive Digital (VD) (Live Digital in english) was an ICT project designed and promoted under the Government of Juan Manuel Santos (2010-2018). The Ministry of Information and Communications Technologies was in charge of establishing the guidelines and structure of the program. VD was divided in two phases: the first that ran from 2010 till 2014, and the second from 2014 till 2018 (corresponding to the president's two consecutive terms). The project as a whole did not change significantly over the years, though each segment was handled based on social and political shifts (the 2016 Peace Process being the most notorious one). It must be pointed out at this point that the project as a whole came to a halt in 2019, after the policies of the newly elected Central Government were enforced and no further budget was given. This issue presented a challenge for this research, as there is not much available information from the VD program.

VD was initially unveiled at ANDICOM 2010, Colombia's International ICT Congress. Technology, policies, industry and digital economy are discussed in this yearly event (ANDICOM, 2019). The Governmental program was intended to cover the following needs:



providing technology to every Colombian in order to make life easier, close the digital gap, increase both internal broadband internet networks and improve the country's international connection, expand fiber optics within the territory, and create physical infrastructure and endow it with computer terminals (Ministerio TIC Colombia, 2017). Three principles that characterize the overall project in Colombia are worth mentioning as well: (1) Freedom of market and less State control; (2) Encourage the supply and demand of digital services; (3) Reduce tax and regulatory barriers to facilitate the deployment of infrastructure and the supply of telecommunications services (MinTic Live Digital, 2019). These characteristics have similar traits to the ones described in previous case studies. They sought to introduce technology for improving citizens' life conditions, they addressed inequality and advocated for digital solutions, and they stressed the importance of ensuring both networks and hardware. The project followed a liberal approach regarding social and economic policies, similarly to what was discussed previously in the case of e-Estonia. The role of the state had to be as minimal as possible, with the idea that the market and services would flourish with less regulations after receiving an initial push from the Government.

The positive results revealed in 2014 show how the project achieved some desired quantitative goals. By the end of the first stage all the municipalities within the country were connected to high-speed networks, the number of internet connections passed from 2,2 million in 2010 to 8,8 million in 2014 (in a country of 45 million inhabitants), four more submarine cables were added to the country's network for a total of nine, and over 20,000 public schools, libraries and community centers were equipped with computers and tablets; so that there was one computer for every two children, and one tablet for every four (Ministerio TIC Colombia, 2014). By the end of the first phase the politicians and managers identified future challenges for the ICTs projects, like for example: the creation of jobs, the reduction of poverty, the usage of ICTs in a post-conflict scenario, and the improvement of education, health, justice and agriculture (Ministerio TIC Colombia, 2014).

The country had a significantly better infrastructure by 2014, so the policies targeted the creation of content during the second stage of the project. Official guidelines also sought to promote the development of applications and programs that focused on peacebuilding, as the

Peace Negotiations between the Government and FARC were taking place in Cuba. VD was considered as a hub from where ICTs could positively impact society (Vive Digital Colombia, 2014). There were three main goals during this new stage: encourage the development of apps aimed at the poorest and establish Colombia as a frontrunner in the development of such applications, foster peace, and improve the digital Government and services for making them more efficient and transparent (Vive Digital Colombia, 2014). The new phase even unveiled a new slogan: ‘Technology in the life of every Colombian to close the social gap’ (Vive Digital Colombia, 2014).

Nicolás Llano Naranjo, expert in digital entrepreneurship and transformation in Colombia, was the Director for Vive Digital Regional (VDR) between 2013 and 2015. VDR was a branch of VD that focused on introducing ICTs in small communities and distant districts. He was interviewed for this research, as his expertise and knowledge helped to understand how VD took place on a practical level in three phases: planning, service and implementation. This discussion clarifies how the program evolved from idea to execution, rather than just focusing on facts and figures

The planning stage, as he pointed out, consisted of identifying different successful ICTs projects that were already up and running within the country (led by either public or private sectors). The reasoning behind this was to foster efforts that were throwing positive results, rather than starting from scratch (in order to avoid intricate paths that would slow down the processes and cost more money). The goal was to be efficient and to build based on successful previous experiences. This meant that an important aspect of this stage was to do feasibility studies in order to analyze if local activities could be scaled up on a national level. The intention was to learn from regional strategies in order to establish national policies.

Llano exemplified this with one case that was originally managed by The Bogota Phone Company (ETB for its acronym in Spanish). ETB, the public institution that handles ICTs in Bogotá, began to unfold a program in 2005 called ‘Interactive Portals’ (El Tiempo, 2005), which consisted of centers that were endowed with computers, internet access and even Xbox consoles. The project’s goals included: reducing the digital gap within the capital city, providing citizens with access to information and entertainment, and training users on how to use the digital tools.

