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## **Science from Below and to the Left:**

**A Processualist Understanding of the Zapatista  
Movement's Counter-Hegemonic Practices**

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## Declaration

I, Antony Martel, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature.....

Date.....15.12.2018.....



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## **Abstract**

Norms in International Relations are often discussed from the perspective of the Global North, while focusing on the political relations of transnational organizations and nation-states at high levels of politics, but there is much to be learned about norms that originate from the political processes occurring at the grassroots in the Global South. This study was conducted to address knowledge production at the grassroots beyond Europe and North America. The Zapatista Movement of National Liberation (EZLN), located in Chiapas, Mexico, is a social movement that is actively working to produce an alternative political project from within the Global South, which is an interesting location to ground a study of norms for International Relations. As a case study, this thesis analyzes the encuentro ConCiencias por la Humanidad, a science for humanity, hosted by the Zapatistas in Chiapas during December 2016 and December 2017. ConCiencias is a challenge to what the Zapatistas perceive as a dominant framework of capitalism laden within scientific research. This study analyzed this encuentro to see how knowledge production takes place in practice, with the use of semi-structured interviews of participants and observers at ConCiencias, while also trying to understand what the Zapatistas were challenging at ConCiencias. In doing so this study examined the historical relationship between science and capitalism in Mexican agriculture through a *longue durée* lens. Through this inquiry it was found that capitalist science in Mexico evolved historically as an idea through patterns of relations between the Mexican state and American interests that were longer and shorter in scale, which explains that norms align with power for reasons that are deeper and more complex than are currently addressed in the norm literature in International Relations. While analyzing ConCiencias, this study found that grassroots movements in the Global South offer constructive alternatives to address domination at the level of ideas by escaping the limitations of Eurocentric thought. ConCiencias, as a process initiated by the Zapatistas, formed an alternative conversation around a participatory science for the purpose of serving ordinary people, rather than capital. Moving forward, there is a possibility for critical norm research to study the construction of alternatives to dominant normative frameworks from the location of social movements in the Global South.

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# 1. Introduction

Imagine the possibility of another world. A world that applies science not for making weapons or the destruction of the planet, but one that uplifts humanity. Such a world is under construction in Chiapas, Mexico by the Zapatista Movement of National Liberation who are using science as a tool to transform society. Their encuentro, ConCiencias por la Humanidad, held on two occasions in December 2016 and December 2017, convened a diverse group of scientists to ponder whether such a world is possible. The fact that the Zapatistas call science into question, not for its usefulness, but for its destructive capabilities should catch many people off guard. As a discipline, many would say that science is already a humanistic endeavor. However, ConCiencias reveals that science in its current form has been constructed alongside capitalism to function according to its processes.

When the Zapatistas construct this alternate depiction of science, for humanity instead of capital, it begs the question of how the current model of scientific discourse can be so prevalent. This study will analyze the formation of capitalist science in Mexico that the Zapatistas are challenging at ConCiencias, instead calling for a humanistic science, and do so to unravel the forces in international politics that influence people to privilege the former over the latter. In this sense, this study composes two distinct analyses. The first constructs the normative framework of capitalist science in Mexico as a historical process, and the second analyzes ConCiencias as its response. Constructing both parts of this analysis can be done using the concept of norms in International Relations. Norms are a useful conceptual tool for this investigation since they are an examination of how ideas function in international politics. This study can add to the literature on norm research in International Relations by looking at how social movements, like the Zapatistas, are a location for understanding the emergence of norms from the grassroots in a horizontal process. This approach can give International Relations a better understanding of how ideas produced by social movements shape international politics, for a discipline that mostly emphasizes processes occurring at high levels of politics.

When thinking about where capitalist science owes it deepest roots in Mexico, the Green Revolution stands out as the most pivotal era for the institutionalization of science.

The Green Revolution is a pivotal era of 20<sup>th</sup> century international politics where scientific agriculture has steered the path of states in the Global South. Under this paradigm, Western states and institutions have promoted agricultural programs that shaped the socioeconomic and political conditions in states where they have been implemented (Morvaridi, 2012). A core assumption of this paradigm that drives its application is the continual advance of technological science to improve agricultural yields and supply a growing human population (Perfecto et al., 2009). Contemporary research notes the Green Revolution as a major achievement of the 20<sup>th</sup> century for its modernizing impact across the globe (Evenson & Gollin, 2003; Conway, 1990). There is also academic literature that addresses the negative consequences of Green Revolution programs for states in the Global South, like Mexico (Shiva, 1991; Cleaver, 1972; Kloppenburg, 1988). Taking a historical approach, the first component of the analysis in this study will unravel the web of scientific agriculture in Mexico to build a reflection of this normative framework that explains where structures of dominance align to form the science challenged by the Zapatistas at ConCiencias.

The Green Revolution did not take hold across the Global South without some challenge to its authority. An important case of resistance to the Green Revolution from the Global South is the Zapatista Movement of National Liberation (EZLN). Zapatista resistance is not reducible to the Green Revolution, but this is simply one manifestation of the larger system of capitalism the Zapatistas have challenged through their discourse and their autonomous practices. A measurable site of this resistance sits at ConCiencias, where the Zapatistas have constructed a discourse that challenges the dominant framework of science under capitalism. It is a forum where scientists, activists, students, Zapatistas, and ordinary people meet to formulate a theory and practice of science seated “from below and to the left” (Meek, 2018).

### 1.1 Two Opposing Normative Frameworks:

In this study I aim to discern whether social movements in the Global South, like the Zapatistas, have their own theoretical contributions for the discipline, specifically in terms of where ideas come from in international politics. At the encuentro ConCiencias por la Humanidad, a science for humanity, the Zapatistas confront the boundaries of

knowledge between multiple conceptions of reality, from multiple scientific disciplines, and build a new idea for an autonomous science. In this way, ConCiencias is a case where ideas in international politics are built from the consent of ordinary people in the Global South, through a dialogue of their realities, to challenge the concepts built and studied from a Eurocentric perspective. Critical norm research that implants itself within the Global South enables International Relations the capacity to not only critique the issues of norms that originate from the Global North, but also the possibility to understand how norms can be constructed for liberation through processes that are socially just. Consequently, the understudied theoretical contributions to critical norm research from social movements in the Global South should be prefaced by an examination of the dominant normative framework they are challenging. What follows is a background of the two normative frameworks that will provide context for the analysis of this study.

### 1.2.1 The Green Revolution

Beginning a discussion about the forces of domination facing the Zapatistas must start with the advent of international agricultural assistance at the turn of the 20<sup>th</sup> century. One of the driving forces for change at that time was the dissemination of scientific agriculture across the Global South from the United States, most notably with the work of the Rockefeller Foundation. This agricultural paradigm now takes the name of the Green Revolution, whose objective was to extend, in Global South countries, technologies such as hybrid seeds, chemical pesticides, synthetic fertilizers, mechanical irrigation, and the mechanization of farming techniques (Olsson, 2017). Most importantly, it was as much a program for agrarian modernization through technology as it was for “the socialisation of families” (Nally & Taylor, pg. 54, 2015). In this way, the science challenged by the Zapatistas at ConCiencias took its most concrete form with the Rockefeller Foundation’s agricultural extension programs beginning in the 1940s.

The normative framework underlying scientific agricultural projects in Mexico was actively cultivated through the education of rural peasants. The object of this education was built under the assumption that “traditional or subsistence agriculture can and must be replaced with a highly productive, market-oriented system” (Harrar, pg. v,

1968). The blueprint for agricultural extension administered by the Rockefeller Foundation was formed in the US South and later implemented in Mexico. There, it was believed the social problems ailing the Southern United States lay in the poor cultivation of soil (Olsson, pg. 5, 2012). Indeed, the logic underlying agricultural extension at the outset of the Cold War, and US foreign policy for that matter, was a major concern for food production and population growth (Georges, 2017).

Given this context, the notions of science advanced under contemporary studies of International Relations become problematic. This work will take a historical approach to the constitution of scientific agriculture as a hegemonic project in Mexico to understand its dynamic construction in the present day. This is important because there is currently a lack of research about the emergence of norms in International Relations from a historical approach, where most literature focuses on localization (Acharya, 2004) or ideational change (Hirsch, 2014). This study aims to address this gap in norm literature by looking at scientific agriculture's historical emergence as a dominant normative framework in Mexico, which will give a rich description of where this framework originated and how it evolved. Also, crucial to this study's analysis, a historical examination of scientific agriculture helps explain what ConCiencias is challenging in Mexico's context of science and agriculture.

### 1.2.2 The Zapatista Movement

The Zapatista Movement of National Liberation (EZLN) began as a clandestine revolutionary army in 1983 that emerged from the jungle of Chiapas, Mexico on 1 January 1994 in a declaration of war against the Mexican government. From the outset, Zapatista resistance embodied the 500 years of struggle experienced by indigenous and campesino farmers at the hands of colonial, and later state, power in Mexico (Kingsnorth, 2003). The Zapatistas committed to revolution for the liberation of rural campesinos and indigenous peasants in Mexico by directly contesting the government. At this time, past social movements in Central America had dwindled and failed (Weinberg, 2000), but the Zapatista's armed rebellion rekindled the flame of the 1910 Mexican Revolution (Klein, 2015), built on existing organizing work in Chiapas (Bonner, pg. 131, 1999), and drawing influence from Mexican anarchist Ricardo Flores Magon, Pancho Villa, and their namesake Emiliano Zapata (Khasnabish, 2010). The Zapatistas' war lasted for 12 days

before they were overwhelmed by the Mexican government's counter-insurgent military response (Stahler-Sholk, 2007).

The Zapatistas currently reside in the Lacandon Jungle of southern Chiapas in Mexico. They claim autonomy from the Mexican government in pursuit of their right to self-determination, which was obstructed under the 1992 revision of Article 27<sup>1</sup> of the 1917 Mexican Constitution by parceling up collective lands of the "Nation" (Kelly, 1994). Privatizing the land of peasant and indigenous farmers in Mexico removed the possibility for life to continue without falling into poverty and destitution. When offered a pardon by Mexican president Salinas de Gortari, following the rebellion in 1994, the Zapatista Subcomandante Marcos asked what it would be for other than not dying of hunger or the many other deprivations faced by Mexico's indigenous peoples (Munoz Ramirez, 2008). The Zapatistas said enough

Zapatista autonomy directly opposes the capitalist system, which is promoted in one dimension through the normative framework of scientific agriculture. Their autonomy, as a collective territorial space, is a means to delink from the political and cultural structures of power that administer social control over the indigenous peoples of the region, which is otherwise described as a subaltern strategy of localization (Escobar, 2001). The Zapatista struggle against modernizing development projects is to dismantle the power structures that administer social categories to divide the people of Mexico (Overmyer-Velázquez, 2002). By reorganizing themselves collectively the Zapatistas make social relations on their own terms. The Zapatistas reject the normative morality imposed by modernizing science and politics, which Jose Marti once described as a distinction "not between civilization and barbarity, but between false erudition and Nature" (Martí, 1891). The Zapatista struggle is constructed from a deep examination of this ideological formation, evident in science, which this study's historical analysis will examine.

Most important for understanding the Zapatistas in relation to ConCiencias are their autonomous practices. The Zapatistas' organizing principles reflect the internal

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<sup>1</sup> Article 27 of the Mexican Constitution states: "Ownership of the lands and waters within the boundaries of the national territory is vested originally in the Nation, which has had, and has, the right to transmit title thereof to private persons, thereby constituting private property. Private property shall not be expropriated except for reasons of public use and subject to payment of indemnity." (Mex. Const., art. 27, §1)

demands and external challenges that come with building a new world beyond capitalism. Zapatista leaders “follow the will of the people” (EZLN, 1994) and act on those demands. Zapatista autonomy embodies the revolutionary change they see for the rest of Mexico, and the world for that matter, which is about building a democratic space where the people have the freedom to choose their guiding philosophy (Marcos, pg. 85, 1995). Building a democratic project distinct from capitalism requires the Zapatistas develop systems for “production, health, communications, defence,” juridical systems and schools (Shenker, 2012). This implies they build structures that reflect community needs to manage the complex issues of everyday life. In this way, the movement constructs a way of life in its struggle against the processes of neoliberalism (Mora, 2008). This will be important to remember when discussing the Green Revolution and the normative framework of scientific agriculture in Mexico.

In taking this approach, this study will address the following questions:

### 1.3 Research Questions

- 1) How has a historical construction of scientific agriculture in Mexico contributed to the the hegemonic project of capitalist science?
- 2) How much can the discourse enacted by ConCiencias por la Humanidad tell us about the construction of alternative norms that originate with social movements in critical norm research?
- 3) How has the Zapatistas’ conference, ConCiencias por la Humanidad, shaped an alternative conversation around science?

This thesis will explore the Zapatista Movement’s role in constructing a normative framework around a humanistic science at ConCiencias por la Humanidad produced by their construction of autonomy and international solidarity. ConCiencias is a concrete example of the Zapatistas’ response to capitalism, which informs how studies in International Relations can benefit from the theoretical contributions social movements have to offer the discipline. In doing so, this thesis will begin by constructing a theoretical framework around knowledge production, which will give a foundation for the

analysis of ideational formation in Mexico's historical context and at ConCiencias. Next, there will be a discussion of the research methodology and methods to frame the choices made to conduct this research. Following a discussion of methods, what ensues is an analysis of scientific agriculture's historical emergence and evolution in Mexico, namely as a product of the Green Revolution. The analysis will then shift to the narrative construction of a humanistic science at ConCiencias. The findings from this study will determine to what extent the Zapatistas have shaped a discourse around a science for humanity that opposes capitalist science, and what this tells us about the production of norms from bottom-up processes in social movements. Perspectives from critical norm research, consolidated with a practice theoretical approach, will illuminate how these practices form.



## 2. Theory of Knowledge Production

Understanding how knowledge is produced as a process is imperative to identify both how the hegemonic project of scientific agriculture takes form in Mexico, and how the counter-hegemonic project *ConCiencias por la Humanidad* also takes shape as its response. Such an understanding demands a theoretical grounding of the doings and sayings that informs how a norm develops and the role of power in this process. A theory of knowledge production for this study gives a set of conceptual tools that can identify the normative framework that develops historically in Mexico in scientific agriculture, as well as at *ConCiencias*. Such a theory must first discuss how norms are conceived in International Relations. This section will begin with an explanation of how norms are discussed in the disciplinary literature and will move to a critical perspective of this discourse to describe how they address power in international politics. This section ultimately aims to illuminate how it becomes possible to conceive change with norms as a concept based on the constellation of forces around them. It will then move to discuss a Neo-Gramscian perspective of hegemony, which identifies how dominance forms in the normative framework of international politics. Lastly, there will be a discussion of practice theory, which informs a better methodological approach to conceive norms as a process. Practice theory helps reflect on not only how norms are challenged through the discursive tactics of the Zapatistas at *ConCiencias*, but also the immediate context of this discourse that is embodied by the actions of people at the conference.

### 2.1 International Relations and Norms: Ideas Make the World Go Round

In the wake of the Cold War, constructivism entered mainstream conversations in International Relations theory to argue that world politics is socially constructed (Adler, 2002). It departs from previous paradigms that take the material world as given and instead views the world as becoming rather than being. A standard definition of norms is succinctly described by Martha Finnemore and Katherine Sikkink (1998) who characterize norms as “a standard of appropriate behavior for actors with a given identity” (pg. 891). Represented in this way, norms are an ontological tool that constructivists use to measure processes of change that are contingent on the presence of a social reality. In time, norms have become a core lens to explore international politics

as inter-subjectively constructed in social relations (Towns, 2012). This understanding of norms will help uncover how they emerge and are constituted in international relations, which will be applied in this study to understand how the hegemonic project of scientific agriculture develops in Mexican history, and how ConCiencias constructs a counter-hegemonic response to this normative framework.

As the study of norms has evolved in its history a distinction has developed between conventional and critical approaches in the literature. Ted Hopf distinguishes the two approaches, which depart from one another in their approach to reality and how it is studied. The conventional approach accepts normal science, meaning there are expected conditions to determine one identity from another (Hopf, 1998). Said differently, constructivist theory in international relations applies a positivist approach to norm literature that seeks to explain rather than understand international politics (Epstein, pg. 8, 2008). A critical constructivist approach abandons a universal foundation where social relations can draw rational comparison (Hopf, 1998). In a critical view, norms are negotiated continuously through social interaction, which cannot be separated from the meanings given to them by actors (Hofferberth & Weber, 2015). This means norms are constructed and reconstructed over time, depending on who is speaking, which clashes with the former approach that believes social relations can always be compared by the same rationality.

This study will apply a critical approach to norms to understand the dynamic construction of power in the historical formation of scientific agriculture and its response at ConCiencias. Most importantly for this study, a critical approach brings questions of power to norm literature, by identifying what is privileged, or conversely, excluded from practice (Ashley, 1987). Seen this way, norms consequently shape what people do and who they are, which changes power into the understanding of social construction (Krook & True, p. 108, 2010). Studying norms with a critical lens discerns where the strategies of power take form as a structure of dominance, and where excluded voices form as challenges to power, all of which takes place at the level of ideas.

### 2.1.1 Critical Constructivist Norm Research: Who Makes Meaning in Global Politics?

Understanding how a critical approach to norm research addresses power in international politics is best done by explaining them as a response to conventional constructivist norms. Norms are conceived in the conventional literature as stable entities that disseminate at the institutional level to states or movements at the local level where they are either accepted or rejected (Acharya, 2004) by passive recipients (Bloomfield, 2016). This process privileges the structure of the political system as its basis for analysis, meaning its underlying set of social rules is constant and unchanging (Park, 2005). The norm follows a unidirectional path from the agent diffusing it to its target adopter where it maintains a stable meaning in this process (Kersbergen & Verbeek, 2007). Critical theorists address the conventional approach to norms by questioning the stability of the norm's content as its target state or movement receives it. The norm attains meaning only when it is contested between actors (Tholens & Grob, 2015), where its content adapts to a local context (Björkdahl & Gusic, 2015). The dynamic reading of norms in critical literature is important in the context of this study to understand where scientific agriculture takes on a privileged position in the discourse of politics in Mexico. It is also crucial when the definition of science is contested at ConCiencias, which is a site where many different meanings meet, and therefore take shape according to their dynamic interaction.

A critical approach to norm research assumes they are subject to change based on how well they are accepted by self-identifying groups. The successful internalization of norms by local actors dictates that local actors will appropriate norms based on how well they fit into existing practices or pre-existing values (Acharya, 2004). Conventional literature focuses on how norms are accepted through processes of diffusion, persuasion, coercion, learning, or mimicry (Towns, pg. 184, 2012). These logics explain how actors adopt behavior from one another, which is applied in a single direction, but does not critically examine the norm itself (Acharya, 2004). This teleological view of normative change looks at the norm's acceptance as an indication of moral improvement, but this ultimately ignores the other's role in how the norm changes (Epstein, 2012). Adopting a norm is a multidimensional process and requires that domestic actors accept them, which may entail that the norm's content will change (Krook & True, 2010). A critical approach to norm research will view the norm's content to have some level of ambiguity

that will appeal to different groups (Krook & True, 2010). The ambiguities that are necessary for norm diffusion open the possibility for their content to change over time. Therefore, the integrity of norms is perpetually challenged from their internal dynamic, as well as the broader framework of already existing norms, their external environment.

The critical perspective adopted for this study sees norms as a dynamic process of knowledge creation in discourse, which addresses a divide between agency and structure in the conventional literature. Charlotte Epstein (2008), defines a discursive approach to norms by identifying patterns of meaning embedded in different contexts. Consequently, conventional and critical norms are differentiated when applied in a discursive context by their treatment of subjectivities and subject-positions (Epstein, 2008). Conventional constructivism treats norms as objects affected by human action, and subsequently views communication objectively without analyzing how communicative action affects the norm (Krook & True, 2010). Analyzing norms therefore focuses on the subjectivity of the actor and how this affects whether the norm is accepted. From a critical perspective, norms are viewed in a discursive framework where they are interpreted through a collection of subject-positions. Identity is then defined through locations within that discourse (Epstein, 2008). The process of norm change is consequently not informed by a static and conclusive definition for the norm. Therefore, focusing on how norms change through subject-positions transcends the levels of analysis from local to transnational, because the discursive approach does not distinguish identities as social actors.

A critical approach to norms through discourse is also useful for identifying power in the construction of norms, and how they change. A critical approach to discourse posits that people assert power through language, which shapes our collective social reality (Foucault, 1981). Meaning in discourse consistently reformulates through interaction (Krook & True, 2010), and when it is interpreted through language it redefines how power is conceived. Language both shapes and reflects reality, which departs from the sociological notion that certain objective meanings are present in discursive interaction (Epstein, 2008). Identities are therefore continuously shaped and reshaped by the speaking actor absent the presence of a socializing agent (Epstein, 2008). Power is then consequently embodied not through agents, but meaning in discourse. It is compelling to view norms from this perspective because the meanings that shape identity are contingent on their relation to power.

Another problem in the conventional literature about norms is its attachment to a single epistemology, specifically of the West. The prevalence of norms from Western states and institutions disseminating to countries and organizations in the Global South brings into question the assumptions of these norms, and most importantly, the focus of conventional literature on such phenomena. The conventional literature, by applying scientific rationality, focuses on the role of human action to enact change because it takes a norm's content as given (Wiener, 2004). Norms consequently have a homogenizing effect on certain practices, ideas, and discourses across international borders (Towns, 2012). It follows that norms ignore the hierarchies of power that legitimize some actors over others. A critical reading of norm scholarship acknowledges that most norms under study originate in the West (Engelkamp & Glaab, 2015), which ignores the contribution of other meanings. Therefore, the findings from studies of Western norms will prioritize discourses and practices that are commonly accepted in Western understandings of international politics. It does not address the underlying motivations for the broad acceptance of norms, because it does not acknowledge the hidden power relations within the international system (Towns, 2012). Conventional constructivism approaches norm research by viewing human interaction as a product of individual human behavior, but this does not address the causal role of power in social interaction. Norm change as a product of socialization depoliticizes the costs incurred on collective, rather than individual identities, which privileges the identity conceived for the promoter of the norm over those on the receiving end (Epstein, 2012). Consequently, the lack of accountability for conventional literature to address its affinity to the West's dominant epistemology weakens the capacity of the approach to understand normative change.

A critical approach to norms can explain the reflective process of change over time as the norm, which a conventional approach does not address. Norms are an expression of identity, which is highly subjective. The problem of conventional constructivism in tracing norms is that by claiming its definition they contribute to legitimizing it under their interpretation (Krook & True, 2010). This limited framework does not account for process of change in the content of a norm (Deitelhoff, 2009). Conventional constructivist norm literature, with its objective position, alienates itself from its subject matter by hiding its assumptions in what is called zero-degree writing, where the writer distances themselves from their work with their use of language

(Barthes, pg. 5, 1967). However, despite the writer's attempt to remove themselves from their work, their voice is still present (Doty, p. 389, 2004). Discursive approaches are more capable of addressing normative change because they are attentive to the ways that language creates narratives about the world and defines how things work. In this study, the normative framework of scientific agriculture, and its response at ConCiencias will be analyzed according to how each project is dynamically constructed through their interaction within discourse.

For this study, a critical approach to norms must be consolidated with additional concepts in International Relations theory to understand the formation of normative frameworks through power relations over time. Antonio Gramsci's concept of hegemony will be useful in this study to explain how power constructs a framework of ideological dominance, in this case through scientific agriculture, as well as its alternative, a science for humanity. Bringing these two concepts together also requires a methodological approach that views the process of knowledge creation as a practice. A practice theoretical approach takes social interaction as the basis for building theory, rather than adopting norms that essentialize identity according to one epistemology (Epstein, 2012), as the grounds for knowledge creation. Seeing discourse as practice makes this process iterative by nature, which makes the basis for theory relational rather than substantial, as is the case in conventional literature.

## 2.2 The Power to Make Ideas Legitimate: Normative Hegemony

One way to address the role of power in knowledge creation from the perspective of critical norm research can be done using the Gramscian concept of hegemony. The basis of this concept assumes power is exercised by a dominant group through both society and direct domination in state government (Gramsci, pg. 12, 1991). Important to this theory is the consent of this domination by a large proportion of the state (Schwarzmantel, pg. 8, 2009). Applied to International Relations, the field assumes an intersubjective understanding of the term in global politics that accounts for the ideological dimension of dominance (Cox, 1996).

The roles of material and ideological dominance that shape hegemony are practiced through a combination of force and consent. Hegemonic dominance is

articulated across the extension of the state to civil society (Burawoy, 2003). In this way, Gramsci conceived the state as a political party that exercises its hegemonic function as a set of organizing principles that balances the interests of civil society by absorbing it into political society (Gramsci, p. 253, 1991). The extent of state control over civil society dictates the strength of hegemony in each context. The war of movement takes place where a direct opposition to subjugating power is conducted by force. When the strength of civil society and the state is too great, a war of position must occur where the challenge to dominance must come from the realm of politics (Gramsci, p. 207, 1991). In this sense, ConCiencias forms as a war of position to oppose scientific agriculture as a structure of dominance. The force of hegemonic dominance is historical and produced through deep-rooted structures that evolves alongside the interests of “different classes or states” (Joseph, pg. 112, 2008). A historical approach to understanding hegemony will be applied in this study to construct a narrative that understands how scientific agriculture developed as a dominant normative framework in Mexico over time.

Hegemony can be applied to norms as a theoretical tool to make sense of the role material and ideational forces play in knowledge construction. Gramsci’s orthodox view of hegemony is the process of ideological domination that begins with the control of material forces of production, which is replicated at the level of ideas (Scott, 1985). On the world scale, this manifests as universal norms, institutions, and mechanisms that dictate behavior in support of the dominant mode of production (Cox, p. 172, 1983). In this sense, norms are a political practice that aims to construct or deconstruct hegemonic projects. Consequently, this study will apply hegemony as a nexus of power in capital, government, and civil society that constructs reality under a singular interpretation, which ignores the presence of other perspectives that exist in the Global South. These projects either challenge dominant terms of a political discourse or they inform the existing order of dominance (Howarth, 2015). This study will juxtapose scientific agriculture and ConCiencias on opposing sides of the hegemonic project of scientific agriculture, one to form the order of dominance and the other to dismantle this project.

Constructing an order of dominance through norms implies that hegemony, as a process of ideas, becomes legitimate by producing consent through subjects. Norms both set expectations and establish social order by creating representative identities (Mills, 2007), which produces an othering effect for those who are not under the ascribed this

normalized subject (Bhabha, 1984). When norms dictate human behavior, and privilege certain subjectivities over others, they ultimately define what is human. Normative hegemony consequently performs an act of symbolic violence on those identities rendered invisible by the idealized subject, as a punishment for deviance from the norm (Castro Varela & Dhawan, 2011). In this sense, the normative framework of scientific agriculture produces a hegemonic understanding for the mode of agricultural production, which privileges methods oriented toward capitalism and economic markets over subsistence and communal agrarian practices.

It is appropriate to discuss hegemony in the Zapatista context when referring to *ConCiencias por la Humanidad*. They challenge the dominant model of science and replace it with a system of knowledge production that has a transformative social purpose (Meek, 2018). The Zapatista discourse is also a manifestation of Gramscian common sense. They resist subjugation by dominant political forces through a counter-hegemonic discourse, which is malleable to alternative futures and open to interpretation (Rupert, 2003). The improvisational nature of their politics creates a dialectical relationship between the leadership and the people (Morton, 2002), which is similar to how practice theory views the construction of counter-hegemonic practices between agency and structure (Joseph, 2008). Acknowledging the presence of multiple ontologies that inform processes of knowledge creation begins to illuminate the privilege of certain discourses over others.

### 2.3 The Materiality of Ideas: Norms in Practice

Despite its name, practice theory does not constitute a uniform perspective, but rather a space for thinkers to share ideas about practices. Sherry Ortner (1984) was among the first to apply the notion of practice theory. She conceived a study of practices in anthropology that focused on the forms of human action to explain the construction, reproduction, and change of meaning or form for a social/cultural whole (149). Many threads of interpretation exist within practice theory, but they all adhere to six core commitments. They “emphasize process, practical knowledge, collectivity, materiality, multiplicity, and performativity” (Bueger & Gadinger, p. 19, 2015). Studying the construction of a normative framework at *ConCiencias* complements most aptly an



application of practice as a theoretical concept, to corroborate the doings and sayings of conference presenters through not only discourse, but also audible and visual media.

Social practices, like norms, constitute a dual function as both ordering and changing. They are “socially meaningful patterns of action” (Adler & Pouliot, p. 6, 2011) that consist of bodily and mental activities in the context of background knowledge in the material world. Critical norm research criticizes the norm’s ontological status, as it only takes this appearance when it is performed in social practice (Butler, pg. 48, 2004). The contingency of practices implies that knowledge is situated in the process of becoming. They are repeated interactional patterns that are temporarily stable, but they perpetually shift, as they are performed (Beuger & Gadinger, 2015). These routinized patterns constitute an ordering function that is self-reproducing, which is useful to consider how ConCiencias produces an alternative framework around science that is reflective of the doings and sayings at the encuentro.

A practice approach most aptly complements a critical view of norms. Practice theory interprets knowledge “through relational ontologies” (Bueger & Gadinger, pg. 453, 2015), which takes a flat perspective to reality, meaning it attributes knowledge creation to both agency and structure. Consequently, the social world is constructed as a routine of social practices that are carried out by individual agents (Reckwitz, 2002). Thought of in this way, a practice theoretical approach offers critical norm research a methodological bridge between its ontological assumptions and its application in social reality. A study of ConCiencias, as a conference setting, offers more depth of analysis with a theoretical approach that is attentive to the routinized practices of the encuentro.

A critical approach to norms can address the ontological security of hegemonic dominance, meaning the identity laden in power structures that is self-reproducing (Steele, 2008), with practice theory. International Relations has recently turned to process-based perspectives of the international, which has offered new epistemological and ontological considerations for the discipline. Such a view holds that social entities should be conceived as processes rather than substances (Guillaume, 2007). In this way, concepts like norms are thought of as a set of relations formed in a dialectic between agents rather than as a unit of measure. This ontological premise can be extended to the entire social realm of politics, which construes the international as a constellation of processes rather than a “territorially (de)limited space” (Guillaume, pg. 742, 2007).

Practice, whether it is discursive or otherwise, gets the study of social relations closer to its material basis.

Studying norms as a process, through practice theory, adds a temporal understanding to norms that is more relational and less deterministic. The relationship between agency and structure becomes less problematic, because they inform one another through interaction within an evolving context. Short of action theory, which fixates on the individual, a processual understanding takes this diachronic approach to time associated to relations that structuralism or functionalism are too fixed and atemporal to examine (Lewellen, 2003). Processes can help break the Cartesian duality between structure and agency by seeing the basis of existence as a mediation between the social and natural environment (Lacroix, 2013), which does not conceive the identity of the agent or structure as essential categories. At a given time, a situation may consist of a structure that is solid, leaving the agent with few courses of action. In others, the structure may be more malleable, consequently giving the agent innovative paths toward change. A process-based perspective can help social theory break from passive politics, and the reductionist traps that it produces by seeking out the messiness and contingent nature of social reality in all its complexities.

## 2.4 Tracing Power in Norms: Hegemony and Praxeology

Hegemony can be applied concretely to the practices that build and maintain hegemonic projects or aim to deconstruct them. Gramsci informs his ideas about Marxism on the concrete action of man (Thomas, 2015), which therefore means he is focused on the praxeological dimensions of social theory. Dissecting the constitution of hegemonic projects through practices abandons the binary oppositions of structure and agency by emphasizing their mental, physical, and material dimensions (Schatzki, 1996). Gramsci's own understanding of hegemony also situates the forces of material and ideological dominance in everyday practices. Gramsci's interpretation of hegemony is not simply an ideological disposition, but something that goes beyond culture to encompass whole social processes and their relation to power. The forces of social and cultural dominance are consequently "our senses and assignments of energy, our shaping

perceptions of ourselves and our world” (Williams, p. 110, 1977), which adds up to an absolute sense of reality.

Understanding hegemony as a process requires a theoretical perspective that goes beyond conventional constructivism. A strictly intersubjective reading of Gramsci is limiting in its ability to identify patterns of behavior in social practices. A scientific realist view of hegemony sees it as a dualistic concept. Hegemony has an agential character with respect to practices and a structural element that identifies the basis for those practices, which gives them meaning (Joseph, 2008). Gramsci begins his analysis of hegemonic construction by viewing the social forces that are linked to structure and “independent of human will” (Gramsci, p.180, 1991). His focus turns to moments of collective political consciousness that operate above the level of structure. Viewing hegemonic projects from this dynamic perspective then builds an encompassing narrative of their constitution, which attributes a dialectical relationship between agency and structure (Joseph, 2001). This reading grounds hegemony in material conditions, which identify patterns of interaction, and construes the concept as a process rather than an entity.

Hegemonic practices are identified historically and rooted in daily experience. People conform to patterns of daily life that allow them to assimilate and function accordingly. Subordinate classes possess divergent understandings of dominance because it is contextually driven by their relationship to power-laden situations (Scott, 1985). Rockefeller agricultural extension in the early 20<sup>th</sup> century, with its socialization of Mexico’s farmers through their education practices, is a historical example that will be discussed later. The normative understanding of science, and its connection to technology and productivity, has constructed an ideological framework that is at the level of popular consciousness to this day. This is too complex to fit under a strict definition of hegemony as a relationship of domination existing solely between the state and civil society.

As a philosophy of praxis, Gramsci’s view of hegemony is not static, but is malleable to its dynamic construction through interaction. Robert Cox (1983) interprets Gramsci’s construction of a concept, like hegemony, as elastic and meaningful when applied to a situation where it has explanatory power (163). Cox’s insight is most apt for this study where other concepts of power could have been applied, like Foucault’s governmentality. Hegemony can be viewed as a dynamic process, rather than a

unidirectional force, that makes it possible to disentangle reduction of singular, homogenous explanations with the complex reality of power that sits in heterogeneous spaces across time.

Methodologically, it is useful to conceive hegemony as an articulatory practice that develops as a unity of ideology in social formations (Howarth, 2015). The antagonisms present in discourse and practice shapes meaning between subject-positions, and achieves stability through relationships across contexts. Viewing hegemony in this light, it is possible to trace it discursively as a malleable and dynamic process over time that is complex and more adept at understanding the root causes of oppression and domination through power. As a set of practices, discourse can explain how hegemony forms, as well as how counter-hegemonic practices take shape. ConCiencias will be discussed in this study as a counter-hegemonic project of a humanistic science. It is a space that produces a discourse which challenges the basic ideas of scientific agriculture, as a normative paradigm, and how it manipulates its principles for capital accumulation through dominance.

### 3. Research Methodology and Methods

Constructing the normative framework of scientific agriculture in Mexico and its response at ConCiencias required a set of tools for analysis that could measure the discursive practices in both approaches. In addition to methods, there were also a set of strategies for this study that guided the application of these methods to appropriately analyze and address the research questions. Discursive analysis was vital to understand the role of normative power dynamics of scientific agriculture in Mexico and the Zapatista response, but each of these projects required a different strategy to achieve the appropriate depth of analysis for this study. Therefore, measuring the historical emergence of scientific agriculture in Mexico, as a normative framework, needed to trace the path of its formation and evolution without reducing its construction to static concepts in existing literature, like the nation-state. Similarly, tracing the history of this framework could not be bound by the scale of time. This means an approach to the history of scientific agriculture needed to be capable of measuring how long and short-term scales of history affected the emergence and evolution of this normative framework. Additionally, analyzing ConCiencias por la Humanidad as a response, the contemporary practices of the Zapatistas and their collaborators required a thick description of this event to examine the discursive practices of those present at the encuentro, which was achieved through participatory interviews. The participatory interviews consolidated the analysis that could be gleaned from the discursive material, consisting of audio/visual presentations and transcripts, which helped triangulate the findings of this study. What follows is a reflection on the methodological choices made for analysis of this study, an explanation of those tools, and how they were applied.

#### 3.1 Methodology: Tracing the Construction of Normative Frameworks

##### 3.1.1 Methodological Nationalism

Addressing the hegemonic project of scientific agriculture in Mexico, which has developed historically over the last century, required a type of discursive inquiry that is wary of its methodological assumptions and implements the right tools to analyze this subject. In the present day there is no longer a stable, taken for granted, concept of the

world as made up of nations composed of citizens (Abbott, 2016). National borders are weakening, which welcomes analyses of transnational processes that acknowledge the dynamic relationship between actors and the nation-state as a structure. Deeper analysis of this structure unveils the nation-state has always been a negotiated concept, maintaining its stability as the primary unit of comparison through discursive power (Abram, 2018). In this context, it is also important to address this methodological assumption for a study of the Zapatistas, an autonomous social movement, located within a nation-state.

International Relations has followed the path of modern industrial societies, which “have been closely attached to, and shaped by, the experience of modern nation-state formation” (Wimmer & Schiller, pg. 303, 2002). Studying dynamic processes that occur both between nation-states and within them is an important step for reflecting on norms and social change. However, it is also vital to acknowledge that methodological nationalism, the assumption that the nation, state, or society is the natural social and political form of the modern world, is implicit within norm studies (Checkel, 1997).

As a primary unit of analysis, the nation-state is a model that has been placed over societies without its reflection in practice (Abbott, 2016). The problematic assumption of the nation-state as a unit of analysis is its reduction of understanding for norms to a large, homogenous unit that ignores the dynamic processes occurring within it. This requires a way forward to avoid the pitfalls of such colonizing practices within academia, which brings understanding of the world without overlooking the voices of everyday people. However, a path to understanding will also necessarily reduce complexity (Wimmer & Schiller, pg. 326, 2002). Articulating an interpretation of a set of practices will put constraints on the other ways they might be framed. Norm studies must find a path that emphasizes transnational processes, but also acknowledges the influence of the nation-state. It must go between the assumption of the nation-state and ardent transnationalism to point out the processes under study that liberate rather than oppress. In this sense, the historical approach taken by this study is one way of addressing the problematic assumptions of the nation-state as a primary unit of analysis for norms in International Relations.

In this case, a narrative that depicts the hegemonic project of scientific agriculture, which the Zapatistas are addressing creates a distinction between the

hegemonic norm of scientific agriculture and the counter-hegemonic project of ConCiencias. Framing both sides of this hegemonic project by the processes that exist within and between nation-states, by acknowledging the nation-state as a methodological assumption, makes it possible for analysis without “still being defined in relation to the norm” (Castro Varela & Dhavan, pg. 96, 2011). The contingencies that can be drawn out from a historical approach will help those studying norms identify where the values being discussed are drawn from. A historical frame will help bring the layered meanings of scientific agriculture in Mexico to the surface. Such a historical perspective explains the emergence of scientific agriculture as a norm from an extended perspective that has not been addressed yet in International Relations.

### 3.1.2 Longue Durée

In addition to applying the concept of methodological nationalism to the historical analysis of scientific agriculture, this study applied the conceptual tool of the *longue durée*. The *longue durée* is a methodological tool of analysis to understand the temporal relation of a problem, which in this case is the hegemonic project of scientific agriculture in Mexico. Such a narrative helped identify the liberating social processes at ConCiencias by framing the hegemonic project of scientific agriculture as the science the Zapatistas are challenging. Studying scientific agriculture from a historical perspective demonstrated how this normative framework developed and the origin of its structure of domination.

Longer historical narratives can help the study of norms in International Relations develop an informed understanding of a norm’s constitution as a set of unfolding social processes. Political history often describes events through the same lens, a single underlying narrative, and humanity arrives at its destination according to a single teleology, what Gilles Deleuze calls arborescent thinking (Deleuze & Guattari, pg. 21, 1987). At the same time, when norm studies in International Relations analyze events they ignore their connection to deeper historical structures, which articulate “continuities underlying the processes of change” (Armitage & Guldi, pg. 222, 2015). This binary logic composes two sides of the same ontological coin, where there is no examination of dynamic regularities between seemingly disconnected events, because a single teleology

is implied in the analysis of history. However, this becomes problematic when contradictory evidence to the dominant narrative comes to the surface.

Empirically, the social sciences have developed rigorous tools for discerning falsehood, “yet our normative approach remains without any recognition of history” (Abbott, pg. 354, 2016). The component normative ideas that build the scientific framework present in Mexico today are not reducible to a single moment in time but have evolved over a long historical period. Looking at this problem as a long duration breaks down multiple histories, which analyzes a more dynamic view of social change (Armitage & Guldi, 2015). A historical perspective of modern science in Mexico establishes the normative framework of science that ConCiencias challenges today.

This historical approach triangulates the hegemonic view of science collected from ConCiencias by reviewing primary historical documents from The Rockefeller Foundation’s agricultural extension programs in Mexico beginning in the early 20<sup>th</sup> century. What source material can be collected gives at least a glimpse of thought by the organization that played a role in shaping Mexico’s normative understanding of science and agriculture. Composing the Rockefeller Foundation’s documents with other primary and secondary material over this longer historical period makes it possible to trace the path of scientific agriculture as an idea over time without reducing its formation to a static and linear process. The sometimes convenient simplification that narratives of history provide scholarship give the perception of credibility, but it is important to remember there is a distinction between the way people think and the contingent nature of reality where “the world is under no obligation to conform to the logic by which some people conceive it” (Sahlins, pg. 138, 1985). A *longue durée* of scientific agriculture in Mexico is useful to examine this narrative as a social process (Abbott, pg. 205, 1991), which opens a space for a more holistic view of how ideas evolve over time, without falling into the reductionist trap of a linear timeline. This process teases out its ideological formations and situates its thought as a cultural framework from its principles as a discipline.



### 3.3 Research Design

Since this study aimed to build on the existing literature of critical constructivist norms through the Zapatista encuentro, ConCiencias, a case study was chosen as an appropriate framework for its analysis in the context of international politics. The case study method is an in-depth examination of a single subject, which can contribute to the application of theory, and discover or suggest a theoretical concept (Berg & Lune, 2017). This study's application of a social movement to critical constructivist norms in International Relations is an understudied area of research for the discipline, which gives ConCiencias the characterization of a unique case.

One core objective of ConCiencias is to determine if a humanistic science is possible (Duncan, 2017). This means hearing the perspectives of scientists that challenge the dominant consensus in their respective disciplines. This research project therefore sought to understand how this process of emergence and evolution of a humanistic science unfolded through the concrete manifestation of discourse about science at ConCiencias. Additionally, identifying processes of emerging and evolving normative frameworks required a method of study that emphasized the subjective experience of those involved with ConCiencias. The nature of this research, as a case study of norms in critical constructivism, adequately fit within the scope of qualitative methods. Qualitative research is adept at "understanding the processes by which events and actions take place" (Maxwell, p. 221, 2013).

The general purpose of qualitative inquiry falls under a symbolic interactionist definition that "focus[es] on subjective understandings and the perceptions of and about people, symbols, and objects" (Berg & Lune, p. 17, 2017). Consequently, a study involving qualitative methods derives its meaning from a reality that is socially constructed. One important element of this socially constructed reality in the context of ConCiencias is the conference's aim to illuminate the taken-for-granted level of experience in science. As Schutz (1987) mentions, "a change of attention can transform something that is taken for granted into something problematical" (74). The problematical nature of hegemonic science renders oppressions of class, race, and gender invisible. Therefore, this study took a critical approach to its design, meaning its aim was to "document the tools of oppression and repression" (Rubin & Rubin, 2005, 21) since this study aims to focus on the reality of the oppression facing the Zapatistas.

This study intended to collect views from participants at the Zapatista conference, ConCiencias por la Humanidad, held in December 2016 and December 2017 at Universidad de la Tierra (CIDECI) in San Cristobal de las Casas, Mexico. The motive of this research was to understand the complex interpellation of various perspectives from academic participants and observers at the conference and identify how it has contributed to building a counter-hegemonic project around science. The Zapatistas aim to create a science “from below and to the left” (Meek, 2018) that opposes the dominant model of science that is co-constitutive with the forces of capitalism. Zapatista solidarity with academics and social movements around the globe establishes a network of communication that makes encuentros like ConCiencias possible, but it is worthwhile to determine what kind of science they want for the world and if their efforts have created an alternative to the current hegemonic project of science.

It became evident while conducting interviews that science, especially in agriculture, had been cultivated in Mexico through the early phases of international development during the 20th century. One question ConCiencias provoked through an observer was “Where does ConCiencias sit in the past 500 years of indigenous struggle?” (Peller, 2018). The analysis of this study was informed, in some part, by identifying science in Mexico as a “historical category” (Wainright & Mercer, 2008). The Zapatistas have a similar approach to understanding science, “We Zapatistas think that in order to understand something, one has to know its genealogy. That is, its history. In other words, how it became what it became” (SupGaleano, pg. 188, 2016f). A historical lens is useful for sociological studies like this one, because its central focus turns to political economy, and thinks about “causality in qualitative terms” (Abbott, pg. 211, 1991). The desired outcome of such study was a situated understanding of scientific agriculture as a normative framework and how it has developed as a process in Mexico. This study therefore aimed to unravel science based on how it came to be and how this can help explain what the Zapatistas think about science.

### 3.4 Data Collection

In order to analyze this normative framework, it was necessary to locate primary and secondary documents about scientific agriculture in Mexico. This analysis

contextualized the normative framework the Zapatistas are challenging through ConCiencias. The Rockefeller Foundation was foundational to building the framework for agricultural extension in Mexico through science and education.

This study collected empirical data to understand the perceived experience of the ConCiencias as well as its context. This study implemented semi-structured interviews to triangulate patterns and narratives from the discursive practices at ConCiencias based on the experiences of those who attended. The experiences from conference attendees helped construct a better depiction of the event, gather reflections of how the event was structured, and how the knowledge constructed at the event was socialized outside the conference setting. The reflections of conference participants about their experience also illustrated what was most important about ConCiencias.

This study also collected the conference material recorded at ConCiencias that is stored online in written, audio, and video formats at <https://conciencias.org.mx/>. This composes the bulk of empirical material that this study has drawn from. ConCiencias consisted of two annual encuentros, the first of which was conducted almost entirely in Spanish, and the second which had accompanying English translations of each presentation. The proceedings from the conference were posted online at <https://conciencias.org.mx/>. This website also consists of audio and video recordings from both iterations of ConCiencias in 2016 and 2017. All these empirics came together to inform an analysis of ConCiencias that situated the conference in a temporal context and framed two opposing interpretations of science.

Primary documents from Zapatista discourse, both from ConCiencias as well as past writings, were useful to understand how ConCiencias sits within the group's other organizing efforts. Specifically, ConCiencias is most relevant to a series of recent encuentros the Zapatistas have held since 2014. The first of these encuentros, *Critical Thought in the Face of the Capitalist Hydra*, laid the theoretical foundation for the subsequent encounters. It was also the most directly correlated with ConCiencias, since both conferences invited international academics to contribute theoretical tools for the Zapatistas to inform their construction of autonomy.