The Interactive Portals were distributed evenly across the city, and the services were free of charge in the poorest areas and had a minimal cost in middle-class areas. ETB established alliances with public and private sectors (from within the City Hall and companies such as Microsoft, Intel, HP and Sun Microsystems), for finding locations, acquiring computers and hiring staff. One significant partnership was with the National Learning Service (SENA for its acronym in Spanish), so that students could follow educational programs and get certificates of completion when attending from the Interactive Portals. The success of this project was recognized by the Central Government, and it was used as a model to replicate around the country under the name of Punto Vive Digital (PVD). The expertise from ETB was acknowledged to the extent that The Bogota Phone Company was in charge for coordinating and managing several PVD around the country (Colombia Digital, 2012).

The second stage (service) consisted of a portfolio of successful projects that could be replicated. VD worked as a menu, as Llano explained, from which local leaders and politicians could select a program that would fulfill their local needs. The reasoning behind this was that the communities could decide what type of ICT scheme would be beneficial for them. Instead of appointing programs based on a centralized structure, VD provided services based on specific needs. The Central Government did not decide where the projects were implemented, but it was rather the community who made the call. Some services that could be selected, according to Llano, were among others: VD points (which were centers endowed with internet access and computers), tablets for educational purposes, training programs focused on digital entrepreneurship, or support for e-Government developing.

However, VD did not ignore possible necessities or solutions that were outside its scope of action. It also supported local ICTs activities and programs that were already running, or even new ones that were envisioned by the communities. The VDR branch was in charge of these types of cases. This division, according to Llano, worked more as a lab where projects designed and run by locals were backed and promoted. If VD corresponded to predetermined programs that were offered, VDR consisted then of experimentation. The former VDR director pointed out the following examples that this branch financed: in 2015 the authorities of the Department of Chocó requested support in creating digital platforms focused on the National Sports Games that

they hosted, the leaders in the Island of San Andrés asked for guidance in creating digital content for promoting tourism, and the local Government in the Region of Tolima called for digital help for improving cattle raising. These three, as Llano explains, show how VD and VDR were open to listen to the needs of communities and to provide the most adequate program according to their social and economic reality.

The third and last phase (implementation) was characterized by the interaction between central and local governments. The former financed and the latter managed. The goal was for local authorities to run the programs, to make adjustments if needed, and even add budget when required. The idea behind this was to decentralize and decrease the dependence on Bogotá. The Ministry of Information and Communications Technologies kept supervising VD as a whole, but more liberties were given over time. The idea was that locals know best about their own interests.

On a last note, Llano underlined his concern about the fact that information from the overall VD and VDR programs cannot be found online nowadays, as many of the links are broken (as a result of the changes in ICTs policies enforced by the new Government). He is worried that the efforts are not continued, and that the project as a whole is going to be forgotten. He gives an account of how the project was beneficial for hundreds of citizens living in districts, and that still much work is needed in order to keep improving.

For analyzing and finding an answer to the research question of this thesis three regional digital centers supported by VDR were visited, and interviews were conducted with local coordinators and users. Finding staff and people willing to share their experiences posed a challenge, as many PVD were closed and contact information was outdated. The three cases in Santa Marta, Cali and Mocagua responded to the call. The following four questions were asked to the persons in charge of managing the projects: (1) What was the project's origin, and which were the initial goals? (2) How were users included during the planning process? (3) How did users react and respond to the digital tools that were offered by the program? (4) Were there any unexpected results of how ICTs were used and appropriated by the communities? The following four questions were asked to users: (1) Was the community involved in the planning process? (2)

Were the program's goals shared? (3) Did the ICTs that were offered fit your personal interests?  
(4) Did you use the digital tools for achieving personal interests outside the project's scope?

## PVDLAB Santa Marta

Jannia Rosette has been coordinating activities and projects from the PVD Lab in the city of Santa Marta since it was opened in 2017. This city is the largest from the Magdalena Department, and is located in the northern part of the country by the shores of the Caribbean Sea. The Lab was requested to the Central Government by the Governor's office, which has been in charge of running the project since then. Rosette explained that the PVD Lab was a service that the Ministry of Information and Communication Technologies started to offer in 2017, with the goal of fostering the creation of audiovisual content. All PVD centers were endowed with internet access and computers, but the special characteristic of the Lab version, as Rosette explained, is that it is equipped as well with professional cameras, editing rooms and photography studios. The intention in this case was to foster film and photographic projects in the region by working in alliance with the Film and Audiovisual Media program (Faculty of Humanities) from the University of Magdalena. Support was provided to students and recent graduates who lacked the proper equipment for creating content, so they could improve their portfolio or start their own business (PVDLAB Santa Marta, 2018). The idea behind PVD Lab was to foster a new generation of professionals in visual media and become an incubator for entrepreneurship. Another goal, as the Peace Agreement was taking place, was to provide training in digital tools to vulnerable communities that had suffered from the aftermath of the conflict.

Users, as it was explained, were not included during the initial planning process of the project as a whole (as this was selected from the national portfolio of existing services). However, the projects that are promoted from within the PVD Lab are previously discussed with the community, so that the offer meets the demands. These services are shared on social media, and open calls are made to anyone who wants to register. Some examples are: editing courses, usage of social media, content creation, camera operation, and even a film club. The services offered to vulnerable communities were more basic regarding the use of ICTs, and they were

more focused on how to browse The Internet, how to open an email account, and how to write a CV. Users were not included in the planning of these workshops, as it was rather a broad introduction to how to use computers.

Rosette pointed out that students and users cannot use the facilities at any time. They are welcome to participate in the no-cost programs that are coordinated and planned by the staff, or that they can apply to use the facilities if they have a relevant ongoing visual project. This aspect was challenging according to the coordinator, as it was difficult at the beginning to make a balance between the discourse of free services and skill training. Some citizens had the initial perception that they could go to the PVD Lab to check their emails, post on social media and browse the web for any purpose. So efforts were not only made in training the community with technical skills, but also promoting the idea that the services were for the benefit of the community rather than the individual.

Students and users reacted and responded positively to the digital tools offered by the Lab, according to Rosette, as they valued the initiatives of fostering entrepreneurship and digital literacy. She exemplified this with a successful case of a group of students who created a digital animation series called *The City of Ghosts* (*La Ciudad de los Fantasma*s, 2017), that was screened with video mapping techniques on the walls of heritage buildings in the city's center. The creators behind the project were enrolled at the Film and Audiovisual Media program at the university. They had the theoretical knowledge for undertaking a project as such, but they were lacking the equipment for doing so. The coordinator explained that students applied for support from the PVD Lab, and were granted access to the facilities, which became their office while the project was taking place.

The Lab's coordinator explained that there were no unexpected results of how ICTs were used and appropriated, as the goals were clearly defined from the start. However, she mentioned that unplanned situations happened during the execution of some of the projects. She underlined that the digital tools were not misused, but it was rather the human interaction that was sometimes troublesome. The leaders of some projects were giving improper use to the facilities, by working on different personal projects outside the agreements while outsourcing the obliged tasks. In order to stop this misuse, stricter guidelines were implemented.

Last, but not least, Rosette mentioned that the PVD Lab has been weathering political changes, bureaucratic problems and lack of budget. The center was originally requested by the Governor's office to the central Government, and in this initial phase it was the latter who provided financial support for purchasing equipment and adapting infrastructure. After this, the local authorities were in charge of maintaining and funding the project, so adjustments based on political disagreements have threatened the original goals and intentions. For instance, Rosette explains that there are efforts to privatize the whole project, so that money could be charged in order to generate income. She also expressed uncertainty when discussing the future of the project, as 2019 was an election year and new local Governments were going to start their term in 2020. There was not a clear policy of how this particular project was going to keep operating in the near future.

Four former users who were working as interns were interviewed for this case study: Carolina Portela (Film student from Universidad del Magdalena), Lizeth Jiménez (Marketing student from Universidad del Magdalena), Yeraldin Queiroz (high school student), and Diego Jaimes (high school student). The conversation with them took place as a round table. They each described their roles and commented about the PVD Lab project. Carolina was in charge of creating visual content for promoting events and workshops, Lizeth's task was to handle social networks, and Yeraldin and Diego were there to assist the facilitators of the workshops. The two high school students were getting trained so that they could work in the VD of their local communities.

They pointed out that the projects they were involved in were properly explained to them (both as users and interns). The goals and aims were clear and successfully shared with them, so they knew from the beginning what to expect. However, they discussed that the planning process was not open to the community, but rather that the projects were contemplated and organized internally; as Jannia Rosette, the project manager, mentioned. They indicated that they were not familiar with the portfolio from where the activities were selected from, but that they chose the workshops that fitted better their interests. For example, Carolina Portela and Lizeth Jiménez participated in some editing and social media workshops that complemented their studies. These were merely technical, and there was no critical discussion about these tools. They indicated that

they did not use the digital tools for achieving other personal interests (outside the programs' goals). They explained that they perceived the workshops and the PVD Lab as a place for experimentation, but that they needed to follow first the steps established by the project.