### 3.4.1 Sampling

When searching for research participants to perform semi-structured interviews, it was most useful for this study to seek respondents that contributed to ConCiencias as a presenter. Among all those who attended, presenters at ConCiencias would be most likely to know about how the encuentro was planned, and what developments came out of it due to their contact with the Zapatistas. Of the research participants in this study, all were academics or students. Among them were scientists who were invited to participate or were independent observers who attended by their own volition. One of the research participants was a master's student. The pool of potential research participants was relatively small. Despite the roughly 200 Zapatista students in the audience and 200 observers, there was no record or contact information for these attendees. The Zapatistas invited only 51 academics to the conference. Therefore, those observers who had written journalistic pieces about ConCiencias or the presenters themselves, were the only identifiable attendees that could be contacted.

The small number of academics who attended the conference, and the specific knowledge they possessed, required that this study used purposive sampling (Bryman, pg. 408, 2012). Additionally, since this study sought to understand the construction of a normative framework at ConCiencias, it did not seek to conduct analysis that could be generalizable across contexts, which is the purpose of its opposing approach, probability sampling (Berg & Lune, pg. 39, 2017). This study aimed to understand how knowledge was produced in this context, which demanded a sample that had the precise information necessary to conduct analysis. The first research participants that were contacted for interviews were chosen based on their perceived ability to speak English, which was gathered from the language of their research material that could be located online. From there, research participants were contacted based on recommendations from other research participants during interviews, which is to say the sampling process snowballed in an iterative fashion during this part of data collection.

### 3.4.2 Semi-Structured Interviews

This study sought a deeper understanding of the experience at ConCiencias by acquiring the subjective responses of those who attended the conference. Interviews are

most applicable “when the subject matter concerns aspects of human experience or our conversational reality” (Brinkmann & Kvale, p. 127). It was especially important for understanding the construction of a normative framework at ConCiencias, because qualitative interview projects are most effective to examine how and why social or political processes change (Rubin & Rubin, 2005). The collection of 11 interviews helped construct a deeper analysis of the practices exhibited at ConCiencias. Of these 11 interviews nine of them were corroborated from the group of 51 presenters at ConCiencias 2017. Four research participants were presenters at both ConCiencias encuentros. The insight from personal experiences of those present at ConCiencias offered a thick description of the event, which can add depth and detail to synthesize in the analysis. While constructing the analysis for this study it was important to maintain the confidentiality of those who contributed to the data collection about ConCiencias. In qualitative research confidentiality is the effort to withhold the subject’s identities from the findings (Berg & Lune, 2017). In the analysis of the encuentro, the research participants were anonymized with pseudonyms in the text so as to protect their identity and maintain the integrity of their cooperation by withholding their names from the research.

The choice to make semi-structured interviews was based on the inductive nature of this study. ConCiencias is a case that can help build theory about critical constructivist norms in International Relations, both for methodological purposes and to understand the role power has played in their construction. This means by examining the substance of ConCiencias, its critique of science, it could have implications for how International Relations approaches the study of norms. Framing the encuentro as a response to the normative framework of scientific agriculture also examined what social movements can contribute to the study of norms. Both of these objectives could be ascertained by taking an exploratory approach to interviews that would allow for a more inductive path of inquiry. Therefore, interviews that were more conversational by nature could help build meaning across the perceived experiences of multiple research participants, which could situate their subjective interpretations of ConCiencias. It was the aim of using semi-structured interviews to guide the conversation with some questions, but to be flexible as well in order to understand what the research participants thought was important. This

meant the descriptions of ConCiencias from research participants could build a coherent narrative of ConCiencias based on what was significant to those who were present.

### 3.5 Data Analysis

#### 3.5.1 Discourse Analysis

The subject matter collected from research interviews as well as the documents drawn from primary and secondary sources required a strategy to analyze their content. Therefore, it was important to ground this study with a theoretical basis in discourse to appropriately examine its discursive and linguistic data. Discourse theory is a post-structural approach that analyzes the latent power in meaning, which is conveyed through language (Epstein, pg. 12, 2008). The theory uses discourses to analyze the linguistic construction of international politics through intangible meaning. Therefore, discourse analysis seeks to understand the purpose behind the way things are presented in language (Bryman, pg. 534, 2012). This means that while pouring over the literature for the analysis, discourse analysis was applied to interpret the latent meaning within the text, in order to garner a deeper understanding of the material for this study.

Beyond just discourse analysis, this study implemented a critical approach to this conceptual tool through post-structuralism, which applies discourses as an epistemological framework through which meaning is conveyed. By extension, words become a set of empty vessels where meaning transforms across contexts (Foucault, 1981). Important for this study, critical discourse analysis applies a post-structural framework to identify power in the use of language in the context of social and cultural circumstances (Jørgensen & Phillips, 1999). Therefore, when thinking about norms in International Relations, meaning is constructed by the agent whose identity is at the same time derived from the international structure (Engelkamp et al., 2014). Meaning is always being created, which makes it difficult to assert that there is an essentialist self where norms can originate or be internalized (Epstein, 2010). The application of a critical discourse theory is therefore more equipped to understand international politics by staying open to the possibility of alternative meanings.

### 3.5.2 Archival Research

Crucial to analyzing the material of this study was an effective approach to the data collected from archival databases and websites. Taking a historical approach to this study required a coherent method to validate the credibility of primary sources and their potential biases. A primary source is material that was produced at the time in question that can include letters, diaries, newspaper articles, photographs, or film (Leedy & Ormrod, pg. 297, 2015). Important for analyzing historical documents was vetting their authenticity, as this had implications on the credibility for the findings that were produced by this material. This is called vetting the document's external criticism (Berg & Lune, 2017). The historical material analyzed in this study was gathered from digital archives that were trustworthy, namely rocharch.org, archive.org, and published works in university databases. Also vital for reading historical documents was an awareness for the context of the document, and the biases of the author, whose perceptions would be situated within its temporal context (Leedy & Ormrod, pg. 302, 2015). When analyzing primary historical documents, this study made conclusions from these findings in the context of the time they were written.

### 3.6 Limitations

During this study, there were a few obstacles that limited the scope of its analysis both in its historical approach to agriculture in Mexico and at ConCiencias. These limitations were both personal, indicating a barrier to my capabilities as a researcher, and methodological, meaning the consequences of the choices made in this study. As these limitations are addressed here, they point to future opportunities for research on this topic of study.

The first and most consequential limitation of this study was my lack of understanding of the Spanish language. This hampered my ability as a researcher to grasp an immense volume of literature from Latin America. However, it was possible to translate some of this material using Google Translate. When analyzing the material for ConCiencias this also became problematic as the 2017 encuentro was the only version to feature English translations of the audio from the presentations. Otherwise there was enough material written in English to glean analysis for the conclusions offered in this

study. Another personal limitation occurred while surveying the historical material for the Rockefeller Foundation. It became evident that despite their meticulous record keeping, most of their primary source material was physically located at the Rockefeller Archives Center in Sleepy Hollow, New York. Not only the Rockefeller Foundation, but generally, historical materials dated from the late 19<sup>th</sup> and early 20<sup>th</sup> centuries were in physical archives in North America. Despite the wealth of content that could not be analyzed for this study, there was a digital archive of important documents from the Rockefeller Foundation online as well as digitalized texts from other sources in this historical period as well.

The analysis for this study would have also benefitted from having traveled to Chiapas for the conference, but this was not possible as ConCiencias had concluded before this study began. It was initially a consideration to travel to Chiapas for interviews with Zapatista participants at ConCiencias, but it became logistically difficult to locate the network of those who attended. It was also challenging to predict whether there would be anyone that could translate interviews with potential research participants, and without any contacts in the area, this became too much of a burden to explore further. The network of international academics posted on the ConCiencias website, in addition to their content presented at the conference, was enough material to conduct a rigorous analysis of ConCiencias.

This study would have benefited from the participation of Zapatista students or organizers who had either participated in or attended the conference. However, the anonymity and reclusive nature of Zapatista officials, and their reduced access to digital communication, were obstacles to acquiring interviews from these participants. Certainly, the reflections of Zapatista students would have given this study a better understanding of how the knowledge presented at ConCiencias was socialized amongst each other, and with their communities. The Zapatistas who helped organize ConCiencias would also have insightful reflections about the thought and work that went into organizing the encuentro.

Since this study chose to analyze digital material of ConCiencias that was posted online, there was a weaker material foundation to build theoretical analysis. Despite this limitation, the design chosen for this research was still capable of answering the questions this study set out to address. There was enough material from the encuentro online,



combined with interviews from conference participants, to build a sufficient understanding of the practices undertaken at ConCiencias.

In the event of another ConCiencias, this study could generate a deeper-rooted analysis of the normative framework for humanistic science proposed by the Zapatistas if data collection were conducted at the location of the encuentro. This would entail taking observations of the behavior at the event, and conducting interviews with presenters, observers, and possibly Zapatistas.

## 4. Mexico's Modern Science: A Story of Population and Food

Understanding what normative ideas about science the Zapatistas are challenging demands a reflection about the hegemonic project of scientific agriculture, but in order to do so this project must be situated in a context. As mentioned earlier, norm studies in International Relations have examined the norm as a site of interaction, either for its acceptance or rejection. Where other approaches have constituted norms as a process of critical reflection for power relations, they still have a present-oriented approach to the constitution of norms. A historical approach has the potential to address the formation of ideas and their intersection with power, as a narrative evolution of an idea, which avoids oversimplifying the power dynamics that are perceivable today.

Analyzing scientific agriculture through a *longue durée* lens, it is possible to see where the constitution of this normative framework is a consequence of long-term structures, as well as shorter term contingencies, or the consequences of individual events. Such a perspective illuminates how power situates in the system of capitalism and where it manifests directly in the Zapatista context. Starting at capitalist science and looking backward in the Zapatista context must study where capitalist science took hold in Mexico, which has a deep connection to Mexican independence, democracy, and its relationship to the international economy. Agriculture is the site of Mexico's longest and most persistent effort at scientific research and application of its methods. This chapter coalesces a historical narrative around scientific agriculture in Mexico that seeks to unravel the constitution of this normative framework, which the Zapatistas are challenging at ConCiencias by examining if another science is possible.

At the turn of the 20<sup>th</sup> century, the dawning of scientific agriculture was present in Mexico at universities and governmental research stations in the center and north of the country. During the government of Porfirio Diaz, Mexico's agriculture shifted toward export crops to earn money through international trade (Perkins, 1998). The Mexican Revolution signaled a profound change in the country's politics through agrarian reform (Bonfil Batalla, 1996), but Mexico's agricultural landscape was already a heterogeneous group of farmers that consisted of both subsistence and productive farming. One of the birthplaces of what would become the Green Revolution has a complex history that was

informed by a drive toward market-oriented agriculture and the assumptions underlying its formation, most importantly, a drive toward modernizing Mexico.

Mexico's relationship to agricultural science is riddled with failed assumptions, political expediency, and geopolitics. The path Mexican agriculture would take, toward a highly commercial and input-dependent industry, was decided by figures in the US government, the Rockefeller Foundation, and the Mexican government. In the end, Mexico would become inextricably linked with the international market economy through its involvement with the US government and the Rockefeller Foundation. Contrary to many narratives about the Green Revolution in Mexico, the outcome of scientific agriculture was not just a push from the US government and the Rockefeller Foundation, but it was also a pull from figures in the Mexican government (Olsson, 2017).

This section will examine the emergence of the Rockefeller Foundation's Mexican Agricultural Program, cementing ideas about scientific agriculture, and ultimately shaping the climate of today's agricultural economy. This narrative defies methodological assumptions that characterize the origin of the Green Revolution as an overt exertion of US foreign policy onto Mexico. Rockefeller agricultural work in Mexico was shaped by its past work in the US South, its relationship to both Mexican and US politics, and the onset of the Cold War. Analyzing the development of the Rockefeller agricultural program in Mexico frames a narrative that follows the construction of normative ideas about science in Mexico as a hegemonic project that developed and evolved over the late 19<sup>th</sup> and 20<sup>th</sup> centuries. The complicated picture of Mexican agriculture distinguishes a science driven by capitalism from the science proposed at ConCiencias and situates the Zapatista's approach to science as something distinguishable from its proponents in Mexican government.

#### 4.1 The Beginning: Positivism and the Porfiriato

Historically, Mexico's institutional science is rooted in the liberal reforms of 1857 where positivism became the doctrine of governance for the country. At this time, the turmoil of Mexico's independence after 1810 led many elites in the Mexican government to consider options that would promote order and attract foreign capital to

reach the country's economic potential (Vanderwood, pg. 326, 1970). As a guiding ideology for the state, positivism in Mexico was constructed as an absolute philosophical method where all aspects of reality could be understood through Positivist truth (Reinhardt, 1945), which can also be understood as pure reason distinguished from observable reality (Weinberg, 2000). Where military repression could maintain social order, positivism maintained the order of people's consciousness.

Following the election of President Benito Juarez in 1854, liberal politics became the governing ideology of the state. The government adopted positivist logic, scientific truth, to inform Mexican policymaking in the latter half of the 19<sup>th</sup> century. Later, Porfirio Diaz, who presided over the country as the dictatorial Porfiriato, further institutionalized positivism as a guiding doctrine of governance. In accordance with positivism, Mexico under Porfirio Diaz became the first free trade regime for the country's government (Weinberg, 2000). Influential to Diaz, Galbino Barreda was a leading Mexican thinker and student of the French positivist Auguste Comte, who saw this ideology as the last stage in the development of human thinking (Ibarra Garcia, 2013). Most importantly, Barreda's positivism would become the underlying basis for education and industrial development in Mexico, as the march from superstition and religion toward scientific thought, cientifico-led policymaking (Beatty, 2001). The impact of scientific governance on Mexico has persisted to this day. In their First Declaration of the Lacandon Jungle, the Zapatistas reference the scientific Porfirista dictatorship in a list of conservative, sell-out groups that have played a role in creating the inequalities and exploitation present in the country (EZLN, 1994).

At this time, as would be the case throughout the 20<sup>th</sup> century, agriculture was central to the country's development. Farming was the basis of the Mexican economy and was the key to the country's prosperity (Alec-Tweedie, pg. 390, 1906). During the Porfiriato, French agronomy, like Comte's positivism, was heralded by political elites as the best in the world. Mexican agronomos were trained at the National School of Agriculture in European scientific agriculture, which they transmitted to farmers in the countryside (Cotter, pg. 3, 2003). Mexican agronomos viewed the knowledge of plantation owners as backward, and therefore sought to transform Mexico from its underdeveloped condition through the extension of scientific knowledge. However, the government's focus on industrial development meant Mexican agriculture did not receive

equal treatment. The agricultural sector failed to produce significant growth despite institutional reforms to transition agriculture from subsistence toward a commercial industry. Meanwhile, the shift toward export crops and larger farms also undermined the traditional land rights of rural peasant farmers (Beatty, pg. 195, 2001). In this way, industrialization was an evolution of Mexico's relations to the Global North from the colonial period where projects were "geared toward exports and cash crops" (Dahlberg, pg. 129, 1979). The Mexican state embraced the material and ideological position of the Global North to resemble the balance of relations between Mexico and its former colonizers. During the Porfiriato, 127,111,824 acres of communal landholdings shifted to commercial haciendas, which accounted for more than half of Mexico's arable land (Beezley & Maclachlan, 2009). Faced with a transient position between industrial production and subsistence agriculture, rural Mexican farmers would soon rise up in the face of deprivation to their livelihoods, for land and liberty. The intensification of agriculture on large plantations in tandem with the redistribution of Mexico's campesinos made land the basis for the Zapatista uprising in the south of Mexico during the 1910 Revolution (Villasenor, 2015).

The Mexican people's discontent for their condition under the Porfiriato led to the first popular revolution of the 20<sup>th</sup> century, which took place from 1910-1920. At its end, the dictatorship of Porfirio Diaz was defeated and a democratic constitution ratified. In the wake of revolution, Mexico's political landscape took shape as two opposing forces, between the labor movement and industrial development, between democracy and state paternalism (Paz, 1985). Land reform, a great revolutionary success for the rural poor, was also a political victory for the state as well. Mexican farmers achieved autonomy through the communal landholding, ejido, but the state continued to favor larger commercial farms rather than small-scale production (Taylor, 1990). The state, composed of moderate revolutionaries, could concede the demands for land reform from populist rural farmers, while persisting in their aim to achieve national development through economic productivity. Subsequent leaders in Mexican government would continue this trend throughout the 20<sup>th</sup> century, where heads of state held different attitudes toward inequality for rural farmers, but all shared the desire for a productive agricultural economy. Ultimately, traditional agriculture was no longer viable where cultivation shifted in favor of consumption (Bonfil Batalla, 1996).

The developments in Mexico's national political economy did not happen without the United States taking notice. During this revolutionary period, the United States looked onward at Mexico for private and political self-interest. Indeed this was an era when Henry Luce, writing his prophetic essay in 1941 for Time Magazine, said the 20<sup>th</sup> century is "America's first century as a dominant power in the world" (Luce, pg. 167, 2002). This seat of global leadership was a void that American private and public interests would seek to fill. Leading up to the Mexican Revolution, there was legitimate concern that President Woodrow Wilson would intervene in Mexico militarily on behalf of American banks and industrial corporations, one of which was John D. Rockefeller Sr.'s own Standard Oil Company (Turner, 1920).

In fact, following the Mexican Revolution the state expropriated Standard Oil's holdings in Mexico, accounting for approximately a third of the national industry's production (Jayne, pg. 9, 1997). Private actors in the US were keen on implementing policies in Mexico that would favor their profit in the early 20<sup>th</sup> century, but the government did not act on these interests (Perkins, 1998). Politically, during Franklin Roosevelt's presidency, the US State Department maintained an interest in Mexico due to fears that Lazaro Cardenas's government, on the heels of the Mexican Revolution, might lead to a socialist or fascist state on its border (Perkins, 1998). This fear was no doubt a consequence of Mexico's nationalization of oil, where private oil companies wanted the state to help threaten Mexico with sanctions, but Treasury Secretary Henry Morgenthau thought an unstable economy would lead to political radicalism (Maurer, 2010). Though no formal intervention would occur at this time, the involvement of American interests in Mexico, both politically and economically, were only beginning.

As fate would have it, Mexico's ideas for a productive industrial economy began in the mid-19<sup>th</sup> century, and took shape leading up to and following the Mexican Revolution. A wave of positivist thought reached Mexico from Europe, and implanted an ideology of scientific thinking that affected Mexican statecraft. The revolution of 1910 brought about democratic change, and reshaped the composition of rural Mexico for many, but the motor of economic productivity and scientific thinking continued to forge ahead. As these constituent forces progressed, Mexico's path toward national development also piqued the interest of US corporations and politicians. The subsequent

birth of scientific agriculture as a hegemonic project would form as a coalescence of these forces into a force of domination against the rural Mexican campesino.

#### 4.2 The Hindu Sage and the Zapatista

Scientific agriculture in Mexico starts at the beginning of the 20<sup>th</sup> century rather than in the middle of it (Prakash et al., 2017). Before the Rockefeller Foundation set foot in Mexico, the groundwork for scientific agricultural research and education was laid by an unlikely source. A young Indian agronomist, Pandurang Khankhoje, also known as the Hindu Sage, traveled to Mexico to establish cultural and diplomatic relations with India, where beginning in 1924 he taught at the National School of Agriculture in Chapingo (Sawhney, 2017). Educated in the US and a major critic of British imperialism, Khankhoje was involved in the Indian Independence Movement, where he believed agriculture was central India's development (Sawhney, 2017). While in Mexico he would befriend important and consequential figures in Mexican society, the most important of which was Marte Gomez, who was the director of the National School of Agriculture.

As a sitting professor at the National School of Agriculture Khankhoje had a working relationship with the director of the school in Chapingo, Marte Gomez. Gomez was disappointed in Mexico's poor harvests and blamed its poor performance on the lack of technical knowledge of the country's peasants. As a former Zapatista, Gomez sought to promote the efficiency of the ejido to defend its legitimacy, as it was a major victory for Emiliano Zapata's revolutionary cause (Black, 2017). Gomez established an experimental station to improve the cultivation of seeds and soil (Cruz Leon et al., 2015). Research on varieties of corn, wheat, and education of young agronomists were all objectives of the experiment station for their participation in developing and applying new agricultural technologies (Isabel Pacios & Ocampo Ledesma, n.d.). One platform of the field station, student training in farm practices, is still part of the curriculum at the National School to this day (Duque, 2014).

Following his professorship, Khankhoje founded the first of thirty-three Free Schools of Agriculture in 1926 (Duque, 2014). As director of Escuela Libre de Agricultura Emiliano Zapata in Texcoco, he was charged with promoting the socialization of the Mexican peasant (Duque, pg. 12, 2014). This process was articulated

by teaching new techniques to farmers and improving existing methods of farming. Khankhoje's work to improve agricultural farming methods through better cultivation techniques and scientific experimentation laid the groundwork for what George Harrar and the Mexican Agricultural Program would do years later. Certainly, this evidence proves the work of agricultural education and productivity-oriented research had preceded the involvement of the Rockefeller Foundation. Consequently, the pre-existing conditions for scientific agriculture do not remove the US role in creating and spreading the practices of the Green Revolution (Prakash et al., pg. 410, 2017), but this extended narrative of scientific agriculture does shape the environment where scientific agriculture formed as a dynamic construction between actors in Mexico and abroad, which facilitated the environment for its later consolidation by the US government and philanthropies.

The relationship between Khankhoje and Gomez demonstrates how the Mexican Revolution triggered deep profound changes in Mexican society, which redistributed approximately 76 million acres of land with the introduction of the communal "ejido" landholdings and eradication of large haciendas (Wolf, 1959). However, as the first revolution of the 20<sup>th</sup> century, this event also introduced a new tension between the mestizo and the indigenous, the future and the past (Bonfil Batalla, 1996). The government sought a transformation of Mexican society to promote its national development, which meant promoting industrialization and the mechanization of agriculture as the path toward its future (Wolf, pg. 251, 1959). Scientific agriculture had become a revolutionary activity for democracy in Mexico, as it was also for India in their struggle for their independence from British colonialism (Cruz Leon et al., 2015).

Ultimately, scientific agriculture took shape in a period of turmoil, starting from its positivist roots in the Porfiriato and evolving toward its institutionalization throughout the country following the Mexican Revolution. This story explains that the origins of agricultural extension in Mexico was fomented by the convergence of an Indian agronomist and a former Zapatista, but this has the potential to confuse the intentions of their roles as purely exploitative, given the shape of what agricultural extension would later become. This also begs the question that if the Green Revolution started with the Rockefeller Foundation, then how was it possible for two revolutionaries from separate contexts to train Mexican agronomists in scientific agriculture starting in the 1920s? Given the longer temporal analysis in this study, such ironies can be explained where



events meet deeper structures that produce transformations in the structure itself. In a *longue durée* this is known as the dynamics of practice, or the structure of conjuncture (Sahlins, pg. 35, 1981). The deeper structures are as Immanuel Wallerstein (1974) described them “those coral reefs of mankind” (pg. 3), that remain stable over long periods of time. As is true of an underwater ecosystem, social structures are born, they grow, and they die. The slow death of imperialism across the Global South made for sweeping changes in the philosophy of governance, where incipient ideas about sufficient food production aligned with movements for independence. The Mexican Revolution was a conjunctural event that coincided with the ongoing struggle in India for independence from British colonialism. For Khankhoje and Gomez, scientific agriculture was no longer the instrument of an authoritarian paradigm, but a revolutionary activity.

#### 4.3 Enter Stage Left: The Rockefeller Foundation

The Rockefeller Foundation was established in 1913 with the dual purpose to promote welfare globally through technological solutions while also promoting US leadership for “tackling complex issues like hunger, food, and agriculture” (Georges, pg. 64, 2017). By its own accord, The Rockefeller Foundation saw itself as an independent actor, disentangled from government, whose aims were to promote the well-being of humanity (Coler, 1917). However, from a historical perspective the foundation played a crucial role in shaping the international position of the US through its engagement with foreign policy thinking, economic development, and institutional change. Their story began in the US South, across sectors of health and agriculture, and spread to Mexico where their mission evolved alongside the events of the Cold War.

The key figure involved in producing a relationship between the US government and Mexican agriculture was US Vice President Henry Wallace. After traveling to Mexico for the inauguration of Mexican President Avila Camacho, he was horrified at the condition of farmers, whose high rates of poverty and low agricultural productivity were disconcerting to his view of the country’s welfare (Wessels Living History Farm, 2005). Wallace resolved to take action, but was skeptical of a political option through Congress, which incited him to contact Rockefeller Foundation President Raymond Fosdick. In a letter to Fosdick, Wallace proposed the idea to develop an agricultural program that

would improve Mexico's economic productivity through the experimental development of better strains of corn in addition to a better set of agricultural practices (Sauer, 1941). This new synergy between the US government and the Rockefeller Foundation was built on the personal relationship between Wallace and Fosdick, and Wallace also knew the foundation had previous experience conducting agricultural extension in the US South (Perkins, 1998). Wallace's privileged position as the US Vice-President, and his contact to the Rockefeller Foundation, gave weight to the concerns of previous actors who had promoted such a strategy, US Ambassador Josephus Daniels and Rockefeller agronomist John Feller (Olsson, pg. 120, 2017). Thus, began a campaign to improve the conditions of the average Mexican.

Following this exchange, a team of scientists, wielding \$10,000 (Rockefeller Foundation, 1941a) traveled to Mexico in 1941 to survey the condition of agriculture in the country (Fleishman et al., 2007). Upon return, they concluded there was an immediate need to improve the country's agricultural conditions and practices through scientific education of agronomists and agricultural extension to farmers (Rockefeller Foundation, 1941b). Not long after this sojourn, an agreement between the Mexican government and the Rockefeller Foundation in 1943 founded the Mexican Agricultural Program, which was an initiative to increase food production in the country. Elias Stakman, a leading American plant pathologist, set up the program as one of the original scientists tasked by Wallace to survey Mexican agriculture. Before taking on this role, Stakman wanted a guarantee from the Rockefeller Foundation that if he was successful it "would lead to a larger undertaking in Latin America" (Rose, 1916). The larger change Stakman sought would come later. Stakman's doctoral student, George Harrar, would become the first Director of Agriculture for the Rockefeller Foundation in Mexico (Harrar, 1956).

The Rockefeller Foundation forged ahead into Mexico while treading carefully, cognizant of Standard Oil's past extraction of petroleum, and the potential unrest their external presence could bring (Olsson, 2017). The foundation, at the behest of key figures in the US and Mexican government, waded into a zone of agricultural experimentation (Jennings, 1988), and did what was not politically possible in the US context to the north (Olsson, 2017). At its outset, the Mexican Agricultural Program would be attentive to the inequities of smallholder peasant farmers, focusing on contextually specific solutions of northern and central Mexico. However, despite their intentions, the Rockefeller

Foundation further legitimized a model of science that was predicated on a model of capitalist production, and a discourse that distanced its scientific basis from this underlying assumption.

The first iteration of the Mexican Agricultural Program, with its deployment of US scientists, rooted its experiences in the US South. There, Rockefeller scientists made direct comparisons from the Texas Cotton Belt to the social and economic conditions of Northern and Central Mexico (Olsson, pg. 143, 2017). Daniels, in writing to Fosdick, thought Mexico experienced similar problems to the US South following the Civil War, where Rockefeller investment could “make real progress in Mexico” (Cobb, pg. 26, 1956) if the right men were entrusted with the project. Rockefeller scientists were considerate of the regional differences between what was successful in places like Iowa and Texas, which refutes common perceptions of the Mexican Agricultural Program as a blatant Americanization of the country’s rural landscape. Unsurprisingly, the initial program was agreed upon by Mexico’s Secretary of Agriculture, Marte Gomez, who was aware of the foundation’s previous work, and felt US science could improve his country’s agricultural productivity. The Mexican government was experiencing food deficits at the time and sought an easier way to improve their food security while quelling unrest and reducing their import costs (Clapp, pg. 37, 2016). Therefore, the Rockefeller Foundation entered Mexico at a time when the government was promoting a shift from their traditional agricultural economy toward a new industrial capitalism (Perkins, 1998).

Up to this point, the Rockefeller Foundation’s agricultural work in Mexico, at least at the surface promoted research and welfare for the betterment of humanity, all of which was done through science. The pursuit of science, according to foundation president Warren Weaver, teaches respect for special competence (Weaver, 1948). This special competence is reminiscent of the positivist truth espoused by Gabino Barreda, which enhances people’s capacity to move beyond tradition, and foreshadows the Rockefeller Foundation’s agricultural extension work will be discussed later. Weaver’s views on science are worthy to note here, as he had been a director of the national science program for the foundation in addition to a background in the physical sciences (Perkins, 1998). In his comments, Weaver went on to say that science cannot be the answer to every problem, as not everything “can be weighed with the balance” (Weaver, 1948), but this will be interesting to juxtapose with the discussion at ConCiencias. Rather than

seeing an issue with the base of the values in society and their impact on social relations, as discussed at ConCiencias, Weaver believed the solution for science resided in better communication of knowledge through language and a common tradition (Weaver, 1948).

#### 4.4 Toward a Strategy for the Conquest of Hunger

After the initial years of the Mexican Agricultural Program, the intervention of American interests in Mexico began to align with the geostrategic interests of the US government. The Green Revolution unfolded in Mexico in a way that cemented the policy objectives of the United States government, while also furthering the Rockefeller Foundation's strategy to promote scientific agriculture (Georges, 2017). This nexus of private capital from foundations like Rockefeller and public institutions of the United States government coalesced the power of monetary capital and political legitimacy of the state to advance an early form of international development. Despite their own words that the Rockefeller Foundation's "position of detachment" (Rockefeller Foundation, 1977) was a suitable source of public policy analysis and support for global issues, it "was in the driving seat from the outset" (Patel, pg. 8, 2013) when it came to the Green Revolution.

As agricultural assistance in Mexico ensued, political thinkers in the Post-World War II foreign policy establishment sought to assert the United States as a driving force in global affairs. Additionally, academic International Relations was constructed as a collective project between state institutions, universities, and philanthropic foundations "to usher in the American Century" (Parmar, pg. 199, 2011). This is worth mentioning here, because the Rockefeller Foundation has cited world food and agriculture as one of its core issue areas for its International Relations program (Rockefeller, 1977). Consequently, the evidence suggests that not only were the Rockefeller Foundation and the United States government benefiting from each other's work, but also the aim of scientific agricultural assistance and International Relations theory were also necessarily intertwined.

At this time, the Rockefeller Foundation was taking on a bigger role in US foreign policy. The foundation played an active role in not only international development projects, but also the relationship of the US government with the rest of the world. The

1954 Conference on International Relations, funded by the Rockefellers, was an attempt at developing a coherent and actionable theory to exercise power in the interest of US foreign policy. Such a coherent theory did not develop out of the conference, but this instance is indicative of a pattern of investment from philanthropic foundations toward a theory of practice in International Relations. Indeed, when programs are funded to the tune of hundreds of millions of dollars, “there is a degree of ‘hardwiring’ into their very being the assumptions underlying their formation” (Parmar, pg. 199, 2011). In this period, World War II had ended, and the Soviet Union had become a major threat to the United States as a leader in international politics. The consequences of this change in power were reflected in the Rockefeller Foundation’s attitude toward agricultural assistance in Mexico.

At the onset of the Cold War, the Rockefeller Foundation’s attitude toward agricultural assistance faced a major turning point toward concerns beyond the context of the locations in northern and central Mexico where it was being practiced. The United States emerged from World War II as a military and economic power with a focus on defeating Communism for the promotion of peace. Consequently, there was a shift in attitude from a position of isolationism before World War II (Doenecke, 1982) toward partnering with like-minded countries to improve their standards of living and reduce the barriers to world trade (Truman, 1949). Victory following the Second World War, and the threat of international Communism conspired to shift the hegemonic project of scientific agriculture into the form that is apparent in most narratives of the Green Revolution described by the likes of Nick Cullather and Vandana Shiva. Both the US foreign policy establishment, and the Rockefeller Foundation, were in agreement over their dislike of Communism and their belief in US capitalism (Patel, 2013). Indeed, the aforementioned nationalization of oil during the presidency of Lazaro Cardenas meant a loss of assets for John D. Rockefeller’s Standard Oil Company, leaving him bereft of a financial stake in Mexico. The ideological interests of the US government, and economic stake of the Rockefellers made for a synchronized alignment with regard to policy toward Mexico. Interestingly enough, similar concerns for Rockefeller’s Standard Oil in Venezuela in 1939 led him to analyze Communist ideology to the point where he could be seen walking around with a copy of Marx’s *Capital*, deeply disturbed by its analysis (Colby & Dennett, 1996).

A shift in focus from not only efficient production but also military power further influenced an institutionalization of the rational study of agriculture through modern science (Perkins, 1998). Agriculture would take on a “strategic position in the world” and became a concern for John D. Rockefeller Jr. himself (Rockefeller Foundation, 1951). It is not inconceivable that his newfound interest developed out of the aforementioned geopolitical events, which is made evident by a personal communication from President Truman to his son, Nelson Rockefeller, to participate in his program for international economic development. International economic development would be targeted at the “underdeveloped areas” of the world through “cooperation between private enterprise and government, here and abroad” (Truman, 1950). Unabashedly so, the cooperation sought by US foreign policy thinkers not only involved promoting peace through economic development, but also establishing a base of troops from Latin American countries for military exploits elsewhere (Mangelsdorf, 1951). At a conference on US foreign policy, Mexico’s developments in agricultural production was noted as a key success for replication, which the Rockefeller Foundation saw as a credit to their work (Mangelsdorf, 1951). As this shift in Mexican agricultural assistance took hold, what began as a program that was contextually specific to Mexico’s climatic and social conditions shifted to a design for a replicable model across contexts. Indeed, agricultural science became the key tool to address the needs of non-industrialized countries (Perkins, 1998).

During this time, the Rockefeller Foundation developed a Strategy for the Conquest of Hunger to dampen concerns about the spread of Communism and their newfound concern for overpopulation, all through agrarian modernization (Nally & Taylor, pg. 56, 2015). They did so by enhancing Mexico’s agricultural productivity through technological solutions. The foundation saw a need to assist Mexico, as it was “an unofficial, foreign and inferior extension of the United States” (Georges, pg. 78, 2017). Indeed, it was believed in the early 20<sup>th</sup> Century that the social revolution in Mexico, which preceded others across Latin America, was due to its close proximity to the United States (Brunner et al., pg. 125, 1945). Mexico’s advancement was a correlation of its geographical border with the modernized US. Since the US saw Mexico as behind its development, and farming was a primary activity for its economy, the foundation saw agriculture as the key to engagement with the country’s population, and the driver of its economy (Osoyo, pg. 6, 1968). It is important not to understate the focus

institutions like Rockefeller placed on agriculture, as they saw it forming the basis of all economies, regardless of their development. The modernity envisioned by the foundation was an intervention to reorganize the control and distribution of resources “toward the commodification and privatization of all social relations” (Feldman, pg. 49, 1997). The very contradiction of this idea, to succeed in transforming Mexico by liberalizing the economy, is what created the conditions for massive inequalities that persist today.

The technology driving Rockefeller agricultural extension was designed to stimulate industry by improving food production through “chemical fertilizers, pesticides, improved seed, machinery, irrigation, and transport systems” (Harrar, pg. vii, 1976). The foundation’s work and scientific research was intended to replace local knowledge with Western expertise (Cullather, pg. 228, 2004). In the end, agricultural technical assistance in Mexico was marginally successful, but largely failed to achieve its goals. Where it did improve crop yields there were conditions present, and farmers with assumptions about agriculture, that resembled the circumstances of American farmers in the US South (Fitzgerald, pg. 459, 1986). This particular group of farmers had more resources and were located in Northern Mexico (Patel, pg. 10, 2013) where industrial irrigation systems had been implemented. This effectively meant the stabilization of productive agricultural structures was possible, as was true for the establishment of colonial states, through exchange relationships with those who conformed to European, in this case American, cultural and political values (Whitehead, pg. 147, 1992). Since the type of assistance from American interests was based on their understanding of what worked in their context, it can be said that the logic of Rockefeller Foundation scientists was predicted on replicating what was successful in the US context, based on both the experience of their previous work as well as their assumptions about agricultural modernization.

Since the Rockefeller Foundation had aligned with the interests of the US government, development aid was accordingly wrapped in concerns for not only market integration, but the potential that scarcity could pose for violence as well. At this time in the 1950s, concerns about population coalesced with food production and foreign policy. Population studies, a long-time interest of the Rockefeller Foundation (Perkins, 1998), were front and center in the debate around peace and conflict. Following World War II., two influential publications, Fairfield Osborn’s *Our Plundered Planet* and William Vogt’s *Road to Survival*, shaped the revival of Malthusian thought (Desrochers &

Hoffbauer, 2009), keying into the problem of population growth and limited food supply around the world. The Malthusian intellectual paradigm's main premise affiliated the exponential rate of population growth as far greater "than the power in the earth to produce subsistence for man" (Malthus, pg. 16, 1983). Under this newfound Neo-Malthusian paradigm in US foreign policy, agriculture became the leverage point for the great potential of humankind, but also its demise. This is evident in the Rockefeller Foundation's International Relations program prioritized world food production and agriculture as one of its areas of focus. Adopting Neo-Malthusian concerns, they were both attentive to climatic variations that could affect yields and induce famine, but also political pressures following poor production that would result in armed conflict (Rockefeller Foundation, pg. 5, 1977). Their study reflects both geopolitical and ecological concerns for the impact of agricultural industrialization on the planet.

Not surprisingly, Neo-Malthusian assumptions of scarcity, population growth, and violent conflict entered the Rockefeller Foundation's discourse thereafter. In 1975, the foundation hosted a conference on Climate Change, Food Production, and Interstate Conflict, whose context "was the precarious world food situation, with its potential for interstate conflict" (Hare, pg.vii, 1975). Agricultural aid shifted to "meet the food needs of greater numbers of people" (Romulo, pg. 116, 1968) while creating wealth to promote industry and social welfare. At this conference, the Rockefeller programs in Conquest of Hunger, Quality of the Environment, and Conflict in International Relations all were present to collaborate. American interests coalesced around ecological, political, and economic concerns to address the issues of population and the threat of violence. In the summary of discussion from this conference, climate scientists reduced the human impacts in crop yields to four factors of: marginal climatic conditions, a lack of modern agricultural technology, subsistence production, and a poor financial situation to compete in global food markets (Lansford, pg. 27, 1976). These ideas are mutually constituted by the foundation's development efforts, and its interests in developing foreign policy thinking for the US.

The co-constitution of international development and foreign policy is reminiscent of the aforementioned ambition to usher in the American Century following World War II. The underlying assumption of this strategy "argued that the American economy had become the major factor in global prosperity" (Parmar, pg. 190-191, 2011).



Seen from this perspective, it becomes evident that contemporary global American hegemony is not purely a contingent circumstance, but a mutual desire for power and wealth between American private industry and the US government. In this way, agricultural technical assistance, a core component of the Green Revolution, brought together humanitarian aid and US foreign policy to “become a key US weapon in the Cold War” (Olsson, pg. 99, 2017). Likewise, John D. Rockefeller Jr. believed his best response to unrest among his oil workers across Latin America, who espoused Communist or nationalist sentiments, was not “ideology or analysis but improving the actual conditions of their lives” (Colby & Dennett, pg. 90, 1996). As part of the Green Revolution project, it was a politicization of agriculture that separated issues of production from justice to increase material prosperity and quell unrest (Shiva, pg. 52, 1992). Consequently, this effort to nullify radicalism among peasant populations would also reshape the landscape of Mexico and the rest of the world.

#### 4.5 Diffusion of Innovation: Research, Education, and Extension

The transformation for Mexican agriculture, envisioned by US philanthropic organizations, like the Rockefeller Foundation, sought to achieve progress for Mexico’s national development through technological and institutional innovations. Progress was synonymous with scientific thinking, and the consequent way this shaped social life. Food became “a material instrument of statecraft” (Cullather, 338, 2007) to rectify the social problem of hunger, which US foreign policy thinkers envisioned would lead to conflict. Rockefeller philanthropy brokered social change through agricultural development in Mexico, as a confluence of its interests with US strategic thinking, to modernize its population economically and politically. Bringing new techniques and experimental research to Mexico would foster a “new scientific mentality [that] would extend from farming practices to the most personal of decisions” (Cullather, pg. 104, 2014), that would reshape their households and their yields from production. In tandem with the Cold War, scientific agriculture engendered a radical shift in the political and economic composition of Mexico by reorienting its position from a subsistence agriculture, toward one aligned with the international market economy.

The Rockefeller Foundation, as a private philanthropy, offered the organization independence from the institutional roles demanded of government, which enabled the organization to behave as a disinterested actor in the affairs of politics. However, the aforementioned evidence points to the contrary. Imperial knowledge, generally, has accumulated in the US and Europe in sources of wealth and technology, and spread throughout the rest of the world (Mignolo, pg. 115, 2005). Indeed, the foundation was chartered, with the assumption “that agricultural development must be a programme of social adjustment as much as a technical mission” (Nally & Taylor, pg. 56, 2015). It was not purely to produce knowledge either, but also for implanting their priorities, and building the institutions to transmit this knowledge (Patel, pg. 12, 2013). For the Rockefeller Foundation, agricultural extension, research, and education began as an effort to democratize the material conditions of rural farmers (Rockefeller Foundation, 1941b). The foundation recommended institutional changes in local governments to implement new technologies, which would provide gains to farm productivity, and “keep pace with population growth” (Wortman, 1973). Ultimately, improving agricultural production for undeveloped countries would require great effort because it “involves people, education, and social change” (Paddock & Paddock, pg. 95, 1967). Changing the complexion of Mexico’s agriculture would involve not only the technological methods for farming, but also the necessary changes in social life that would accompany these new farming methods.

Changing Mexico’s agriculture would mean changing the accompanying social relations in the country, all of which was incumbent on the success of the Mexican Agricultural Program for the Rockefeller Foundation. The project was not only about applying new technology, but its ability to socialize campesinos toward a productive mode of cultivating their crops. The foundation’s ultimate goal to raise the level of economic well-being for Mexico required its population to adopt a new set of technologies and methods already present in the US, but unfamiliar to domestic growers. The goal to integrate Mexico’s agriculture into the international market would be transformative, because “the modern physical life” (Paddock & Paddock, pg. 100, 1967) could not be attained without abandoning old customs. Not only this, but this task would mean shifting Mexico’s people to ignore their aversion to any outside economic aid, especially from the US (Rose, 1916). Rockefeller agricultural scientists confronted a set

of social challenges that shaped their approach to the diffusion of technology, which built on their experiences in the US South at first, but later adopted strategies developed in Iowa to promote a replicable model with the pressure of the Cold War on the horizon.

Crucial to demonstrating the success of the Rockefeller Foundation's efforts was their extension work. Starting in 1948, foundation agronomists performed annual farmer field days to advertise their variety of wheat (Wessels Living History Farm, 2005). As was the case earlier in the US South, the foundation knew farmers would only accept a new set of practices if they could see the fruits of such practices themselves (Olsson, 2017). Norman Borlaug, a young soil scientist from Iowa, was at the center of this change toward marketing the success of scientific agricultural methods in Mexico. When concerns were raised for the prioritization of technology over distribution, Borlaug believed that its application would be served best by wealthier commercial farmers rather than smallholders (Patel, 2013). Throughout Mexico there was a "tremendous soil infertility problem" where Northern Mexico had irrigation (Wessels Living History Farm, 2005), which is where the Rockefeller Foundation continued to focus its efforts. As was the case for farming during the Porfiriato, rain-fed agriculture was replaced by industrial irrigation (Perkins, 1998), a drive away from subsistence production toward a modern, mechanized mode of cultivation.

During the Cold War, agricultural extension was further consolidated by research involving the diffusion of technology. At this time, a seminal work of literature on technological innovation, *Acceptance and Diffusion of Hybrid Corn Seed in Two Iowa Communities* was published in 1950. Importantly, this study distinguishes stages of adoption for seed technology, which corresponded with the level of education and economic status for those who accepted and implemented hybrid versions of corn. Early adopters of new hybrid seeds were generally younger, better educated, and "larger operators" (Ryan & Gross, pg. 690, 1950). Borlaug, an Iowa man himself, was undoubtedly aware of this study. If this logic of acceptance were extrapolated from its context in Iowa to Mexico it would mean those farmers who most closely resembled large farming operations in the US and were most educated in scientific agriculture would be initially successful in the mode of production advocated by the Rockefeller Foundation. Later stages of adoption would follow with farmers whose capital and

education were lower, but over time, the composition of Mexican agriculture would appear as it did in the US.

The communication of agricultural technology, from the Rockefeller Foundation to Mexican agronomists and farmers, was predicated on the relationship between the two actors. Extension, while a method to communicate knowledge, is conducted unidirectionally from research scientists in North America toward students and agronomists in Mexico. Where extension is applied, its definition implies going to another part of the world to normalize the epistemology of the extension agent (Freire, 1973). When Norman Borlaug arrived in Mexico, he dismissed the ejido as an obstruction to productive outcomes for their country's agricultural industry. He also tested imported strains of wheat from the US on the Mexican countryside. All of which was in service of recreating his native Midwest US agriculture in Mexico (Olsson, 2017). The hegemonic project of scientific agriculture in Mexico channeled domination in Mexico through such practices by transplanting the epistemology of the extension agent onto the farmers and agricultural scientists of Mexico. Thinking in the scientific terms of agricultural production espoused by US extension agents creates a tyranny of concepts (Tickner, 2001) by defining what is legitimate in agricultural production, which makes it impossible to see an alternative.

All along, scientists and officials in the Rockefeller Foundation sought to educate Mexican agronomists as a paramount responsibility to facilitate their extension work. Technical assistance was an important area of focus, but foundation officials realized "extension work cannot be improved until extension men are improved" and "schools can hardly be improved until the teachers are improved" (Rockefeller Foundation, 1941b). To rectify this, foundation staff were present in Mexico to conduct research as well as teach "future leaders" (Rockefeller Foundation, 1963). Extension facilitated the transmittal of knowledge by American agronomists to Mexican campesinos, but education would instantiate that knowledge in Mexico's institutions, and consequently embed that learning in the country's farmers. In their 1960 Annual Report, the Rockefeller Foundation was transferring its responsibility for research to local scientists in Mexico as fast as they could possibly be trained (Rockefeller Foundation, 1960).

Education became an issue of high importance for the Mexican Agricultural Program before its completion in 1960. Rockefeller Foundation scientists formulated the

model of education for agricultural education in Mexico to focus on the exact sciences like pathology or genetics as the basis for decision-making (Jennings, 1988). The design of Mexico's agricultural education was a direct imprint of land grant universities in the US onto Mexico. Consequently, education at Mexican institutions emphasized the link between topics like crops and food production (Jennings, 1988), but this education did not take into consideration the economic or political implications of their science. Therefore, the scientific knowledge designed and implemented in Mexico's educational institutions does not necessarily accord with the physical needs of people in Mexico but is rather applied through industrial technology for the "production of superfluous goods" (Khor, pg. 43, 1995).