## PVD Tecnocentro Cali

Jaime Rodríguez is an ICT manager working at the City Hall of Cali, where several PVD centers are still up and running. At the moment of the interview he was involved in the restructuring of the project, as changes were requested from local authorities in response to the shifts in the Central Government. The PVD were even changing their names. No longer were they going to be called PVD but rather *Punto de Apropiación Digital* (PAD) (Digital Appropriation Point in English). Rodríguez explained that changes on central policies gave more freedom to local authorities, but that also many of the centers were actually shutting down as they were no longer financially viable. He explained, however, that the centers in Cali are still referred to as PVD, as the locals were more familiar with the name. According to him, more work and time was needed with the communities in order to socialize the new adjustments.

The PVD located at the *Tecnocentro Somos Pacífico* was chosen as a topic of discussion during the interview. This is located in one of the city's poorest sectors, and it was built with a joint venture of public institutions and private. It houses different programs that seek to foster artistic skills within the community, such as dance, music, painting, theater, and training in digital tools. The PVD was introduced by central and local authorities in 2013, specifically with the goal of supporting such activities with the arts and digital literacy.

However, the intention was not only to bridge the digital gap but also invisible social ones, as Rodríguez pointed out. According to him, this center is located in one area that suffers from violence due to conflict between gangs. For this reason, social leaders are invited to meet the coordinators in order to plan activities and promote peacebuilding activities. The PVD is open to the endeavors that these leaders set, while the staff provides the technical knowledge of how to use the digital tools. The experience has proven to be successful and the community has



changed its view of what public services mean. There is the common idea amongst locals that what is public has no owner, so there is no need for taking care of it or that damage can be done with no further repercussions. The PVD has helped to change this idea. The community is taking good care of the center as it understands the valuable impact it has on society. Rodríguez explained that rival gang members have even worked in the same projects, and that together they peacefully ensure that no damage is given to the equipment nor the facilities. This PVD has strongly supported the creation of audiovisual content, as it was the case in Santa Marta.

This PVD made alliances with universities and schools in order to train students with technical skills. Online material was offered to the ones who enrolled, and certificates were given after completion. These courses varied from computer programming to communication techniques, and coaching was given for those searching for jobs. Partnerships were also established with private companies, to urge the hiring of those who completed the courses. The community from this particular area has scarce access to education opportunities and many women under 20 years old are single mothers, as it was pointed out during the interview. This PVD seeks to provide tools to tackle the challenges that this community faces, so programs are both targeted towards peacebuilding and gaining technical skills.

Rodríguez mentioned that the social aspect prevailed over the technological one in this experience. There were no unexpected results of how ICTs were used and appropriated by the community as the goals and intentions were clearly fixed at the beginning. For him, and for the staff working there, what was unforeseen was the social impact. The center had a special community approach since the outset, but it was surprising for the staff to see how eager the users were to make use of the facilities and equipment. It has been rewarding for them to see how ICTs were implemented based on the community's need, rather than just introducing digital tools because of novelty or just for the sake of it.

## Digital Kiosk Mocagua - Amazonas

The Mocagua community is an indigenous reservation located on the shores of the Amazon river, two hours upstream from Leticia (the largest city in the area). It is composed by

members of the Ticuna tribe, and no more than 300 families live there. This place has been historically neglected by central authorities, and there is a lack of public services and state support. The economy is based on ecotourism, activity that has grown in the last couple of years. The increase in foreigners visiting the country is a result of the Peace Agreement, as more people have been attracted to visit Colombia (El Tiempo, 2019). A smaller version of a PVD called Kiosko Digital (KD) (Digital Kiosk) was provided to the community by the Central Government during the second phase (2014-2018). Computers and internet access free of charge were installed inside the school premises.

Nelson Lemus was the KD coordinator during 2018 until August 2019. He explained during the interview that the original intention from this specific point was to grant Internet connection to a community that was completely disconnected from the online world, and to deliver training in how to use the new digital tools. The intention was not to foster the creation of content or encourage entrepreneurship. Professionals in ICTs visited the community to facilitate workshops with the goal of instructing locals on how to run the project by themselves and take care of the equipment. According to Lemus this proved to be successful, as adult and young students started to browse the web to acquire new knowledge.

He pointed out that users were not necessarily included during the planning process, as the project's layout was brought from the capital. The guidelines were initially designed without the input of the community. However, this did not mean that local social dynamics were completely ignored. The KD coordinator underlined that users requested more detailed programs as soon as they saw the opportunities the digital tools brought. The most notorious case was the raising interest on how to use ICTs to boost the tourism industry. Locals learned how to open accounts on social media and services such as booking.com in order to promote hotels and travel plans. This even caught the attention of tourist companies based in Bogotá and alliances between them were made. According to Lemus this was a surprising outcome, as promoting tourism was not one of the initial goals.