#### 4.6 The End: Liberalism and Scientific Agriculture

The Zapatistas emphasize that capitalist science is informed by a set of assumptions about reality that developed at the same time people transmuted their conception of reality from religion to science. Beginning as early as the 16<sup>th</sup> century, Western Christianity was disrupted by the rise of modern science (Whitehead, 1925). As an ontology of imperialism, what began with Christian theology as a regulation of society followed in science and arrived at the invisible hand of economic regulation (Mignolo, pg. 281, 2011). The hegemonic science challenged by the Zapatistas is embedded in its discursive practices, explicating scientific agriculture as an objective endeavor for human prosperity, but is grounded in its promotion of capitalism through productivity and technological achievement. These ideas present in scientific discourse that persist in Mexico today were reinforced by American philanthropic organizations, governmental institutions, and universities to modernize poor rural villages in the early 20<sup>th</sup> century. It was the Rockefeller Foundation's thinking that societies who value science will be rational enough to remain peaceful. This assumption was, again, a coalescence of military strategy and economic efficiency. The US government turned to scientists to promote the development of the poor, especially in less industrialized countries to bring them from a primitive background into the technologically advanced practices of modern society (Cullather, pg. 4, 2011).

The American reverend Josiah Strong, a voice for US imperialism in the late 19<sup>th</sup> century, called science a new revelation of God's will (Strong, pg. 11, 1898). The path of science was that of progress, and this rooted the distinction between the planners and the peasants, between rationality and superstition (Scott, pg. 253, 1998). An objective science and a universal morality could liberate humanity from the irrationalities of religion and superstition (Harvey, pg. 12, 1990). Commitment to such a rationality promotes a reductive certainty that closes itself off to doubt where at a certain limit it "leads science to supplant religion with philosophy" (SupGaleano, 2017b). What is important to note about this transformation is not necessarily the religious undertones within science, but the persistence of a single system of knowledge, the Western code (Mignolo, 2011). The hegemony of scientific agriculture, as an endeavor of modernity, involves its mastery of nature, and its universality (Blaser, pg. 555, 2013). Just as Western Christianity was a projection of fears onto the afterlife, modern science is an escape to the future (Povinelli, 2011). Likewise, agrarian modernization, with its focus on transforming farming into a productive, market-oriented industry, resides in its faith in markets as self-regulating systems that "hold the promise of governance without government: a way of achieving independence and self-sovereignty in daily social life" (Nally & Taylor, pg. 53, 2015). This remains a premise of the Rockefeller Foundation's platform to engender countries in the Global South to help themselves (Conway, pg. 1, 2003). Agricultural extension socialized Mexico's farmers under the logic of self-help to achieve the potential of human capital.

The consequences of scientific agriculture as a dominant normative framework in Mexico have been progressively dire leading up to the contemporary period. Mexico's national development, its production of goods and services, has been championed as the result of its agriculture in the period of the early 20<sup>th</sup> century. This period, as mentioned above, was characterized by the country's policies toward industry. Land reform was a concession to the Mexican peasantry, but following the revolution, policy was oriented toward the middle-class, entrepreneurial farmer (Stavenhaugen, 2013). In Mexico, the changes to agricultural practices and land reform during the 20<sup>th</sup> century led to massive discontent and impoverishment for much of the country's farming population. The ejido system in Mexico, the great victory of land reform, composes nearly half of the country's land mass, but twenty percent of this land is not arable (Weinberg, 2000). Land was

continually privatized in this period toward the free market, especially when ejido system faced reform in 1992. These policies altered Article 27 of the constitution which allowed communal landholdings to divide into individual parcels (Rocheleau, 2015). In the contemporary period, instead of producing corn for subsistence, Mexico imports most of its staple crops from the US for consumption (Weinberg, 2000). Needless to say the Zapatista uprising in 1994 addressed the political and economic implications of the scientific thinking in Mexican policy and the capitalist relations it serves.

#### 4.7 Connecting the Dots

In all, the motor of progress for Mexico was rooted in scientific thinking beginning in the mid-19<sup>th</sup> century. The normative framework of scientific agriculture created a dominant, hegemonic agriculture that was based in the epistemology of positivism rooted in Europe and the US, which later facilitated the Rockefeller Foundation's intervention into Mexican agriculture. Scientific agriculture is a dominant epistemology that rejects Mexico's traditional knowledge of agriculture as backward and creates a vision for Mexican agriculture that resembles the US and Europe. Scientific agriculture proclaims itself to be neutral and objective, but at its base it promotes a capitalist agriculture. As it were, state politicians and private actors in Mexico and the US were keen on promoting the national development of Mexico for their own intended purposes. Their designs for the country happened to align with the same positivist ideas of scientific objectivity and productive economic development, beginning with agriculture and ending with industry. The progress Mexico saw in the 20<sup>th</sup> century administered preferable outcomes for wealthier, economically integrated, members of the international economy, but their "symbols of prosperity are symbols of dependence" (Galeano, pg. 245, 1973).

The scientists participating in the Mexican Agricultural Program legitimized science as a basis for political authority. The neutrality of science as an objective endeavor "legitimized the transformation of agriculture" (Jennings, pg. 64, 1988) through its use of scientific language. Despite the promotion of an agriculture that would support Mexico, scientific agriculture was always in service of capitalism. Scientific agriculture has both material and ideological dimensions of power that inform its legitimacy in

Mexico. Technological development is what enabled scientific invention to enter capitalist production. Indeed, it is the needs of the economy that promoted the research of some subjects over others (Kloppenburger, pg. 21, 1988). As Kloppenburger explains, there were initial barriers to the advancement of capitalist production within agriculture, which stopped at the family farm (Kloppenburger, 1988). It was the externalization of production that brought capitalism to agriculture. This is evident in Mexico during the 19<sup>th</sup> century with the shift from subsistence farming on communal landholdings toward large commercial enterprises for production of export crops. Ideologically, scientific agriculture set its roots during the Porfiriato, where the state introduced positivist, scientific thought in education and policymaking to resemble what the Rockefeller Foundation and US governmental agencies would promote years later. In the contemporary period, the Zapatistas challenge the purported scientific objectivity exercised by the Mexican government. To emphasize this point, Subcomandante Marcos proclaimed in 2003 that the actions of the presidential administrations, Carlos Salinas de Gortari and Ernesto Zedillo, were covered up by researchers and intellectuals complicit with the authority of the Mexican state (Munoz Ramirez, 2008).

The history of scientific agriculture in Mexico depicts how dynamics of power, wealth, and geopolitics have played a role in shaping the Mexican agriculture of today. A nuanced perspective of Mexico's agricultural industry across history also shows the Rockefeller Foundation was not the only factor in shaping the composition of Mexico's agriculture or its attitude toward science. What makes scientific agriculture in Mexico a hegemonic project is its construction of legibility (Scott, 2013), normativity, through positivist science to maintain order, and develop the national economy to integrate with the international market. Among all actors that supported the Mexican Agricultural Program, both Mexican and American, there were similar assumptions about what Mexican agriculture should look like. Farms should be productive, modern, and efficient to raise the level of economic well-being for the average Mexican. Underpinning this vision were the mutual desires for progress, productivity, and technological advancement; all of which were in service of achieving modernity. The short-sightedness of productive outcomes, and the simple-minded assumptions of reductive experimentation precluded its failures outside the North American context (Scott, pg. 264, 1998). However, these ideas were built around a science that is enveloped within the capitalist system of relations.



Scientific agriculture has progressed alongside liberal politics in Mexico to fundamentally transform the structure of subsistence agriculture for many poor rural Mexicans and did so at the behest of organizations with wealth and legitimacy.

The way out of Mexico's current situation of underdevelopment must consider not only how these ideas have shaped the country's social, economic, and industrial setting, but also reflect on the drivers of this change. Perhaps one of the keys to such change sits in the legacy of agrarian transformation during the 20<sup>th</sup> century, whose response from Mexico means tearing down the existing structure of agriculture to promote the welfare of its people (Gunder Frank, 1969). With the onset of the Zapatista rebellion beginning in 1994, perhaps Mexico has its answer. The symbolic alignment of Zapatista armed revolt and the signing of NAFTA is yet another conjunctural event. NAFTA can be seen as a culmination of the "historic US mission to replace the Mexican Indian model with the US agribusiness model," (Weinberg, pg. 73, 2000) and the destruction of neoliberal ideology's practices, as a "normative achievement" (Povinelli, pg. 22, 2011) can offer a new way of living.

## 5. Challenging Scientific Norms: ConCiencias vs. Capitalist Science

If the Zapatistas are a response to the societal consequences of scientific agriculture in Mexico, then ConCiencias por la Humanidad is their construction of an alternative through their critique of science writ large. The hegemonic project of scientific agriculture coincided with a positivist approach to reality, which lent itself to an economic mode of thinking, and a set of goals oriented toward productivity and profit. ConCiencias is a space for dialogue that opens the discussion about science to understand how its processes function alongside capitalism. It is also a forum to construct how science can produce another world beyond capitalism. In order to do so, ConCiencias first set out to explain what science is and is not as a platform to construct a science to build another world. Here it is possible to see where ConCiencias creates a foundation for an alternative conversation around science by criticizing capitalist science, which will be discussed in this chapter, and also what alternatives are possible as will be discussed in the next chapter.

The encuentro ConCiencias por la Humanidad brought together scientists from different disciplines and around the world to discuss the role of science in the system of capitalism. The aforementioned story of scientific agriculture in Mexico describes where capitalism, through Mexican politicians as well as US public and private actors, most tangibly shaped Mexico's attitudes about science. ConCiencias is a process to disentangle science from its capitalist relations by looking at how capitalism affects its different disciplines, and where history has given science its contemporary form. In this process of critiquing science there was a discussion about what science could look like if it were different. This chapter will analyze the contributions to ConCiencias from participating scientists and Zapatistas, as well as research interviews with observers and participants at the conference, to understand how ConCiencias has shaped a different conversation around science.

Capitalist science and ConCiencias are two opposing forces that are divided by their relationship to capitalism. ConCiencias, a science for humanity, is an approach to scientific discourse that problematizes how modern science constitutes knowledge as an engine of progress and technological productivity in the capitalist system. The conference is a forum to critique the various ways scientific discourse manifests in everyday life, and

how the application of modern science is ultimately dehumanizing. ConCiencias connects modern science to capitalist production in a process that is mutually constitutive, which constructs knowledge to recreate the system of capitalism. When science is delinked from capitalism it becomes a tool of resistance that can transform reality toward another world of possibility. Distinguishing modern science from ConCiencias makes their relationship to capitalism clearer and explains where these two forms of science diverge.

ConCiencias por la Humanidad is an approach to science with a human focus that opposes the science controlled by capitalism, which envelops humanity as a world-system. To emphasize its contradistinction from capitalist science, the name of the encuentro is a play on words in the Spanish language where *Conciencia*, meaning awareness, and *Ciencia*, science, provokes its adherents to reflect on their science and its purpose. Under a humanistic science, people must reflect on the position of science in social reality and strive to empower a different science for the benefit of people rather than profit. ConCiencias por la Humanidad is an encuentro that poses the question of whether science has the power to transform capitalism through autonomy and resistance. This encuentro brought together a breadth of scientists critical to their discipline, from entomology, soil science, hydrology, biology, and agroecology to astrophysics, engineering, mathematics, genetics, chemistry, medical doctors, and education scholars. All came to ConCiencias with the intention to define science by discussing how capitalism affects their work, and ultimately to separate the methods and tools from scientific discourse. ConCiencias is a collaborative inquiry across scientific disciplines, in dialogue with traditional knowledge to discover how science can transform society for human liberation.

ConCiencias is one of many recent encuentros conducted by the Zapatistas, where they invite international presenters and observers to participate in the Zapatistas' provocation of thought. The Zapatistas seek to provoke through questions they ask about capitalism through art, critical thought, oppressed peoples, and science. In particular, ConCiencias is important because the Zapatistas see this conference as "not a fleeting moment" (SupGaleano, 2016h), but an ongoing exchange. ConCiencias is a process to build scientific knowledge for their construction of autonomy, which they can take back to their communities and socialize to their peers. In the same way, ConCiencias also has international resonance for its adherents. The encuentro provoked its attendees and

listeners to socialize the knowledge at ConCiencias to continue organizing and resisting in their contexts. Therefore, ConCiencias offers a glimpse at how the idea of a humanistic science forms as a response to capitalist science. Consequently, the encuentro also offers a reflection for International Relations scholarship about the emergence and evolution of norms as a process through relationships that build and reflect over time.

The Zapatistas convened ConCiencias por la Humanidad as a component within a larger project to create another world beyond capitalism. The Zapatistas surmise, based on their communiqués, that another world is possible through the arts, the sciences, and the oppressed peoples of the earth (SupGaleano & Moises, 2016b). This three-pronged approach invokes creative art to imagine another possible future, applies science to transform contemporary reality, and organizes around the peoples most affected by capitalism's destructive forces. The first encuentro in this larger project began in 2014, which was entitled, Critical Thought in the Face of the Capitalist Hydra. Critical thought laid the foundation for the seminar format, what they call seedbeds, to give a foundation for constructing their autonomy. Zapatismo, the philosophical grounding of the Zapatistas, also sees critical theory as the connective tissue between each pillar of their resistance, and therefore undergirds their efforts to create an art and science that uplifts humanity.

Holding encuentros on these topics gives space to open a dialogue about transforming the destructive forces of what Zapatismo calls the “storm of capitalism” (SupGaleano, pg. 18, 2016g). Zapatismo sees capitalism as an all-encompassing force at the global level, meaning the Zapatistas perceive their resistance as a world war to maintain their autonomy (SupGaleano & Moises, 2016c). Ultimately, the science Zapatismo offers, through ConCiencias, may become something truly new and unique (Mora Flores, 2016). A science that separates the logics of capital from its intellectual principles, can conduct inquiry for a new set of questions that build from the work of autonomy.

Summarily, ConCiencias is an encuentro to produce knowledge for one axis of their resistance, science, but this encuentro sits within a constellation of seedbeds for the other axes of their resistance, art and the oppressed peoples of the world. The Zapatistas have held three encuentros about art, CompARTE, and one about women, Convocation to the First International Gathering of Politics, Art, Sport, and Culture for Women in

Struggle. During the first ConCiencias the Zapatistas also announced the formation of an Indigenous Governing Council, and during the second ConCiencias the Zapatistas, alongside the National Indigenous Congress, announced an indigenous presidential candidate, Marichuy. As the Zapatistas mention, ConCiencias is not an isolated event, but one of a series of discussions about topics that navigate the possibility to create a new world beyond capitalism, which may ultimately offer a path to transform that system. The Zapatistas also do not see ConCiencias as limited to one place for a discussion about science, but a new kind of scientific inquiry for participants and observers of the conference to take with them to their communities.

### 5.1 Organizing ConCiencias: Autonomous Education and Practice

In the first year of ConCiencias, Subcomandante Galeano gave a talk called “The Flower is to Blame” where he describes the origin of the idea for the encuentro. In this story a young girl in one of the Zapatista communities asked what gave the flower she was looking at its color, and why this happened. Rather than just the cultural explanation from her indigenous tradition, or some spiritual explanation, the girl wanted to know the scientific answer (SupGaleano, 2016f). In a similar vein, SupGaleano critiques capitalist science for its purported objectivity by explaining how it intertwines cultural understandings with logical reasoning to establish a set of social relations that produce and reproduce capital. Additionally, the invitation to ConCiencias, sent by Subcomandantes Moises and SupGaleano, uses an anecdote from a conversation between SupGaleano and another Zapatista where they break down the difference between science and tradition involved in building a house (SupGaleano & Moises, 2016b). These anecdotes preface the underlying motive for ConCiencias, which is designed for two purposes. It is both to teach and learn what capitalist science is, and also how to disentangle the social relations of science from its intellectual principles. It is about understanding science as a tool of resistance.

In a roundabout way, these stories explain that ConCiencias was a demand from the communities and their organizing work. The interest in science among Zapatistas is new, but it is a result of their autonomous practices (SupGaleano, 2016j). Research participant O noted that Zapatista education in addition to their other pillars of autonomy,

midwifery, bone-setting, and political economy to name a few, had achieved a level where students and members of the community identified a need to acquire more knowledge about science. Research participant X had a similar thought, believing the Zapatistas' relative silence over the five years before their Critical Thought encuentro in 2014 meant they were focusing on their internal processes. Their process of constructing autonomy has brought them to a set of limitations on their organizing work that can produce agricultural goods, promote health services, and educate their youth "because this wasn't about capitalism; we were lacking science" (Moises, 2017). ConCiencias is a forum to perform the collective labor of theoretical work required to understand reality, which can help them construct their autonomy. It is "very complex and requires a mirror with many faces" (SupGaleano, pg. 277, 2016a), to get the knowledge they can use for constructing their autonomy.

One major component of their autonomous practices, which led to ConCiencias was Zapatista autonomous education. Their schools have been as important for building their autonomous project as it has been for ConCiencias. Beginning in 2001, the Zapatistas in the community of Ricardo Flores Magon took their children out of the Mexican institutional school system and organized autonomous schools (Rico, 2014), which reverberated across Zapatista municipalities. Today every community has its own autonomous school (Zibeche, 2013). The change in Zapatista education reflects the reorganization of their communities around autonomous regions, which followed Mexico's enactment of the Law on Indigenous Rights and Culture, which placed restrictions on their rights for autonomy (Hernandez Castillo, 2006). The autonomous schools build on the collective participation of its students to devise a curriculum that is based on their experiences (Rico, 2014). In these schools, the students become the teachers, promotores, where they teach the skills they learned while attending the school, namely agro-ecology, shoemaking, medicine, or communication among other topics (Oikonomakis, 2018).

ConCiencias, in the constellation of their other encuentros, is a means to teach and learn from outsiders to express reflections from their organizing work as well as acquire knowledge to practice autonomous science. Zapatista students desired to reach beyond the secondary education their autonomous schools could offer them. Research participant O mentioned the autonomous schools have been remarkably successful at

providing education to their communities, while elsewhere in Chiapas the schools are among the lowest performing in the country. In their schools, the Zapatistas teach the indigenous languages of their communities as well as their indigenous history. Research participant O pointed out that the history education in Mexico can be convoluted and deceiving in a way that is sometimes far from the truth. The Zapatistas want for their children the tools of science and the creativity of art to realize the future they want for themselves. Autonomous education cultivates the future generations of Zapatistas, something that is as tangibly important to their organizing work as their agriculture, medicine, or economy.

The Zapatistas' past relationship to science was informed by its utility for their survival, for revolution and war. In their history of Zapatismo, the most scientific activity they performed was ballistics and mapping (SupGaleano & Moises, 2016a) for the purpose of revolution and defense of their communities. At ConCiencias, the Zapatistas explained they need to improve health and nutrition in their communities, their customs and practices can only explain so much. Similarly, Research participant T noted their agricultural practices, while based on traditional knowledge, requires science to adapt to the increasingly rapid change in the environment. Their traditional knowledge is based on an ecology that is rapidly shifting and becoming increasingly unpredictable. The Zapatistas' interest in science has evolved alongside their organizing work to depart from a focus on military strategy toward the autonomous processes that are necessary for survival.

The Zapatista students are interested in applied knowledge for their education (Barmeyer, 2008), but they are also intellectually curious about understanding their natural world. In their communities, Zapatista students vocalized their need for knowledge about not only agriculture, medicine, economy, or philosophy, but also about disciplines like cosmology, physics, biology, and engineering. During the first ConCiencias, Zapatista students asked many questions during these sessions, especially Ramon Zuniga's presentation about stars, which focused on what constitutes our sun and whether there are other planets like ours. Since their autonomous education is problem-based, and rises from the students' collective needs, they devise topics based on what makes them curious or what is useful for their surroundings. The interest for the presentations at ConCiencias among the Zapatista students was evident in the visual

footage where many took copious notes, as is shown in Figure 1. The attentiveness of the Zapatista students was also pointed out by many of the research participants.



Figure 1. Zapatista Student Taking Notes During A Presentation at ConCiencias (Medios Libres, 2016b)

Before the conference, Zapatista communities met on several occasions, beginning at zone-level assemblies. At these meetings the Zapatistas chose who would travel to the conference, given their area of expertise, across a breadth of topics such as health, education, agro-ecology, bone-setting or midwifery (SupGaleano, 2017a). Each Zapatista student was chosen by their community, based on their interest in the subject matter, to hear specific presentations. The only requirements were the student's curiosity in science and aptitude in Spanish. From here, the communities developed questions they would send to potential academics for the conference.

Presenters at ConCiencias were either selected by the Zapatistas or applied via email after learning about the event. Research participant Q believed the Zapatistas had possibly sent hundreds of emails to academics around the world. She was impressed at the Zapatistas' ability to discern the scientists who were serious about their critiques and those who were passing off as sympathetic to the Zapatista cause. The Zapatistas' identification of good science is likely a result of their own sophisticated understanding



of science, as well as their liaison to academia, the Enlace Comite. Research participant T received a list of ten questions from the Zapatistas, seen in Table 1, which asked her to reflect on the funding model in science, whether she is an objective actor, or how she formed her research questions. When Research participant O, an astrophysicist, asked the Zapatistas what he should present, he said they wanted him to speak about his science, but not give a presentation with general knowledge. They wanted a deeper understanding of the topic.

Table 1. Questions from Zapatistas in an email to conference presenters

<ol style="list-style-type: none"> <li>1. Does the scientist reflect on his/her practice?</li> <li>2. Does the scientist wonder if he or she is doing science or something else?</li> <li>3. Is the laboratory questioning whether it is doing science or something else?</li> <li>4. Is the asepsis of the institute, of the research center, real?</li> <li>5. Are the emphasis of scientific research on either side innocent?</li> <li>6. Is it the same to teach trigonometry at the Cumbres Institute (private school) than at the Autonomous Rebel Zapatista High School (school of the autonomous zone)?</li> <li>7. Do you research and advance with the sole engine of scientific curiosity?</li> <li>8. Are there no archived research projects because they are not priorities, because they have no use?</li> <li>9. Have not investigations been scrapped because budgets go to certain areas?</li> <li>10. Is the improbable paradise island of scientific endeavor safe from the storm?</li> </ol>
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(Table retrieved from personal communication with a research participant for this study)

As mentioned earlier, ConCiencias is but one pillar of resistance for the Zapatistas to achieve another world. The Zapatistas also believe that art and oppressed peoples are the other components of their resistance, which was evident at the first ConCiencias as it coincided with a simultaneous meeting of the National Indigenous Congress to build an Indigenous Governing Council. The proposal emanated from a desire to voice the needs of Mexico's indigenous peoples at the national level of politics. The voice would take the form of an indigenous woman. The National Indigenous Congress voted to approve the formation of the Indigenous Governing Council while ConCiencias took place in December 2016, which included not only those at the encuentro, but also 523 communities from 43 indigenous peoples and 25 states of Mexico (Congreso Nacional Indigena, 2017). The CNI event took place throughout the first convening of ConCiencias in 2016.

Even as the first ConCiencias had come to a close, the organizing for the second ConCiencias also took place between its two event periods. According to research

participant S, there were conference calls with himself, a Zapatista liaison, and other supporting scientists in North America. These conversations focused on ways to better facilitate Zapatista science education, whether it was through workshops for promotores, or a video. This research participant believed more of these conversations took place between the two ConCiencias events. Research participant L did not participate in these conference calls but spoke with friends who did. She communicated her colleagues were confused how the Zapatistas asked them to be critical to their science, as they did before the first ConCiencias, but sounded like they were asking for what they criticized about scientists' presentations in the first conference.

The second ConCiencias, in contrast to the first year, was organized around a theme of science and the wall of capitalism. The second year consolidated the learning from the previous conference and proposed to bring forward solutions to build an autonomous science. This year was shorter with four days of presentations and coincided with the National Indigenous Congress's (CIG) announcement of Marichuy's candidacy for the presidency of Mexico. The Zapatistas were also heavily involved in the organizing for this simultaneous event that also took place at CIDECI. According to research participant X, the shorter length of the conference was possible due to the labor required to acquire enough signatures for her candidacy.

## 5.2 A Room with a View of Capitalist Science

The Zapatistas have great depth in their calendar and much time to discuss the intersection of capitalism and science, but as a result of their autonomous practices they are geographically limited to give a forum for a conversation about science. ConCiencias, as an encuentro that resembles a formal academic conference, took place as one instance in 2016 and another in 2017. As a geographical location, ConCiencias is situated in Chiapas, at the Centro Indígena De Capacitación Integral (CIDECI-Unitierra) in San Cristobal de las Casas. The encuentro took place in a large auditorium where presenters sat facing a crowd at a long table. At each ConCiencias the crowd was divided amongst approximately 400 attendees, 200 Zapatista students at the front and roughly 200 or more observers at the back. Figure 2 gives a visual representation of the Zapatista students seated in front of the panel presenters at ConCiencias. According to research participant

M, the Zapatista students were divided equally between men and women with 100 students representing each gender. Many times, the auditorium was filled beyond its capacity with people observing from outside the venue. The event was livestreamed both years, with approximately 100 people simultaneously tuning in as listeners online in 2017. During the second year, these livestreams were simultaneously translated into French and English. Research participant X volunteered to translate some of the conference presentations into English.



Figure 2. A Presentation at ConCiencias por la Humanidad (Medios Libres, 2016a)

The structure of the conference largely followed the same format in both years, but there were changes to the structure of ConCiencias in the second year, which involved a presentation format that was less communicative between the Zapatista students and the presenters. In both years, presentations were given as a formal panel by academics in the main auditorium. During the first year, academics were invited to give extended talks about their research to Zapatista students during parallel sessions, which were called divulgaciones. In these sessions, students were able to ask questions to the presenters in a dialogue. Research participant X noted the students were the only

members of the audience that were allowed to ask questions. Research participant Z noted this format did not continue in the second year. It is not certain why the format of the conference changed in the second year, but research participant X believed it might have been the lack of comfort the students felt to ask questions in front of a large audience.

In both years, the students collectively convened in a closed discussion and formulated questions following each presentation that they would ask to the presenters through email at a later time. Research participants Q and L noted they received questions from students after the conference via email, which were often clarifying points about aspects of the presentations they gave. Research participant V was surprised at the students' enthusiasm for her science and their questions about the points she made in her presentation. The closed discussions were held between the general assemblies at the beginning and end of each day. Video from one of the closed discussions on the ConCiencias website depicted a traditional classroom format, with an academic presenter at the front of the room, and students sitting in attendance watching the presenter intently and taking notes. Additionally, academics gave instruction during labs or workshops on topics like robotics, fossil identification, and the scientific method to groups of students, which were closed off to spectators (Press Dinamo, 2017).

Since ConCiencias was at once a forum to discuss science to learn about its relationship to capitalism, as well as improve the base of their science education, the encuentro was both an opportunity to learn about science as well as a showcase for the aptitude of the Zapatista students present at ConCiencias. A common theme among the research participants was their surprise and excitement at the voracity of the Zapatista students for the presentations. The students, old and young, took scrupulous notes and maintained a keen interest in the panel discussions for the entirety of their duration. Research participant O, giving a lecture on astrophysics, said the questions from the students far exceeded his expectations. He wished that graduate students had those questions after two semesters of advanced topics. Research participant T mentioned the students scrupulously wrote notes while she was presenting and observing from the audience, which she found impressive over the nine days of conference in the first ConCiencias. Research participant L, conducting a presentation about biological pest

management, was gratified at the students' enthusiasm for her presentation, as she could see "their eyes light up" when she spoke.

As a reflection on ConCiencias, and the role of students at the encuentro, the distribution of the audience was an interesting feature for its distinct division between the Zapatistas and the public. Figure 3 gives a visual representation of the audience at the encuentro, which shows the observers at the left, and the Zapatista students to the right. According to research participant M, the encuentro was understood to be a decolonization of knowledge, which would appear to make a physical separation between the Zapatistas and observers counter-intuitive to this objective. The crowd, in its organization, maintained a clear divide between Zapatistas and observers, many of whom were internationals, Mexican, students, or academics. When taken in context of the developments in Zapatista autonomy mentioned earlier, it is evident the conference served a dual purpose of improving science education in the autonomous schools. The division in the crowd is likely due to the responsibility of students to act as representatives of their community schools. Research participants O, X, and P mentioned the students, as delegates for their communities, were expected to take this knowledge back to their fellow classmates and teach what they had learned. Research participant P characterized the student's function as a socialization of knowledge, but she was unsure of how this process turned out.



Figure 3. A View of the Audience at ConCiencias Por La Humanidad (Medios Libres, 2017)

ConCiencias, as an encuentro resembled an academic conference setting, but in this sense, it was unlike any other of its kind. First, this forum brought together a diverse range of scientists from many different disciplines, who often do not speak outside their subject, to take a critical position to their science, which scientists in the natural and hard sciences do not often discuss. Research participant O noted the political stance toward Mexico's institutional science has not happened at a public event for many years. In addition to the unconventional disciplinary format, the encuentro also brought together people from vastly different backgrounds and levels of expertise, which is distinctive as an open setting from its typical format where it is exclusive to a particular academic community. Research participant T mentioned that ConCiencias was a very unique experience for her, unlike any conference she had ever attended. As a presenter, she spoke to an audience of approximately 600 people, easily her largest audience for a conference presentation.

A consequence for ConCiencias as an unconventional conference was its lack of clear expectations for the conference participants. All of the research participants were unsure what the format of the conference would be when they arrived. When asked what

they knew about ConCiencias before they attended, research participant O noted they knew students would be in the audience, but they were unsure what level of knowledge they should prepare for in the content of his presentation. Research participants X and L were present as observers during the first ConCiencias, which helped them prepare material that would fit the space. Research participant T noted she could see that her original presentation idea in 2016 was somewhat removed from the concerns of the Zapatistas, but she adjusted to contribute a much more relevant and applicable presentation in the following year. Fitting into the conference setting was likely more difficult for participants that could not be present at ConCiencias as they could not reflect on how their presentation would fit the environment at the encuentro. Indeed, some presentations at the conference were done remotely by video, audio recording, or read by volunteers. Research participants G and Q were unable to present their material in person due to extenuating circumstances, and as a result received some feedback via email but did not have much context about what else took place at the event.

Since ConCiencias was rather open-ended in its discussion of science, there was a diversity of topics that were discussed regarding capitalism and science, but overall these presentations can be divided roughly into two categories of research science and the politics of science. Research science presentations divulged the outcomes of personal academic work in an accessible language for the audience. Some of these research presentations had an applied focus that were among the best received at the conference. Others were densely theoretical while some were a brief survey of scientific disciplines like geophysics or astronomy. The political category focused on the theoretical and historical dimensions of science, which discussed general influence of capital on science and its institutional limitations in Mexico.

Another interesting reflection from ConCiencias, as an open conference setting, was its exposure of the insular grievances and interests within academia to the public, which made them seem entitled and unoriginal when compared to the struggles of the Zapatistas present. Academic conferences are typically exclusive to researchers, professors, and graduate students. At ConCiencias anyone could attend, which meant the personal issues of academicians fell on deaf ears to the audience of ordinary people. The denser scientific topics presented were also inaccessible to many in attendance. Near the end of the first conference, SupGaleano and Subcomandante Moises challenged the

visiting scientists to talk about their research rather than their personal experiences in academia, as they saw it to be disingenuous when the scientist proclaimed that they would agree to talk about science, when instead they talked about their own “existential lashings” (2017d). Research participant T mentioned some of the academics might have misconstrued the conference invitation to talk about their science by getting too personal in their presentations, which made their issues seem trite in the context of the Zapatista struggle. Research participant L noted some scientists who presented at ConCiencias repeated similar criticisms that are often mentioned in conference settings, which focus on bureaucracy and the lack of contact scientific research often has with reality.

A positive consequence of the conference setting was its capacity to bring comfort to those presenting, and joy to those in the audience. Research participant P noted there was a lively atmosphere with music, art, and games taking place outside the main auditorium at the end of the general sessions. Also, the presentations were not limited to academics participating at the encuentro, but Zapatistas also spoke during the inauguration of the conference and during the evening sessions each day. The contributions from the Zapatistas grounded the presentations in their reflections of what was discussed by academics in addition to communicating the purpose for this encuentro in the context of the storm of capitalism. Both research participants Q and R noted how comfortable they were in this space as outsiders to Chiapas. In particular, research participant R reflected on how easy it was to settle into the conference presentation despite never having been to Mexico or having previously been involved with the Zapatistas.

### 5.3 ConCiencias and the Wall of Science

The substance of what was discussed at ConCiencias was generally consistent across both events in 2016 and 2017, critiquing science as a function of capitalism, but there were differences in terms of its overarching theme each year. ConCiencias began in 2016 as a general discussion about capitalist science, and how it is possible to construct a science that is autonomous from capitalist influence. Since most of the presentations given during that year were conducted in Spanish without translation it took on a secondary focus for this study. In 2017 ConCiencias focused on a theme of Science and the Wall, which was a reflection on the many ways that capitalism reproduces its system



of relations through science. After initially establishing the principles of science as distinguishable from capitalism, 2017 followed as a deeper examination of how capitalism stymies science's transformative capacity to create a world beyond this system of social relations. The ConCiencias held in 2017, "Facing the Wall," recorded and translated its presentations into English, which made it possible to critically analyze its material with more depth, and for this purpose will be the focus of the analysis for this study.

### 5.3.1 Defining Science

ConCiencias is a forum to ask questions that are critical of science. The first of which is what constitutes science, which leads to as many different answers as there are participating scientists in the conference. The plurality of interpretations denotes the challenge of disentangling science from capitalism, but the reflections of scientists are complementary in most cases. Above all science is a social activity. The presenter Lev Jardon explains science has a dual function as an explanatory activity and a medium to transform the world (2016). Another presenter Alejo Stark concluded science is a process with no fixed rules. It is inseparable from the reality under which it is subsumed, meaning it is not manipulated by capital because it is part of its production (2017). Kristin Mercer and Joel Wainwright constitute science as a skeptical conception of the world (2016). What this adds up to is a denunciation of capitalist science and its claims to objectivity and neutrality, because this is not possible for humans who are fundamentally social beings. As a system of knowledge, science is a method of communication and learning that involves creative questioning and critical interpretation of results. It is not simply one method or a universalizing principle, but a syncretic interrogation of a question through many methods. Its purpose is for understanding and predicting behavior in the natural world, which is not necessarily driven by competition but rather collaboration and collective work. Consequently, the advancement of science is produced through participatory action and collective reflection among people.

In holding this encuentro, the Zapatistas want "learn what real science is" (Moises, 2017) to transform their reality and build their autonomy. To achieve this, there must be a separation between capitalism and science. This is reflected in the first

ConCiencias where an overarching theme among the presentations was a distinction between science and pseudoscience. The pseudoscience discussed at ConCiencias is a manipulation of scientific principles for profit, a science under capitalism. Presenting in 2016, Eduardo Vizcaya Xilotl said capitalist science is rooted in Newtonian mechanics, which extrapolated the concept of gravity toward an explanatory paradigm in the field of power and belief, which formed what we now know as scientific knowledge (2016). This means certain aspects of science are privileged under capitalism to produce and reproduce its system of relations. Following this line of thought, most science that is conducted today would fall under the definition of pseudoscience. However, despite what conclusions about science that were made during the first ConCiencias, it ultimately did not resolve with a final definition of science.

The second ConCiencias in 2017 picked up where its first manifestation left off. In his presentation during the second ConCiencias, Alejo Stark pointed out that one presentation during the first ConCiencias had enraged many people when the claim was made that science is everything that produces predictions (2017). Juan Manuel Malda's presentation in the second ConCiencias addressed some of these problematic oversimplifications of scientific concepts made during the first conference by addressing its historical interlinking with capital (2017). It is ultimately the case that in any given historical period, science is a product of the dominant system of relations that governs humanity. In the aggregate, presentations at ConCiencias explained that capitalist science in its current form derives from its relationship to the military and colonial conquest, its relationship to power and dominance. Lev Jardon explains this link to power developed into its modern form in Imperial England through thinkers like Francis Bacon (Jardon Barbolla, 2016). It was a promise of practical solutions to technical problems as a means of empowering the bourgeoisie (Levins, 1990). In a similar vein, John van Der Meer explains capital's function in ecology as an evolution of the discipline from a study of populations and systems by Europeans across Latin America, Africa, and Asia (2017) to control what was deemed the property of colonial territory and extrapolate wealth from its resources.

Separate from the explanations given by the presenters at ConCiencias, the Zapatistas arrive at their own definition of science. For them, it is contingent on the genealogy of capitalism, which creates wealth as well as scientific and technological

advances to maintain and further develop this system. The Zapatistas do not reject science, but its historical formation under a set of ideas that promote the current set of social relations in the world-system. As far back as 1994, Subcomandante Marcos wrote about the role of ideology in science as “that constant leap of knowledge from ‘common sense’ to scientific knowledge to aesthetic products is a way in which the dominant ideology dominates in the sciences” (Henk, pg. 261, 2016). In his public speeches during the conference, SupGaleano frequently returned to the unpopularity of science, by which he means a non-institutional science. Applying science’s intellectual principles of arguing through a series of empirical proofs and remaining open to falsification are not rewarded under the modern social productive forces of capitalism, as these forces are produced in tandem with the dominant ideology of capitalism. The science desired by the Zapatistas must be critical to its position, meaning it cannot be absent of values as capitalist science proclaims itself to be.

### 5.3.2 Facing the Wall

The ConCiencias in 2017 emphasized not only the importance of critiquing capitalist science, but also appropriately situating oneself in the face of it. As one of the presenters in 2017, Fabiola Mendez began her presentation by stating this time presenters were invited to go further ahead with this science against the wall, and to take a position against it (2017). Juan Manuel Malda described this theme as an allusion to the political situation in the US following the 2016 election (2017). This may be true, but the Zapatista origin of their use for the term began in May 2015 as the wall of history (SupGaleano, pg. 168, 2016b) during their encuentro Critical Thought in the Face of the Capitalist Hydra in May 2015. The wall represents the barriers of capitalism, and the impossible notion of an alternative system of relations. Capitalism’s totalizing and universalizing influence closes people’s imaginations off from seeing a way other than its own reality (Fisher, 2009). Autonomous organizing by groups like the Zapatistas, and the work of rebellious science, generate a crack in the wall, a view of alternative possibilities, which allows people to see another way of life.

ConCiencias, in its second year, examined the wall of science through the disciplines of those who presented. These presentations demonstrate that the wall

manifests across the sciences, but intersects most pervasively within agriculture, education warfare, and public health. ConCiencias problematized the overarching concept of science and the wall as the “hegemonic capitalist-science binomial” (Besal, 2017) which is an objective-empiricist project. In another way, research participant A alluded to science as a set of techniques, which is distinguished from its ideological function, as a mode of capitalist production. Ultimately, the wall is a manipulation of these techniques for its ideological purposes, to produce and reproduce capital.

A crucial manifestation of the wall in science resides in the agro-industrial model of farming that developed in the 19th and 20th centuries, which was discussed as scientific agriculture in the previous chapter. John Vandermeer points out in his 2017 presentation that 75-80% of agricultural soils around the world are managed according to this model of farming, where products are made for market consumption yet often not the food we eat. Indeed, at the signing of NAFTA, the land on which smallholding farmers cultivated their crops in Chiapas were hillsides and rocky patches of soil, all while ranchers and speculators owned massive tracts of arable land that were purposed to produce agricultural exports (Weinberg, 2000). Vandermeer went on to note that roughly 50% of the world’s food production for human consumption comes from smallholder producers (2017) who ultimately use less than 30% of the arable soil on the planet. This agro-industrial model is crucial to the impact of capitalist science on the Zapatistas in Mexico. Its historical emergence and evolution, as discussed in the previous chapter, is wrapped in the pursuit of profit and the transformation of the rural peasant from their reliance on tradition toward having a special competence in science.

Presenters at ConCiencias discussed not only the material impact of the agro-industrial model, but its ideological formation in education and research as well. The origins of the agro-industrial model in education were discussed by Kristin Mercer and Joel Wainwright, who describe how agriculture was the impetus for research universities in the US. Its purpose was to translate technical knowledge from research to farmers which would directly benefit agricultural companies (2016). Adding to the conversation, Jaime Morales Hernandez explains that the system of rural extension, is a manifestation of the neoliberal industrial agriculture in Mexico (2017). This wall of science also produces a hyper specialization of experts that study one area of focus like plants or trees while at the same time sharing a pretense to universalize knowledge. He emphasizes that

agriculture is a product of cultures, which are a component of agroecosystems that evolves over time (Morales Hernandez, 2017). He goes on to explain that the homogenizing effect of scientific agriculture, to produce monocultures, is as much a material condition as it is an ideological condition for the knowledge of farmers. This last point will be important to remember when discussing the alternatives that ConCiencias offers in the following chapter.

ConCiencias points out that it is not only agriculture which is manipulated by capitalist science, but it is also produced through its connection to war and military power. The Zapatistas see capitalist science as a productive force at the expense of nature and humanity because “capitalism produces for war and because of war” (SupGaleano, pg. 267, 2016a). Presentations at ConCiencias on astrophysics, cosmology, and astronomy explained that while they are studies of the universe, their advancements have been appropriated for military purposes. Kristin Mercer and Joel Wainwright stipulate that capitalism changes science through a process of state competition to create advanced weaponry (2016). As an example of this, Alejo Stark mentions in his 2017 presentation how Sheck Hardman sensors, used to correct the images of celestial objects in telescopes, are appropriated for missiles to correct their trajectories (2017). However, it is not just the study of celestial bodies that interlinks with capitalism and military conquest, but also sciences that are closely connected to technology. Engineering is another science whose origin sits in the development of military practices and organization (Banks, 2018). These two sectors have formed alongside one another, where the discipline and uniformity of military organization meets the application of mathematical principles with science (Blue et al., 2014). Consequently, it is evident thus far that certain sciences align themselves with capitalism more so than others, and in doing so co-evolve with capitalism to produce ideological and material relations under this system.

The way in which material and ideological relations are produced under capitalist science is clearly seen in the instruments and technology used for research. The co-evolution of capitalism with the sciences is predicated on not only what is studied but also how this study is done. Indeed, technology and science have a reciprocal process of development, where advances in technology produce science which then consequently enhances that technology (Hessen, 2009). Thought of in a different way, the advancements that take place in scientific knowledge correspond with the need for

material production (Levins & Lewontin, 1985). Research participant O mentioned that advancements in science are dictated by technology, which is predicated on its economic function. In their presentation, Mariana Benitez and Alejandro Vazquez explain the materials and equipment in scientific labs are produced by a few companies in the world (2017). Consequently, a deeper understanding of methods in science are deprived of most researchers who become dependent on the requisite knowledge to build or maintain this equipment. It is the case, as professors Benitez and Vazquez point out, that scientific questions often originate with a technological understanding of the equipment used for experiments in science (2017). Therefore, control and ownership of the material production for scientific equipment upholds the institutional boundaries of science by withholding the requisite knowledge for constructing equipment and methods in communities.

The control and ownership of material production is one way in which capitalist science produces and reproduces its system of relations, but it is also more pervasive today in terms of how research is funded. The walls of capitalist science at universities, research centers, and private corporations inform the questions asked of science, which informs the answers it gives. Kristin Mercer and Joel Wainwright mention the greatest loss for academia, when treated as a business, is the narrowing of questions toward that which is oriented toward interests of capital (2016). Research will not occur unless there is money to be made. Maria Alejandra Jiminez Zuniga presented about a scientific research project to build a vessel that can travel to the nearest habitable planet that is funded by billionaires like Mark Zuckerberg, which explains that the most ambitious scientific research is organized by and for the interests of the wealthiest in society (2017). Luis Suarez Rodriguez presented about the dominance of pharmaceutical companies in medical research. Their role is to make drugs that cure people, but for them illness is opportunity for profit (2017). Pharmaceutical research, predominantly in the private sector, is subsumed by the desire for producing capital rather than human benefit.

Capitalist science has a pay wall that obstructs people in communities from accessing knowledge. Academic publishing is an industry owned by five companies: Elsevier, Springer, Wiley-Blackwell, Taylor & Francis, and Sage (Larivière et al., 2015). Academic research is mostly transmitted through papers, which appear in journals owned by one of these five companies. As a consequence, access to public scientific knowledge

is privatized when it is published. Research that is done with public funding becomes an exclusive property when it is realized as a product (Levins & Lewontin, 1985) Students and academics at universities are the only members of society with enough capital to investigate this information. Capitalist science maintains its system of reproduction by limiting the generation of knowledge to members of academia (Lewontin, 1991). Erika Gomez explained in her presentation that scientific knowledge becomes more rigorous through its generation and its transmission, but the exclusive institution of science under capital reduces its capacity for communities to conduct scientific work (2017). Open access breaks down this wall by sharing scientific knowledge with the rest of society.

The ideological dominance that produces and reproduces the wall of science was also a core thematic discussion for the Zapatistas at ConCiencias. The Zapatistas see capitalist science as an extension of religion's universalizing logic onto reality (SupGaleano, 2017a). This totality of authority and certainty informs what the Zapatistas call scientism. For them, scientific discourse is a manipulation of logic that gives false hopes to those who adhere to its ideology. A science for humanity, on the other hand, does not seek to channel people's desperation, but rather to dissuade people from hope because "anyone who ceases to hope can begin to act" (SupGaleano, 2016i). Capitalism's project of creative destruction to bring about a transformation from religion to science carried with it the same logic that promoted a universalizing understanding of what science is, in tandem with the progress economic development could bring as a force of modernization.

This ideological component of domination in science has consequences for how ideas are generated through this system of knowledge. The scientific institution under capitalism, as Edgardo Xilotl pointed out in his presentation, is prone to reductionism at the level of theory. Natural science extrapolated from the study of mechanics "the simple change of place of bodies in space" (Hessen, 2009). This occurred as a result of the subservience scientific development played to mechanics, which accorded with the economic interests of the bourgeoisie who were mostly concerned with war and industry. Consequently, the science of today sees nature as an indissoluble whole that is composed of gears and levers (Lewontin, 1991). A mechanistic conception of science is comparatively like the life-cycle in norm studies. In a norm's life cycle, it emerges from an entrepreneur who has strong feelings toward a desired behavior that should change, a

cascade follows where many states adopt the desired behavior, and finally the norm becomes internalized by the states (Finnemore & Sikkink, 1998). Such a mechanistic logic around norms, conceived as a thing, removes all consideration for how the norm is constructed, and the power involved in the construction of meaning through a single epistemology (Epstein, 2008). This aspect of the relationship between norm studies in International Relations and capitalist science will be discussed later in more detail.

Capitalism's ideological domination in science is reflective of its manifestation in Mexico's historical context that was discussed earlier and is predicated on its separation from value. Under a capitalist system, the false neutrality of science establishes a set of relations to dominate and exploit those subjected to its logic. Indeed, the institutionalization of science has been predicated on its origin outside of human social struggle, and a transcendent truth that is beyond human agency (Lewontin, 1991). Capitalist-science, therefore, has behaved as an intermediary institution between the public and private spheres of liberalism, just as the Catholic Church did so for centuries (Abbott, 2016). The objectivity applied in the scientific method, from philosophical positivism, is fundamentally transfixed upon an external reality. The positivism espoused by Gabino Barreda and Porfirio Diaz believed this objective logic could explain reality independent of it. Objectivity, meaning a thinking distinct from emotion, instills passive reflections that cover up the struggles that led to the value-free conclusions (Levins, 1990). Therefore, this principle of modern scientific discourse is built on a foundation that does not respond to conditions of the reality people face.