The KD in Mocagua had a major difference from the PVDs in Cali and Santa Marta: the strong dependence on the Central Government. Local authorities in the two latter cases had more financial and political independence for sustaining and coordinating the PVDs. This was not the

case in Mocagua, so the project did not survive the changes in central policies from 2018. This brought frustration to the community, as Lemus explained. According to him, no central authority gave any type of reason explaining why the program was being cancelled. They were just notified that from a certain date the Internet access was going to be cut off.

## Linternet

Linternet is a Colombian project that started running in 2011 under the direction of Camilo Herrera. The project was dubbed ‘A Liter of Light’ by that time, as the initial goal was to provide lighting in communities that were not fully connected to the country’s energy network. Herrera explained during the interview that on the early stage they provided homemade ‘bulbs’ made with used plastic bottles filled with water and chlorine. These ‘bulbs’ used the physical laws of refraction to increase the scope of the rays of light, but it was a method that had many flaws. These did not produce light, but rather they tried to redistribute light from other sources (like the sun or electric bulbs). Solar energy panels that powered street lighting posts were introduced in 2014 in order to fix this problem.

Herrera noticed one interesting phenomenon while he visited different communities while installing ‘A Liter of Light’. According to him, poor families in the country owned smartphones even though they lacked toilets or even proper floors in their households. However, there was no data coverage on their surrounding area, so the fact of holding smartphones may have not seem useful. Nevertheless, he mentioned that having smartphones was a matter of prestige, of social recognition and status. Herrera and his team identified this, so they realized that the communities could benefit from a Wifi signal. For this reason, they started to install Wifi replicators on the light posts in 2016, so the project kept the initial goal of providing lighting with the addition of internet connectivity. The project was called Linternet from there on (a combination of the words lantern and internet in Spanish). The Linternet team formed an alliance with the PVD program in order to use the internet infrastructure that the Government had already installed in remote regions. The communities already had access to internet and computers inside the PVD, but connectivity to a wireless network was a complement provided by Linternet. In some places a

modest sum of money was charged per minute of Wifi access, which was not disruptive because a small fee for using the computers within the PVD centers was already charged in some cases.

According to Herrera the process for implementing the project has three main steps. The first one is to invite members of the community to engage during the construction and installation of the light posts with the Wifi replicators. The users are included during the construction process, which results in creating a sense of appropriation within the locals. After this, during the second step, the community is trained on the maintenance of the light posts, to avoid the dependence of external people if something goes wrong with the equipment. Herrera pointed out that Linternet is not only a project that brings Wifi connectivity, but it also provides workshops about how to use the digital tools. In this third step 'Light ambassadors' visit communities and facilitate workshops that teach how to browse the web and access services. They even provide free online courses in topics like personal finance and accounting. The first and second step are focused on constructing and preserving the infrastructure with the help of the community, whereas the third step is centered on the usage of the newly introduced digital tools.

Herrera's team initially thought that locals within these communities were going to use the Internet to learn new skills, communicate with others, increase their network, and share personal projects. This is something that actually happens, but not to the desired extent. Locals are browsing mainly YouTube, other social networks and pornography. Herrera underlined that Linternet makes efforts to improve the Wifi infrastructure and facilitated workshops for using digital tools to overcome poverty, but at the end the user is free to browse whatever he or she wants (as they are paying for the service). Herrera explained that this situation and outcome is frustrating, because the bigger picture is not only to provide access to technology, but also to change behaviors. Nevertheless, this issue is not something that is stopping them from keeping working and reaching more communities, as they constantly strive to bring lighting and wireless connectivity to the periphery.

Herrera and his team won a grant from Google in 2017 to implement the Linternet project in over one hundred communities across the country. Places with extreme poverty situations that were affected by the internal conflict were selected during this phase. Linternet, as Herrera pointed out during the interview, wanted to support communities in a post-conflict scenario and

back peacebuilding initiatives and efforts. They managed to bring lighting and wifi connectivity to places as such, following the same principles of community work and using the infrastructure from the PVD. However, as it was mentioned earlier, many PVD are currently shutting down as a result of policy changes from the central government. Linternet cannot replicate the signal that was coming into the PVD any longer, so they are making alliances with private companies at this point. Their idea is to keep connecting these communities with private internet providers that would charge for a monthly fee.

## 7. Analysis and presentation of findings

The previous Colombian case studies present two approaches on how ICTs were introduced in rural communities. These have certain similarities, for example: they had a strong belief that technology would foster development, and they both strove to work with rural communities in peacebuilding. There are also significant differences between the two, apart from the fact that VD was originally a State-run project whereas Linternet is a non-governmental venture. This chapter examines these two programs with a critical perspective to understand their similarities and differences, and to analyze their levels of success or failure. In order to achieve this, each project is first studied individually. Each is contrasted against other case studies that were earlier described, and ideas and concepts that were introduced in the Literature Review chapter are applied and discussed. Then, the points in common and distinct characteristics of the projects in Colombia are discussed. The intention is not to claim that one project is superior to the other, or even suggest that one should copy the other's model. The goal is, to have a critical view and contribute with ideas and suggestions that could improve the projects. The analysis will first address VD, followed by Linternet.