Lastly, a few of the presentations at ConCiencias discussed the form that the wall of science takes in Mexico, which can be explained through its connectivity with global capitalism. It is the flow of money into research and education in Mexico that reflects the systemic trends of capitalist science. Research participant O mentions how Mexico has a very meager science budget, and where it is applied it has problematic implications. In her presentation, Fabiola Mendez describes how Mexico's National Council of Science and Technology (CONACYT) shares its resources with the Secretary of Marines, Navy, Defense, and the Interior Ministry (2017). Her synopsis for the state of research funding in Mexico is trending toward a consolidation of the union between the military and academia. Something that was discussed as both a historical and contemporary phenomenon in scientific research. At the same time, Gabriella Piccinelli Bocchi



mentions how Mexico's national budget for research is increasingly being defunded (2017) in favor of private research and funding. As a suggestion for where to trace the path of this trend, and a possible means to combat capital's dictation of research, Natalia Mantilla Beniers reflected on the objectives of the national laboratories, whose emphasis resides in financial sustainability. In doing so the laboratories are strengthening partnerships with private businesses to strengthen their funding (2017). Taking a position against the funding wall in Mexico, by evaluating Mexico's national research objectives, performs a check on the reproductive force of capital in scientific institutions. Starting with the questions that people ask of science, and combatting the influence of capital on this

#### 5.4 ConCiencias: A Counter-Hegemonic Response to Capitalist Science

In 2016 and 2017 the Zapatistas convened an *encuentro* on the implications of capitalism for science, and whether another type of science is possible, a science for humanity. The Zapatistas created a forum that is more than its spacio-temporal limitations by curating a website to disseminate this information as a process of dialogue. ConCiencias is not just a conference with presentations and an audience, but a conversation that will take place over time. To encourage the continuation of this discussion, the Zapatistas asked their participants and observers at the conference to take what they learned during these events to their context and have their own conversations about the possibility for another science. ConCiencias manifests as a space for teaching and learning that brings together people from different contexts, levels of expertise, and ways of knowing about the world. Its challenge to the hegemonic project of scientific agriculture is its embrace of difference for those who participate in the conference.

ConCiencias demonstrated that science cannot remain neutral or objective because it sits within a reality in which the capitalist system is dominant. The walls of capitalism are not in science, science is the wall. The wall of science takes many forms through its relationship to capitalism through agriculture, military, education, and public health. This *encuentro* demonstrated that the questions asked of science in its institutional form reflects the extent to which profit can be generated for capitalism, and that this motivation puts limits on what science can achieve for society. As a reflection on the wall

of science in Mexico ConCiencias problematizes how scientific research and education in Mexico is not prioritized for its domestic application, but for the profit of corporations, or the interests of countries in Europe or North America.

ConCiencias is a direct response to Mexico's ambition for development, through a science that is modern, that fits into the model of the US and Europe. As mentioned in the previous chapter, Mexico has a historical relationship to science that began in the 19th century and has had a long relationship to agriculture since that time. ConCiencias addressed capitalist science as well as its application to agriculture. John Vandermeer's presentation in 2017 outlined how industrial agriculture functions, and what agroecology can offer as a response to capitalist science. ConCiencias is a response to capitalist science and its application to agriculture by demonstrating how these linkages form and manifest in the capitalist system. The conference presentations also offered some alternatives, paths forward, both for the Zapatistas and for those listening. Some of the presentations about specific topics like medicine, agroecology, or engineering give practices or techniques for autonomous science that can solve problems that directly affect Zapatista communities. Many other agroecologists at ConCiencias presented their applied research to offer the Zapatistas a means of improving their agricultural practices in Chiapas. ConCiencias not only challenged capitalist science but provided a means to develop science for autonomy.

## 6. Establishing Alternatives: Autonomy, Dialogue, and Seedbeds

*If you as scientists organize yourselves and stop selling your discoveries to capitalism, they won't continue to develop, because it buys your discoveries, your inventions – Delegates from la Realidad (EZLN, 2017)*

ConCiencias is not just a space to critique capitalist science. It is a process to disentangle what is useful and transformative about science from what is destructive. Therefore, ConCiencias is a space to build a science of resistance. The Zapatistas and participating academics at the conference propose that autonomous science has the power to transform the system of capitalism toward a world that is constructed for human liberation. The Zapatistas also provide a path for this knowledge to be transmitted beyond CIDECI, through what they call seedbeds, which can be thought of as seminars. In this way, the Zapatistas encourage those listening and participating in ConCiencias to build their own science of resistance by holding their own encuentros and constructing their own participatory science. As a path to bridge the gap between science and communities, ConCiencias is capable of starting a conversation to transform science from its institutional form to something practiced by people, through a mode of communication known as dialogos de saberes, or dialogue of knowledges. This concept was mentioned by some presenters at ConCiencias to embrace different ways of knowing and open a space of collective reflection that produces new ideas and meanings from what was originally proposed at the outset of the conversation about science.

According to research participant M, ConCiencias does not altogether represent anything particularly new as a forum for autonomous knowledge but is a coalescence of trends occurring in social movements across Latin America. This encuentro exists within a movement to decolonize knowledge, happening in the Global North and Global South. Some notable examples are the education work being done by the Brazilian Landless Workers' Movement (MST) or La Via Campesina (LVC). Research participant M also mentioned that MST asks radical questions about education and what knowledge counts, which challenges the location of where knowledge comes from in the Global North. Research participant X mentioned that LVC has developed dialogos de saberes, dialogue of knowledges, over the last few years, which has been instrumental to their internal cohesion as a group, and very rich for their theorizing about the production of knowledge. What makes ConCiencias unique is its critical questioning of science from the

perspective of a social movement. Research participant Q notes this effort to decolonize is in a concrete sense about the Zapatistas generating their own knowledge in an autonomous space, dislocated from the forces of capitalism. As mentioned before, ConCiencias is a forum to teach and learn about capitalist science, but it is also about building a new world in which many worlds fit. The Zapatistas want to understand what real science is by looking at its formation under capitalism generally, as well as the state of science in Mexico. The Zapatistas want to know how to build an autonomous science that builds on their practices and traditions, to take what is useful and leave behind what is not.

The Zapatistas are convinced there is an impending collapse waiting for the system of capitalism. The storm of capitalism is their metaphor to outline the coalescence of environmental, political, social, and economic crises in the near future that will lead to global catastrophe. They are not waiting for this impending collapse, but rather re-educating and re-organizing (Moises, pg. 75, 2016b) to prepare for what is coming. The Zapatistas are not dwelling on the past but thinking about the future. ConCiencias offers a discussion about capitalist science and it offers a path forward for supporters of Zapatismo to build new knowledge that can build another world beyond capitalism, which will prepare them for the impending collapse of the global capitalist system. Research participant L mentioned that ConCiencias was not just a space to critique science for its interpellation with capitalism, but also to express their gratitude and need for the work of the scientists at ConCiencias. The Zapatistas need science because it is the tool to transform their practices and build another world.

## 6.1 Autonomous Science

Science is a collective activity. It is done through social engagement between those in pursuit of a question about the natural world. This activity does not have to take place at the university, but should be something that is innately human, in the community. The Zapatistas, and those who presented at ConCiencias, promote science for communities and social movements. Another kind of science is possible that asks questions holistically, which is claimed for creativity, justice, learning, and equality (Mercer & Wainwright, 2016). The Zapatistas seek to learn from ConCiencias what scientists can offer to help build their autonomy. As mentioned by research participant O,

the Zapatistas take with them what they deem appropriate at ConCiencias and leave the rest. It is about constructing a genuinely radical science “one that is not neutral with respect to capital and the state but can fulfill science’s potential for liberation” (Wainwright & Mercer, 2016).

The promise Zapatismo sends to its supporters in Mexico and across the world is its example of the possibility that an alternative exists to the capitalist system of relations. Zapatista autonomy provides a space for self-organization that can put into practice a different set of ideas about how people can relate to one another, and how community should function. In this process of redefining a new set of relations, a new way of living, the Zapatistas discover what they need to make their organizing possible (Moises, 2017). As mentioned earlier, the Zapatistas need to fulfill the educational deficits its youth demands as well as produce knowledge that would enable them to continue their organizing work.

Not only is autonomous science a reflection of their internal demands, but this concept is also a response to the type of extension conducted by organizations like the Rockefeller Foundation during the Green Revolution. While at ConCiencias, SupGaleano performed condense political critique in allegories and extended metaphors. As a reflection on the experimental nature of development work, like the Mexican Agricultural Program SupGaleano proposes the hypothetical situation of traveling to another planet. Asking themselves what they would do, Subcomandante Galeano proposes to this hypothetical alien race “Don’t let us come to your world. If we haven’t resolved the problems that we caused ourselves, we will make the same errors again” (SupGaleano, 2017c). Indeed, the things discussed at ConCiencias, as a process of sharing, let the Zapatistas find what is useful for their organizing work. Rather than proclaiming that everyone follows their decisions for what they find useful, the Zapatistas say “everyone must take responsibility for evaluating what is useful in their situation and what isn’t” (Moises, pg. 312, 2016a). In this way, unlike the aforementioned practices of the Green Revolution, the Zapatistas do not wish to objectify their audience by telling them what is best, but rather inspire them to do what they think is right.

The science that the Zapatistas propose has to be constructed with “natural and hard sciences as its principle foundation” (SupGaleano, 2017c). ConCiencias is a forum to discern the intellectual principles of science from tradition, the tools to build another

world. The method of proof, identifying truth and falsehood, what constitutes rigor in scientific analysis is “unexciting, and differentiates it from the intellectual laziness” (SupGaleano, 2017c) of discursive practices. In Subcomandante Galeano’s earlier writings he was concerned about the disjuncture between science and practice, which he sees as a “struggle between materialism and idealism” (Henk, pg. 260, 2016). However, the Zapatistas do not dismiss theory or science. Research participant H was very moved by the words of Subcomandante Galeano when he said, “you scientists you don’t appreciate what you are doing but what you are doing is so important and we need you. We need to find ways to dialogue with you.”

In terms of how the infrastructure for an autonomous science should look, the Zapatistas want their own universities in Chiapas. They do not want to travel elsewhere in Mexico or in the world to pursue research or higher education. US businesses conduct research and invest in facilities in Europe to strengthen each other’s scientific capacities, but they do not do this in Mexico or Latin America (Galeano, pg. 246, 1973). Research participant O noted Mexico’s scientific research does not benefit its domestic population, but international corporations and trade. ConCiencias taught its observers that real scientific research is not wedded to its institutions, but rather lives in ordinary people (Mora Flores, 2017). Zapatista education, as they mention what it should be, is a desire for knowledge rather than an exploitative endeavor (SupGaleano, 2017b). Science is more than a method for producing things, but more so a production of ideas (Rose, 2017). Biohacker labs like DIYBIO Barcelona, where presenter Frederic Fyon taught a workshop on bacteriophages, make possible a participatory science for common people who can build equipment and modify their function according to their questioning (2017). In this way autonomous science is at once an education for those who participate as well as a path to solving the problems of the community where it is practiced.

ConCiencias also demonstrated that communication is a crucial element for building autonomous science. A common theme among presentations from academics at ConCiencias was a need for an open science. Mariana Patricia Jacome, in her presentation about what it means to be a scientist, describes that the website Sci-Hub offers a way to circumvent the reproductive forces of capitalism that situates knowledge within a small community of researchers (2017). The medium for communicating scientific knowledge is done through papers in peer-reviewed journals, but this becomes

limiting for who can access this information because the massive infrastructure, meaning storage, software, and peer review management, requires capital to maintain and consequently to access (Benitez & Vazquez, 2017). Maintaining an insular communication network of scientific knowledge, one that reproduces science through capital, avoids a base of critique for what science does and how it is done (Sanchez Ramos, 2016). Opening science to communities, opens science to critique, and forces its objectives to reflect the communities where it is done. In order for this to happen, a rebellious science must take shape, which begins with what Alfredo Ramirez Olvado proposed at the end of his presentation, for people to form a crack in the structure of capitalism by disobeying regulations and norms in science (2017). The first of these norms to break are the limitations by scientific publishers to research articles, which can be done through the use of websites like Sci-Hub.

An autonomous science must be organized differently than its institutional counterpart. The type of organization discussed at ConCiencias emphasized the importance of cooperation and collective work to perform good science. More than criticizing the destructive capabilities of competition in capitalist science, cooperation was argued as an innately human quality that should manifest in a collective science. Frederic Fyon describes how humans evolved from hybridizing with other species, symbiosis, which is a result of cooperation (2017). Mutual aid, what Peter Kropotkin describes as “the close dependency of every one’s happiness upon the happiness of all” (1902, pg. 6) is as crucial to organizing as it is to the evolution of humanity as a species. An autonomous science is a struggle for life more so than a competition for profit. An independent and organized academic community that is connected with the rest of society is central to constructing a science that opposes a capitalist science based on competition. Gabriela Piccinelli Bocchi describes that collaboration gives scientists ownership of their objectives and the questions they ask, which builds research that is linked with society, and as a base of knowledge (2017).

From an epistemological standpoint, an autonomous science that focuses on the immediate problems of the community must embrace complexity by looking at the environment holistically. One of the issues of capitalist science is its reductive certainty and neutrality, which becomes problematic when it is not possible to make conclusive results (Ramos Fernandez, 2016). The goal orientation of capitalist science, dictated by

profit, applies the purportedly disinterested judgment of scientists to provide information for decision-making (Ravetz, 1999), which ignores the lack of certainty in scientific work. As a principle of organization, autonomous science must pay attention to the emergent properties of a whole system. Rather than ontological categories, a focus of both the study of science, and the way it is done, should emphasize how things are ordered (Laughlin, 2005). Laughlin points out that people, just like reality, are ordered according to an organization. Therefore, it is important to organize science, so it functions not for reductive certainty, but for the struggle of consensus through emergent ideas. This means the base of scientific research must originate in communities, where questions derive from collective reflection among people, rather than the forces of capitalism.

ConCiencias concluded that an autonomous science must embrace certain values, abandoning the idea of objectivity as value-free, but rather choosing the right values. In her presentation, Gertrudis Hortensia González Gómez outlines how scientists bring their values into their research, which should be a function of not just the material transformations that are produced as outcomes, but also reflective of the organization of people that is also a political exercise of power (2017). From a feminist perspective, science is a production of social priorities and needs, which means as a reclamation of science for liberation it should abandon the distinctions between what is purely objective and subjective. Science should open to other ways of knowing to “offer the possibility of moving towards a more complete form of knowledge” (Fee, pg. 31, 1982).

## 6.2 Dialogo de Saberes: Bridging Science and Communities

Building an autonomous science requires that knowledge is communicated effectively between scientists and communities to construct something that is useful for the social purposes of those who apply science to their daily lives. There must also be a way to form dialogue between sciences that can build solutions to problems through collaboration. Many presenters at ConCiencias emphasized the importance of communication, through a method of communication known as dialogo de saberes, to build interdisciplinary sciences, better education systems, and to put the sciences back into communities. Dialogo de saberes is a way of communicating across ways of



knowing that acknowledges each cultural representation of reality is equally valid. An approach of this kind requires that scientists and community members can generate consensus around a common problem and ask questions that build around the experiences of the people who are applying it. Research participants X and L mentioned they have made progress in their work with school gardens using *dialogo de saberes* to convey complex scientific ideas, while also learning from students, which gave them insight into how make the difficult bridge between scientific knowledge and communities.

*Dialogo de saberes* is a process for collective reflection that constructs emergent meaning horizontally across differences of context, personal experience, and epistemology to surface with re-contextualized knowledge and meaning that forms the basis for collective action and new processes (Leff, 1999). In his presentation, Jaime Morales Hernandez describes that a dialogue of knowledges is a pathway toward science that is truly interdisciplinary (2017). It breaks down the barriers between scientific disciplines, as well as between scientists and ordinary people, to look at issues from a holistic perspective. Below is a definition of *dialogo de saberes* from Peter Rosset and Maria Elena Martinez-Torres:

A collective construction of emergent meaning based on dialog between people with different historically specific experiences, knowledges, and ways of knowing, particularly when faced with new collective challenges in a changing world. Such dialog is based on exchange among differences and on collective reflection, often leading to emergent re-contextualization and re-signification of knowledges and meanings related to histories, traditions, territorialities, experiences, knowledges, processes and actions. The new collective understandings, meanings and knowledges may form the basis for collective actions of resistance and construction of new processes (pg. 4, 2013).

*Dialogo de saberes* is seen to some as a driver behind the advancement of agroecology as a direct response to the Green Revolution (Martinez-Torres & Rosset, 2014a). It is a response to the hegemony of scientific rationality that, as a universalizing logic, relegates other ways of seeing the world invisible (Eschenhagen, 2008). As a hegemonic project, scientific agriculture generates consensus around a way of thinking

that privileged the economy and rationality under a single epistemology, a cosmovision, which excludes other local knowledges from visibility (Martinez-Torres & Rosset, 2014b). Dialogo de saberes challenges what are known as monocultures of knowledge, otherwise thought of as an instrumental rationality applied through science, that build consensus within populations or territories to shape the uniformity of production and extraction of profit (Rosset & Martinez-Torres, 2013). A discourse that transcends different epistemologies, like dialogo de saberes, abandons the assumption in capitalist science that problems are simple enough to be solved from the analogy of a textbook (Ravetz, 1999), which means opening up to the emergent meaning in other rationalities found in the identities of people and their traditions (Duval, 2006). The consensus that develops from encounters between different epistemologies produces new and open ideas, where the outcome is a transformation of previous, absent, knowledge toward something new and open.

Dialogo de saberes, as a living discourse, is an act of creation rather than a transmission of ideas from a subject onto a passive recipient (Freire, 2005). It is a process where different cosmovisions are shared horizontally, as a decolonization of knowledge, where understandings of the world that were once absences are reflected upon collectively to shape meaning that is at once liberating and transformative (Leff, 2014). Discursively, it is a subject-subject relationship that reflects a set of social relations that are level, which is also defined as horizontalidad (Martinez-Torres & Rosset, 2014b), where relationships are developed through inclusivity and the embrace of difference. This is evident in the Zapatistas' practices, where they seek to propose rather than impose, their thoughts and actions in their organizing work.

A dialogue of knowledges is an emancipatory mode of thinking, originating with social movements in Latin America, which coalesces their defense of territory and natural resources with their desire "for democracy, autonomy and self-management" (Leff, pg. 95, 1999). In La Via Campesina, DS acted as a space to reflect the everyday experiences of its members to identify "a latent tendency of peasants and family farmers to apply elements of the dominant model of industrial agriculture on their own farms" (Martinez-Torres & Rosset, pg. 8, 2013). In this way, ConCiencias por la Humanidad can be thought of as a dialogue of knowledges that brings together scientists across many different disciplines, into conversation with people from many different walks of life, to

build and transform an autonomous science. ConCiencias departs from building theory in the epistemic community of Homo academicus (Leff, 2015), and breaks with hegemonic understandings of science from its capitalist form.

ConCiencias as a dialogue of knowledges, is a practice of dialogic communication, which is a process of mutual becoming through subjects. It eradicates the boundary of self and other as a relationship among individuals that builds subjectivity between them through language (Rule, 2011). John Vandermeer pointed out in his presentation how a dialogue of knowledges is a foundation for constructing science, as it is fundamentally a social construction of knowledge (2017). As a tool for confronting boundaries of difference, dialogo de saberes is undergirded by what is called an environmental rationality, where a “counter-hegemonic globalization” is constructed out of differences for the purpose of liberation (Leff, 2012). It is a process of social transformation that transcends knowledge within the objectivity of a single interpretation of reality that opens toward the other in an exchange of negotiation and understanding (Leff, 2012). As a method dialogo de saberes can be thought of as a collective hermeneutics, where a space is built to confront difference through the histories of those involved to “deconstruct and reconstruct stories about doing, knowing and experiencing” and discover how to pose and approach a problem (Ghiso, pg. 10, 2000).

As a space for dialogo de saberes, ConCiencias has constructed a normative frame of a science for humanity, which draws from multiple scientific disciplines, as well as shared experiences from scientists and Zapatistas about the impacts of capitalist science on their worlds. Scientists from Europe, North America, and Latin America spoke about science from their respective sites of experience, and knowledges of science to build an emergent normative frame that is produced from the absence of traditional knowledges, as well as other critical perspectives of science. Zapatista students and organizational members reflected on their relationship to the capitalist system, and their relationship to science in their organizing work. As a process of dialogue, some topics of discussion developed between the two sessions of ConCiencias in 2016 and 2017, like the definition of science, and the idea for what an autonomous science can become. Moving forward, dialogo de saberes persists in the autonomous municipalities of Zapatista territory, where the findings from ConCiencias will help build an autonomous science. In the event of

another ConCiencias, it will be possible to see how autonomous science has taken shape, and what still must be discovered to continue building the concept.

In this way, social movements like the Zapatistas offer a path for reconstructing normative frames that reconcile difference through interaction, which is not homogenizing through one interpretation of reality, but transformational between multiple realities. In terms of the science discussed at ConCiencias, those who presented in dialogue at the encuentro disentangled the current practice of science “as a means of controlling what is permitted to count as knowledge” (Skinner, pg. 10, 1990). ConCiencias crosses the boundaries between different realities, those absent from the hegemonic discourse of capitalist science, and from this dialogue emerges a new science. ConCiencias, as an enactment of *dialogo de saberes*, contributes to what are called epistemologies of the South, where thought is created on the line between one way of knowing and another, which allows those who face oppression to “represent their world as their own and in their own terms” (Souza Santos, pg. 1, 2018). This feature of ConCiencias is the enunciative alternative that is applicable to critical norm research, for its ability to escape the limitations of critique from within a Eurocentric epistemology, and create new ideas through the collective reflection of many oppressed peoples whose voices remain absent from dominant discourses.

### 6.3 Seedbeds: Where Knowledge is Germinated

One concern of this study is to determine how the knowledge at ConCiencias has socialized internationally, to what extent this encuentro has developed a conversation around an alternative interpretation of science. A referent example of where this has occurred in the past is the People’s Global Action Network, which began as a forum inspired by Zapatista “encuentros” for radical social movements to coordinate their struggle, in Mexico and Spain (Kidd, 2003). It is an expectation that ConCiencias might have the same impact internationally. Therefore, analyzing this conference is partially identifying the discourse enacted around an alternative science, as well as how this discourse can reflect on how norms are socialized internationally. ConCiencias is a site of discourse from the bottom up, where a social movement dialogues with international scientists, instead of from the top down.

The encuentro Critical Thought in the Face of the Capitalist Hydra, held in 2014, proposed a vision for what would follow the event, which the Zapatistas hoped would be more seminars by its attendants. Subcomandante Galeano and Moises coined the term “seedbed” when referring to their seminar, to imply that the knowledge and wisdom shared at the event were planted seeds that they would choose to cultivate based on their relevance (Moises, pg. 298, 2016b). At ConCiencias, the call for more seedbeds was also communicated by the Zapatistas. The discourse about an autonomous science builds Zapatista scientific practice in Chiapas, but it also proliferates autonomous work elsewhere through the participants and observers at ConCiencias.

The Zapatistas do not see ConCiencias as a single event, but a process of dialogue that will occur over time. The ConCiencias website is a location for this dialogue to take place across geographies and contexts for a critical dialogue of science beyond each spatiotemporal conference event in 2016 and 2017. ConCiencias brought together many rebel scientists from around the world who actively engage with Marxist, feminist, and agroecological approaches to science. The directive from the Zapatistas, for researchers to organize amongst themselves, is a point of active reflection for those interviewed for this study. Research participants P and L are actively working on ways to develop educational workshops for Zapatista students. Research participant S mentioned in his conference call with supportive academics in North America that researchers were thinking about ways to best facilitate Zapatista education and organizing work related to science.