The VD project was strongly tied to a political project. It was not innovative from this perspective, as it used the same rhetoric as other governments. It was based on a technological determinist approach, which considered that technology would solve social problems and produce only positive outcomes. It was ambitious with the goal of narrowing the digital gap, improving the country's network, strengthening democracy and the digital government, and encouraging the development of applications that would have helped the poor. The project promised to provide technology in the life of every Colombian in order to close the social gap, just as the slogan stated. However, there was no critical perspective of how the new digital tools could have a negative impact upon culture by creating new problems and new dependencies.

The Colombian Government had similar aims and goals as in other projects that are described in this research, especially with the Minitel, e-Estonia, and Cybersin. These three

projects had a political backdrop that perceived technology as a tool for solving social problems of the time, and VD is no different in this sense. The French government pursued a technological revolution that benefited thousands of citizens by providing networks and terminals, and it created the electronic platform for accessing and offering digital services. The Estonian state sought to open up and modernize the country, and it encouraged the expansion of the Internet under a liberal market. Salvador Allende dreamt to build a more efficient and transparent state with the use of electronic terminals and networks that would have fostered social development. The four projects in these countries had similar intentions, but the ones in France, Estonia and Chile were more ambitious when it came to executing the plan. The technological solutions that they sought to create were innovative at the time, and they promoted internal expertise in order to deliver the products. The French government encouraged local industry for manufacturing the Minitel terminals, as well as computer scientists to develop the digital services. The Estonian government used the existing computing expertise in order to build efficient digital services, and it keeps doing it with groundbreaking projects such as the Data Embassies. Chile's socialist government wanted to put the Cybersin project in place despite the financial blockade. British and Chilean scientists worked together, and they exchanged knowledge in order to come with solutions to address the lack of computing power that was available. These were ultimately projects that sought to strengthen the concept of the nation state, and they intended to promote national industry and expertise. The VD project was not innovative in this sense, as there was no goal of manufacturing technological solutions internally. It was more a matter of expanding the network infrastructure and endowing centers with computing devices. There was no reflection about how local expertise could enhance the technological solutions that were going to be introduced.

The fact that all these projects were based on a political agenda opens a question regarding their life span: Can state-run technology programs weather political shifts? The answer to this question differs based on the context. The Minitel ran for over thirty years, the efforts of making Estonia a digital forerunner are still ongoing after their liberation in 1991, and Cybersin never saw the light of day after the military coup. Some projects became part of state policies that continued despite governmental changes, and modifications and changes were implemented

over time. After describing the current state of VD it is possible to point out that the project did not endure the political changes, especially in a context of strong internal division due to the way the Peace Agreement was negotiated and implemented. This is precisely one of the biggest flaws from this particular project. It did not take into account the fact that power structures change over time when making ambitious promises regarding technology. It was a program that was planned and designed by a government for a specific period of time, and funds were only secured for a couple of months after the presidential term was over. It was not a project that promoted structural changes from the base, on how to strengthen ICTs state-policies regardless of the ruling party. The project lacked a critical perspective regarding the time frames. The Technoscience ideas dive precisely into this, by recognizing that the relationship between technology and society is never static, and that it changes over time. The VD project was not transparent about its lifespan. It is easy to argue that the project was ultimately shut down by the new incoming government, but this is not entirely true. The project could have added more critical perspectives regarding its goals not only in space (reaching rural areas) but also in time. For example, by having clear methods for testing and updating the digital tools over a period of time.

Approaching ICTs projects as long-term state policies instead of governmental policies can create a precedent in the way technology and society are discussed in political debates. The former refer to policies that must be kept regarding the ruling party and that are included in a constitution, whereas the latter are policies that come and go depending on the result of elections. It may be indeed a very optimistic suggestion but confronting these issues as such can strengthen the ICTs projects into the future; instead of “reinventing” them under every presidential term. Not having a long-term discussion ignores that these types of projects deal not only with machines and wires, but also with humans. The changes of ICTs programs have more impact on the people using them than on the machines. Budget and equipment can be repurposed in a relatively short amount of time but working with communities requires a longer period of time. The project managers that were interviewed for this research expressed that the uncertainty of VD’s future proves to be a challenge. It was painstaking for them to build trust with the communities and explain the reach and goals of the projects. This is a process that has to start all



over again as completely new policies and strategies are introduced, creating a burden on those working in the programs.