The academics and activists who were conference participants or observers were involved in research collectives with like-minded academics, activist groups, or working groups. Among the participants and observers, there were researchers from the Collective Alterius, Free Radicals, Science for the People, New World Agriculture and Ecology Group (NWAEG), Agroecological Research Collective (ARC), and potentially many more. Research participant P is involved with Science for the People, an activist group that began in the US in the 1960s in response to the Vietnam War, whose organizing principle involves disentangling capitalism as well as militarism from science. Research participants X, L, and P are involved with the NWAEG, which formed as an agricultural and ecological arm of Science for the People. These groups aim to promote anti-capitalist science that is predicated on criticism of the existing institutional model and engage with

participatory science in communities to challenge the dominant and oppressive forces of capitalist science.

When the Zapatistas told scientists to go back to their communities to organize, research participant M interpreted this directive as a call for scientists to not just do research on grassroots movements from an external perspective, but to organize in collectives at universities or faculty departments to discuss what science can look like from the grassroots. Political organizing is one way that some participants at ConCiencias have heeded the Zapatistas' call, where in one case Research participant Z conducted a reading group after the first ConCiencias for Critical Thought in the Face of the Capitalist Hydra I as part of his Marxisms Collective. After the second ConCiencias he did an episode about the encuentro for a podcast that reflected on his experiences there, and what people can do to make the changes the Zapatistas are calling for.

Participants at ConCiencias not only chose to organize to educate and discuss political ideology, but others performed their activism through academic research. Of the research participants in this study, a few are conducting collective work to build on what the Zapatistas started at ConCiencias through research methods that are more collaborative with the communities they serve. Research participants O and L are consolidating the research they discussed at ConCiencias by working with communities through participatory-action research (PAR) to put science to work for the people it serves. Participatory action research is a co-creative process that incorporates the knowledge of non-researchers to become active partners in science (Mendez, 2017). PAR makes useful research for communities by lowering the barrier between scientific knowledge and non-experts, which is a useful tool for building a collaborative science that is not so beholden to the forces of production in capitalism.

As is evident from the results at ConCiencias, this encuentro invigorated the existing work being done by scientists at ConCiencias, but it also inspired new organizing efforts. A group of observers at ConCiencias formed a collective in 2017 in Barcelona, Spain called ConCiencias Barcelona. The collective convenes every two weeks to discuss topics inspired by ConCiencias por la Humanidad. Thus far, the group have published their discussions about the role of the university in capitalism, feminist approaches to science, and mental health issues in academia. The platform of this group, as stated in their manifesto, is to consider science as an “intrinsically human activity” (ConCiencias

Barcelona, 2018) that is socially transformative. The group's online presence consists of a website, [concienciasbarcelona.wordpress.com](http://concienciasbarcelona.wordpress.com), as well as a Facebook page. In February and March 2018, the group held public fora that were recorded and posted on YouTube.

It remains to be seen how ConCiencias will continue to build narratives about an autonomous science into the future. As an ongoing process, this encuentro is a space that will foster interaction between different ways of interpreting science to build something that is fundamentally different from the capitalist science that is currently practiced in universities and research institutions. As mentioned earlier, according to the research participants at ConCiencias, it is uncertain when or if there will be another ConCiencias in Chiapas. If another ConCiencias is to occur it will be interesting to see how the process of reflection takes place, which issues are returned to, and whether there are new participants or topics of discussion that enter the dialogue.

#### 6.4 Another World is Possible

ConCiencias is a site where the Zapatistas point the finger back at academia, and ask what about you? The scientists who presented at ConCiencias offered reflections on their work and where it sits in the capitalist system, but some who presented at the encuentro offered more. This chapter outlined the offerings from some of the conference presenters that went beyond a critique of their discipline to offer constructive ways of building an autonomous science. A science built by the community and for their benefit points out the extractive capability of academia to accumulate knowledge rather than solve the problems that immediately face the people it proposes to serve. ConCiencias is a forum to build a science that works alongside communities instead of benefiting from the knowledge they produce for economic benefit.

The principally transformative moment in the Zapatista movement was their humility to abandon their initially ardent philosophy to listen to the indigenous communities in Chiapas. In this process, the transformation in the substance of their discourse was predicated by its form, they learned to listen which meant they were learning how to express themselves verbally, “not just explaining things in a different way but thinking them in a different way” (Holloway, 1998). The type of discourse the Zapatistas engage with in their communiqués, especially at ConCiencias, dictates not

prescriptive behaviors but covert meaning. When they explain their autonomous methods, and how to conduct the science they need, they say “you need organization, you need agreement, you need work, you need to struggle, and you need practice” (Supgaleano & Moises, 2016a). They tell their listeners “you must go out and organize yourselves” (Moises, pg. 312, 2016a) in their own setting without telling listeners how to do it. The Zapatistas have been building a conversation with the international community since 1994, and in that time, they have invited their supporters to follow their own paths, rather than to copy Zapatista practices (Munoz Ramirez, 2008).

The Zapatistas traversed into Chiapas in 1983 as an army, the FLN, and they came out in 1994 as a social movement, the EZLN. Marcos describes this situation where their revolutionary philosophies were met with the reality of the local indigenous communities, which led to “new and immensely rich theorization of revolutionary practice” (Holloway, 1998). ConCiencias, as a space for a dialogue of knowledges, embraces what is known as dialogic communication. The symbiosis of theory and practice produces a dialogic orientation in their discourse where “the dialectics of the object are interwoven with the social dialogue surrounding it” (Bakhtin, pg. 278, 1981). The dialectic between theory and practice reflected in their contemporary discourse leads to suggestion rather than declarative prescriptions, and in doing so reflects the processual nature of the Zapatistas’ organizing work as well as encuentros like ConCiencias.

In their encuentros, the Zapatistas do not prescribe thought, but rather pose questions. They explain their assessment of the world, but do not proclaim it to be truth, just their interpretation. Zapatista discourse from their communiqués at ConCiencias call for more seedbeds across contexts. The norms proselytized by the Zapatistas through their encuentros are their method of provoking thought. They seek to question and to add perspective from which people can construct their own understanding. Their norms can be thought of in this way as a method rather than a conceptual entity. It is embedded in a way of thinking that is not prescriptive as the only way of knowing, but as what they have found useful in their critical reflections from constructing autonomy.

The Zapatista struggle for autonomy in Chiapas is the construction of another world outside capitalism. Their origin as a revolutionary army and their evolution toward a social movement is a testament of their power to reflect and transform their own philosophical grounding toward something that is emergent and continually changing.



ConCiencias por la Humanidad is a product of the Zapatistas' organizing work, and their ability to listen to the demands of their communities, both of which demand an understanding of science that can educate their students and produce the knowledge they need to continue building autonomy in Chiapas.

## 7. Conclusion

ConCiencias is a process of dialogue and a space of collective reflection among actors from all walks of life. Scientists, activists, students, residents of Chiapas, and Zapatistas sit together in CIDECI thinking and reflecting about capitalism and science. It is a conference with presentations from academia that nuances the relationship between capitalism and science to produce thought about what an autonomous science might look like in practice. ConCiencias as a popular academic conference is an anomaly in the context of academia that, as a space, presents interesting perspectives about the contributions social movements can offer to theory in International Relations. Consequently, ConCiencias presents an insight into knowledge production that demonstrates important contributions which result from collaboration between researchers and society.

As a dialogue between scientific disciplines, as well as between researchers and ordinary people, ConCiencias is a process of teaching and learning for everyone involved. If seen as a process, ConCiencias is a challenge to the model of extension and education championed by Mexico's scientific and educational institutions. ConCiencias, as a response, starts with a set of questions and builds consensus around multiple cultural interpretations of reality. The Green Revolution is a monoculture of knowledge that promotes scientific explanations and technological solutions as answers to the underdevelopment of Mexico. The concept of dialogos de saberes developed in agroecology can offer an analysis of communication that is emergent (Martinez-Torres & Rosset, 2014a), which can be useful for norm studies in International Relations. A dialogue between an ecology of knowledges can bring transformative power to theory and practice, by applying participatory action research to the literature by applying a plurality of methods and forms of knowledge.

ConCiencias disentangles capitalist science, present in scientific agriculture, from what science could possibly be under a different system of relations. Normatively, the Zapatistas challenge an epistemology of science that developed in Europe and the US through positivism, which was introduced in Mexico by Gabino Barreda. Analyzing Mexico's historical relationship to scientific agriculture depicts how the normative ideas about science took shape in the country's research and education, which coincided with

Mexico's drive toward national development and industrialization. Studying scientific agriculture as a hegemonic project outlines the origin of dominance, which took place domestically in Mexico after the election of Benito Juarez and evolved to include the Rockefeller Foundation and the US government in the early 20<sup>th</sup> century.

This study's analysis of Mexico's history in relation to scientific agriculture demonstrates this hegemonic project was constructed as the product of different layers of history. It formed out of longer historical processes, Mexico's institution of positivism, shorter term processes like the Cold War, and events such as Henry Wallace's trip to President Camacho's inauguration. Such a distinction of processes gives importance to the changes that take place as a result of a system of relations, and others that are contingent events. In this narrative there were also conjunctural events that brought deeper historical changes to the surface of history such as the Mexican Revolution and the signing of NAFTA. These events presented a major shift in the hegemonic project of scientific agriculture, where the revolution transformed scientific agriculture from a tool of oppression into a revolutionary activity, and later its complete rejection by the Zapatistas at the signing of NAFTA. Across time these distinct processes coalesce into a seemingly insurmountable and stable structure of domination, manifest in the normative framework of scientific agriculture.

This study's historical approach demonstrates that the structure of domination behind scientific agriculture is not simply the Rockefeller Foundation or the US government but originated as the result of mutual interests from the Mexican government and organizations in the US. Critical narratives of the Green Revolution position the Rockefeller Foundation or US foreign policy as mainly responsible for the institution of scientific agriculture in Mexico, but this is more simplistic than the dynamic construction of hegemony outlined in this study. Such a historical approach in this study also gives a more complex understanding of the role played by the Rockefeller Foundation and the US government, which explains how these organizations changed over time as the result of internal actors and external events. Focusing on the internal behavior of these organizations and their reaction to historical events helps understand how structures of dominance form, which avoids their reduction to homogenous, static actors. The analysis of the complexity within historical narratives of the Green Revolution affirms what is also said in contemporary historiography of this paradigm. This study demonstrates that

studying norms through a *longue durée* lens gives a more dynamic understanding of hegemony, its role in the constitution of norms, and its exertion of power across time.

ConCiencias builds a narrative around a science that works for communities, for people, by speaking about ways to democratize science in practice for the benefit of many, not few. The participants at ConCiencias took a critical position to science from their respective areas of expertise to explain how capitalism affects their work and their discipline. The Zapatistas gave their reflections about the relationship between capitalism and science, which developed out of their autonomous practices. ConCiencias, as a process rather than a spatio-temporal event, continues to build an alternative conversation around science by acting as a space of critical reflection for researchers, activists, students, oppressed peoples, or anyone who is interested. The outcome of ConCiencias for science is that once outside of institutions it can begin to ask questions that directly affect people, and lead to transformative solutions, outside of productive relations, that open the possibility for what is beyond capitalism.

ConCiencias gives critical reflections for the study of norms in International Relations by demonstrating the theoretical contributions that can come from social movements. If it is the case as ConCiencias points out, that the most credible and valid scientific truths remain open to falsification, then this is perhaps the most important lesson for the study of norms in International Relations. Norm studies should be more sophisticated in their analysis, which means that instead of focusing on the content of the norm it should emphasize the process of a norm's development, and how the norm transforms in this process. This conclusion affirms what has already been mentioned by critical norm research. As mentioned at ConCiencias, the natural world is incomplete and perpetually changing, which is also the case for the social world as well. Andrew Abbott suggests that instead of focusing on what behaviors are right or wrong, researchers should theorize a set of rules for change (2016). The value in itself is not only what is important, but also how to arrive at that value. An open system of communication can be the starting point for theorizing rules for change. Meaning-making practices occur as a process through dialogue.

This study will conclude with some theoretical reflections from ConCiencias for critical norm research. The first contribution from ConCiencias is to position conventional norms as a capitalist-scientific project. A critical reflection of capitalist

science helps inform how the study of norms, as a method, is situated within capitalism. The second contribution is a mode of communication that emphasizes dialogue as a liberating path to construct norms, and consequently the theoretical contributions social movements can make for the study of norms in international relations. The Zapatista communication at ConCiencias, through a dialogue of knowledges, and their other encuentros demonstrates a possible alternative for the construction of norms in International Relations.

## 7.1 Capitalist-Scientific Norms

Science is a social activity. As an institution it builds from productive relations, which dictates how the problems from these relations will also be problems for science (Hessen, pg. 49, 2009). ConCiencias performed many roles in that it was critical to the way science is done in Mexico, it offered novel research from academics, and disentangled its explanatory role from its ideological function. The problem the Zapatistas pose, of science as an institution is helpful for understanding the place of norms in International Relations. This is possible by historicizing science, which can explain not only what questions science asks, but also help norm literature reflect on its methodological assumptions and how it fits into scientific ideology. Additionally, analyzing the methodological choices of conventional norm literature can help understand the purpose it serves, that of a modernizing project.

Approaching the normative dimension of science tackles both the destructive and productive modes of capitalism. Capitalist relations expropriate wealth from those who produce it by recuperating the functions that reproduce life, namely the family, subsistence agriculture, and education into productive labor to reproduce the system of capitalism (Midnight Notes Collective, 1998). The spaces capitalism develops are normative in that they establish relations through political actions, but this inevitably influences the physiology of those impacted by this system (Mora Flores, 2017). There are direct human consequences that result from the material and ideological forces of capitalism. The nation-state, under liberalism, constructs norms in distinction from facts, according to Jurgen Habermas, to allow its ideology to claim exception from other forms of violence (Povinelli, 2018). For proponents of liberalism, the ideal-norm enables action

without repercussion because it constructs norms as just, or if bad, unintentionally so. The Zapatistas are aware of this history as SupGaleano mentioned during ConCiencias that the sword was modernized, and religion was replaced by capitalism (SupGaleano, 2017a). This means the construction of ideology under liberalism has internalized repression through the ideas people withhold about how they interpret the world.

The explanation for causal effects in science also resembles the issue of agency in conventional norm literature. Charles Darwin's theory of evolution arose from the assumption that organisms are unidirectionally subject to their environment. In science, this means the world is distinguished between the internal rules of the organism and the external rules of their environment, which then divide into individual components down to the atom (Lewontin, 1991). If this logic of causality is extrapolated from science, it mirrors contemporary ideas about society composed of individual parts. This poverty of interaction between the environment and organism resembles the agency-structure debate in the study of norms, which is possible to resolve through a study of process. Rather than reductionist comparisons norms should study the emergent properties of a system, which are properties of the components in a whole, but is not predictable based on a study of these components (Salt, 1979). The social world, like the natural world, is incomplete, unfinished.

Perhaps the Zapatista organization of autonomy is more attentive to the emergent properties in their system. Subcomandante Moises claimed in a talk at ConCiencias that the science practiced by the Zapatistas that of autonomy. Organizing through local governance, in the words of Subcomandante Moises means "the compañeros are putting science to work in this act" (2017). This emergent quality of the Zapatistas' autonomous practices is reason to interpret a dialogue such as ConCiencias with a critical eye to see where norms are being constructed outside of Western institutions in the Global North, and where theory can be produced from social movements in the Global South.

## 7.2 Dialogic Norms: An Instrument of Liberation

The current literature on norms in International Relations traces the path of ideas in international politics as a means to understand the status of relations between international and local actors around the globe. Critical norm research reflects on the

methodological and ontological assumptions of norm studies in International Relations to identify the hidden relations of power between the Global North and the Global South through discursive tactics. It is a method of deconstructing the relationships between, international organizations, nation-states, and local actors to identify where processes of dominance are produced and reproduced through the mechanisms of international politics. There must be more that can be said about the way political actors in the Global South are challenging structures of dominance in international politics than through discursive tactics. Certainly, actors in Latin America, Africa, and Asia are not passive recipients of the political forces that are imposed upon them, but their practices may also not necessarily be reflective of the Western perception of reality that critical theory applies to the actions of resistance in the Global South.

ConCiencias por la Humanidad, a science for humanity, is a conference that is one manifestation of resistance from the Global South that not only deconstructs the cognitive imperialism of Western science, but also offers a path to reconstruct a science as a tool of resistance from the Global South. In order to do so, the multiple cultures, histories, identities, and knowledges of those at the conference are acknowledged and reconciled to produce a liberatory and emergent understanding of science that is transformative from its dominant Western manifestation currently practiced around the globe. ConCiencias, as a case, offers the possibility for social movements to be a site for future studies in critical norm research. Originating from the masses in the Global South, social movements can give insight to the study of norms in International Relations where knowledge is produced by building consensus around norms through the embracement of differences. ConCiencias ultimately demonstrates that social movements are a site for the generation of theory from within the Global South, which opens the potential for International Relations to conduct research with methodologies that are less extractive, and more reflective of reality. Conducting critical norm research alongside social movements in the Global South gives the opportunity for not only the denunciation of the way knowledge is produced in international politics, but also how alternatives to this knowledge is produced from the grassroots. Critical norm research can move beyond criticism from its location in the Global North to studying how emergent processes of norms are being constructed in the Global South.

### 7.3 Future Research

The Zapatista Movement of National Liberation, as an autonomous project, is one to promote freedom through the creation of tradition without forcing it on anyone or closing it off to others (Renique-Poole, 2014). Since ConCiencias is a space of DS, enacted by the Zapatistas, it provides a direction for future studies in critical norm research to understand alternative nodes of knowledge production. The concept of *dialogos de saberes* is a site for future research in critical norm studies, and its potential to build collective understanding that confronts power structures from the location of social movements. Participatory action research (PAR) would be a useful tool for understanding norm emergence and change in spaces where social movements communicate about collective ideas and values. As a methodology, PAR gives norm research the capacity to eradicate the boundaries between the Global North and Global South by bringing bottom-up processes of those conducting resistance into visibility and looking into the co-creation of knowledge outside the Western canon. This work is already being done from the standpoint of agroecology through La Via Campesina's Nyeleni Declaration (Martinez-Torres & Rosset, 2014) and in geography, through MST's radical education program (Meek & Simonian, 2017).



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## 9. Appendices

### 9.1 Appendix A: Words of the EZLN at ConCiencias por la Humanidad

EZLN. (2017). *ConCIENCIAS por la Humanidad 2a edición. Sesión 1, 27 de diciembre de 2017*. [Video File].

Moises. (2017). *Qué sigue I: Antes y ahora*. Paper presented at ConCiencias por la Humanidad.

SupGaleano & Moises. (2016a). *The Arts and the Sciences in the history of (neo) Zapatista*. Paper presented at ConCiencias por la Humanidad.

SupGaleano & Moises. (2016b). *One House, Other Worlds*. Paper presented at ConCiencias por la Humanidad.

SupGaleano & Moises. (2016c). *Progress on the Encounter “The Zapatistas and the ConSciences for Humanity.”* Paper presented at ConCiencias por la Humanidad.

SupGaleano & Moises. (2017d). *The Walls Above, The Cracks Below: (And To The Left)*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2016h). *Algunas Primeras Preguntas a las Ciencias y sus ConCiencias*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2017a). *Alquimia Zapatista*. Paper presented at ConCiencias por la Humanidad. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2016i). *The Arts, the Sciences, the Originary Peoples and the Basements of the World*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2017b). *The EZLN’s Sixth Commission at the close of “Consciences for Humanity”*: “From the Diaries of the Cat-Dog.” Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2016j). *La Culpa es de la Flor*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2017c). *Depende*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2016k). *El Gato-Perro y el Apocalypsis*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2017d). *The EZLN’s Sixth Commission at the close of “Consciences for Humanity”*: “From the Diaries of the Cat-Dog.” Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2017e). *¿Qué sigue? II. Lo urgente y lo importante*. Paper presented at ConCiencias por la Humanidad.

SupGaleano. (2017f). *Trump, Ockham's Razor, Schrodinger's Cat, and the Cat-Dog*. Paper presented at ConCiencias por la Humanidad.

## 9.2 Appendix B: Academic Presentations at ConCiencias por la Humanidad

Aguilar Melo, A. (Presenter) & Radio Zapatista (Producer). (2017, December 30). *The science between roots and flights that surround the wall or science with freedom to live well* [Audio File]. Retrieved from <https://radiozapatista.org/?p=25038&lang=en>

Angulo Perkins, A. (Presenter) & Radio Zapatista (Producer). (2017, December 28). *The Education System and the Scientific System: Timely Dialogue and Distribution of Knowledge* [Audio File]. Retrieved from [https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2\\_dia1\\_AlejandraArafat\\_Eng.mp3](https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2_dia1_AlejandraArafat_Eng.mp3)

Benitez, M., Vázquez, A. (Presenter) & Radio Zapatista (Producer). (2017, December 30). *Concerns about the development of technical and communication bases for scientific work* [Audio File]. Retrieved from <https://radiozapatista.org/?p=25038&lang=en>

Bruce, M. (Presenter) & Radio Zapatista (Producer). (2017, December 31). *The chemical element phosphorus and its economic interests* [Audio File]. Retrieved from [https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2\\_dia4\\_MarleneBruce\\_Eng.mp3](https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2_dia4_MarleneBruce_Eng.mp3)

Canas, M. (Presenter) & Radio Zapatista (Producer). (2017, December 29). *The Quantitative: Another Math is Possible* [Audio File]. Retrieved from [https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2\\_dia2\\_MartinCanas\\_Eng.mp3](https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2_dia2_MartinCanas_Eng.mp3)

Caccavari Garza, A. (Presenter) & Radio Zapatista (Producer). (2017, December 28). *Geophysics of What is Inside the Earth* [Audio File]. Retrieved from [https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2\\_dia1\\_AnaLuzCaccavari\\_Eng.mp3](https://radiozapatista.org/wp-content/uploads/2017/12/ConCiencias2_dia1_AnaLuzCaccavari_Eng.mp3)

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### 9.3 Appendix C: Table of Research Interviews

<b>Research Participant</b>	<b>Date of Interview</b>	<b>Length of Interview</b>	<b>Affiliation to ConCiencias</b>	<b>Occupation</b>
Z	22/08	67 min	Presenter at ConCiencias (2016/2017)	PhD Candidate
X	06/07	49 min	Observer at ConCiencias (2016) Presenter at ConCiencias (2017)	Professor
O	23/07	74 min	Presenter at ConCiencias (2016/2017)	Professor
M	30/05	55 min	Observer at ConCiencias (2017)	Professor
R	21/07	45 min	Presenter at ConCiencias (2016)	Professor
L	10/07	52 min	Observer at ConCiencias (2016) Presenter at ConCiencias (2017)	Professor
J	22/07	67 min	Observer at ConCiencias (2017)	Master's Student
T	09/08	49 min	Presenter at ConCiencias (2016/2017)	Professor
P	13/08	63 min	Presenter at ConCiencias (2016/2017)	Professor
G	30/05	87 min	Presenter at ConCiencias (2016)	Professor
Q	11/06	54 min	Presenter at ConCiencias (2016)	Professor

A table of anonymized research participants interviewed for this study

#### 9.4 Appendix D: Interview Guide

What is the focus of your research?
How did you get involved with ConCiencias por la Humanidad?
What did you know about ConCiencias por la Humanidad before participating in the conference?
What are the most exciting things that you heard at the conference? Can you give examples?
Do you feel ConCiencias por la Humanidad started a conversation around an alternative science?
Did people have different ideas about what an alternative science should look like?
What, if any, response have you received about the conference from peers?
Do you think a Zapatista approach to science has taken shape since the conference?
What do you think an alternative scientific looks like?
Have your ideas about an alternative science changed since the conference?
Since the conference, have you worked with anyone to build an alternative science?



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