One other element that the projects in France, Estonia and Chile had in common was the pursuit of independence: Minitel from IBM and foreign companies, e-Estonia from the legacy of the former Soviet Union, and Cybersin from strictly capitalist and communist economic and social models. It is true that VD did not use technology for ideologies as such, nor issues about autonomy were brought to the fore. However, topics about freedom and reliance can be actually discussed within VD, in order to address the project's dependence on social networks. One of the biggest flaws from the VD program was that the final products were not stored in a platform or archive that would give account of the processes and results. The project managers that were interviewed for this research pointed to social media (mainly YouTube and Facebook) when asked about the results from workshops and activities. However, these social media are not meant to work as archives, as they aim to constantly feed new information based on their internal protocols and algorithms. It proved difficult to retrieve information about specific projects during the interviews, as there was no system in place for this purpose (other than scrolling down through old posts on social media).

This also limited the circulation of the aesthetic practices within the rules of social media. The ones that were not shared online are currently stored in drives, away from public eyes. This is due, as the project managers pointed out, to legal restrictions and the lack of permits. It is true that PVD centers were fostering aesthetical practices of rural communities in Colombia, specially focused on visual productions. Qualified professionals were training users with modern equipment and digital tools. However, the project lacked planning on the distribution phase. One possible solution would be to develop a platform for showcasing all the projects or promoting festivals or activities where creators could participate. The creators' roles ran short within VD, as there was no further environment or incentive to share the processes and results. The Finnish case study sets an example of a different approach, as the welfare state unrolled the Tekes and Sitra programs to support and follow up technological driven initiatives that started from research.

This also poses a big problem for the peacebuilding initiatives, that are nowhere to be seen. The fact that projects within the VD had no follow-up and no further distribution has made that results fall into oblivion, especially when it comes to projects related to peace initiatives. Nicolás Llano, former director for VDR, suggested that is partly due to the approach the new government is giving to the discourse about Peace. This is a result, also as explained before, from having a techno deterministic approach towards technology. One government believes that technology can strengthen democracy through peacebuilding developments, while the next one shuts off the switch as it believes that technology can strengthen democracy through innovation.

The main goal of the PVD centers in Santa Marta and Cali is to foster visual and creative productions, whereas the DK in Mocagua had the purpose of providing internet connectivity. The project managers pointed out that efforts had to be made in order to clarify to members of the community that the new centers were not intended to be internet cafes (at least in Santa Marta and Cali). It was explained to the users that the centers were there to support local artistic and visual projects and were not available for just sitting and going through emails or social media. However, some workshops trained users on how to open email and social media accounts, without critically thinking what challenges and problems could arise from them providing personal data (especially when it came to communities under vulnerable conditions). Digital literacy was not fully covered during the planning and implementation phases of the projects, and there was not a program that followed-up how users kept using the digital tools after the workshops were over. The VD program was not only very dependent on social media for showcasing the projects, but that it also created dependence for users. Social media was not at the service of VD, but it was rather VD that worked under their protocols and algorithms.

Linternet had two main phases. The initial one that sought to provide public lighting, and the second one (which is still up and running) that introduced Wifi connectivity by combining streetlight poles and land networks. The project's discourse exalts social transformation through technology. It describes the importance of working directly with communities, and in training locals on how to build and maintain the poles and wi-fi stations. The poles are actually built with materials found on the spot, only the wi-fi hardware and the solar panels are brought by the Linternet team (which are actually the most important components). This workflow requires

local participation, similar (to some extent) to the idea behind the French government that pushed for national innovation with the Minitel. Linternet does not have the budget or reach to sustain a country wide project such as the Minitel terminals and network, but it recognized that local expertise had to be put in place somehow when building and developing the infrastructure. It is not a matter of how local computer scientists and network experts can come with solutions (as in France), but more on how local knowledge can be used to build infrastructure with scarce materials. This characteristic may approach Linternet to Cybersin, again to some extent, as both had to find solutions based on a lack of equipment and infrastructure. The aim of Linterent was not to create dependency on external expertise when fixes needed to be put in place (as in France and Chile), but rather to train locals on how to solve problems and challenges independently. According to Camilo Herrera, Linternet's director, this has been a good decision because locals take better care of the poles. However, there is no information or case studies that explain how local fixes take place, or if some light poles are currently not working due to the lack of maintenance. It is not entirely clear how locals can fix problems when it comes to the solar panels and wi-fi routers, or if these are renewed after a certain time.

Linternet encourages business-oriented training by providing short courses on microfinance and entrepreneurship. Their aim is also to train locals on how to use the digital tools for improving performance on economic activities. The intention is not to stimulate aesthetic practices or creativity, but rather productivity. The Linternet team works with local communities to identify local ways of production in order to integrate digital tools to the workflow. However, it is not clear how the outcome of the training is measured. Linternet's team is able to quantify the number of users who access and finish the courses, but the impact of these upon the community is still vague. This poses a certain similarity with the OLPC project in Paraguay, where it was not clear how the laptops could be integrated with already ongoing activities (teachers were not certain how to apply the machines into their workflow).

During the interview Camilo Herrera mentioned that Linternet's task was to deliver infrastructure and network, and not to address cultural aspects of how the technology is used or resistance. The project lacks a thorough understanding of technology by choosing not to dive into cultural discussions. Linternet has a positive approach towards technology, as the other case

studies, but it lacks a more critical approach towards technology and society. The project has indeed narrowed the digital gap by connecting communities in the periphery that were historically neglected by the center, as the interview with Herrera suggests. But the project can gain even more relevance and strength if cultural aspects are introduced into the workflow. It is not only a matter of providing access to networks or training on productivity, but on analyzing the cultural aspects that are amplified or modified by the digital tools that are introduced. Understanding this can be useful for the project, as new approaches can be tested by balancing the analysis of technology and society.

One of the most relevant characteristics from the Minitel and the Cybersin cases was the research that was carried out in the first place. The report, that the president Valéry Giscard d'Estaing ordered Nora and Minc to write, analyzed the current situation regarding technology and society in France. Fernando Flores and Stafford Beer analyzed cybernetics concepts within the Chilean case in the first place, in order to come up with the best possible way to introduce new ideas and procedures in the South American country. Research was also the base of technological development in Finland, that can be traced back to the investments made by the government for improving technical education at university level. There is a lack of such analysis and research within the Colombian case studies. This could be partly due to the lack of personnel and the need to quantify results as fast as possible in order to justify the investments. These matters can be improved by creating research grants for supporting long term projects on a state level. There is, as explained before, funding that is given by international development agencies or internet giants such as Google, but there is still a lack of strong national policies for supporting local development in the long run. Local research can help to address ideas such as the 'technological reconstruction' (Bauchspies, Croissant and Restivo, 2006, 82) and 'technological intensification' (83)

Both VD and Linternet aimed to work with communities that were affected by the war. These intended to bridge the digital gap, create new job and education opportunities, and develop solutions for peacebuilding purposes. However, these two did not consider thoroughly how new structures of power and protocols could have cultural impacts, as Johan Galtung discusses. New dependencies were introduced by social media. Unintended use of the digital tools came to place

when users were able to pay for Internet connection, as the spike in porn consumption that Camilo Herrera pointed out. Users in rural communities create the same dependencies in digital platforms as the ones in urban areas. Locals have become experts in using social networks such as YouTube, Facebook, Instagram and WhatsApp, and they follow the same affordances of like buttons and sharing options. Users provide data and create and share content regardless if they are in the center or periphery. Technology did not intensify peacebuilding, democracy or aesthetic practices. The way both projects trusted technology did not allow a critical thinking of how tools could intensify processes as such. Fostering peacebuilding, democracy and aesthetic practices were part of a positive discourse, but these were not thoroughly planned, backed and socialized.

## 8. Conclusion

Connecting rural areas of Colombia has not been a consolidated State policy, but rather it has become a matter of projects that one government defends and the next shuts down. There has not been a clear long-term strategy for narrowing the digital gap, but rather short-term initiatives that fade every four years. Efforts made by NGOs and private organizations exist longer in time, as they do not strictly depend on decisions made by politicians. These face financial challenges as they are reliant on grants and financial aid from international companies or development funds. Nevertheless, the projects (regardless of who runs them) that aim to connect remote areas to the Internet and foster development, aesthetical practices and peacebuilding have a strong technological deterministic approach. These perceive technology as the key for solving social issues, which has proven not to be successful.

The research presented in this thesis suggests that ICTs projects in Colombia lack a critical perspective about technology. Ideas that begin during planning phases tend to be overwhelmingly positive and are not contested. Potential problems and challenges from introducing digital tools are not seen. There is a blind faith that technology will foster social transformation, and the success of the programs are not visibly measured.

The present times of COVID-19 have stripped away the illusion that the digital gap has been successfully narrowed, and that social transformation is taking place through technology. The pandemic has made evident the inequality in connectivity in Colombia. Citizens with more resources are more likely to withstand the present situation by using digital tools. Some can still work, learn from home, and access different digital services. Whereas the ones that are disconnected do not have the same opportunities. The country is not equally connected after years of programs and projects that keep insisting that technology will transform society. The lack of critical perspective and understanding from the relationship between technology and society have kept the digital gap to endure, despite years of effort. After all, some have the privilege to be connected, while the majority is still disconnected.

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