Seed Schools in Colombia and the Generative Character of Sociotechnical Dissent

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Abstract

In STS, dissent has typically been understood as resistance, a way of saying "no" that is intended to generate change in discourses, material systems, and forms of law and rule that would then govern those who are aggrieved. Using the case of La Red de Semillas Libres de Colombia (RSL) [Network of Free Seeds of Colombia], this paper builds on another approach most visible in feminist, decolonial, and indigenous STS that examines rebuilding rather than direct resistance. Drawing from interviews and participant observation, we show that RSL's practices of "generative dissent" are temporally distinctive in three ways. Firstly, RSL's emphasize knowledge-making in the present, they address bio- and social tempos situated in understandings of both the past and the future. Secondly, RSL re-form the bios revitalizing emotional and social capacities. And finally, they reshape human and more-than-human worlds by invigorating biosocial kinships and university-community epistemic ties.

Keywords

sociotechnical dissent; affect; feminist STS; seeds; indigenous knowledge

Seeding Generative Dissent

> The delicious cakes you ate this morning come directly from the very flour my daughters and I made. That flour comes from the cubios that I have grown in this very plot! These different varieties of cubios, however, had disappeared from this region a while ago because of all the problem[s] with the potato and the use of poison. As you can see, though, in the school and through seed exchanges with other communities, we managed to not only find and rediscover all these tubers and to harvest them again, but also to eat them and to incorporate them again into our daily food preparations (Josefina, seed school session, 2017).

Josefina is describing her experience of the regenerative relationships that are constitutive of participation in seed schools. Seed schools are a form of rural popular, campensino-led politics that emerged in Colombia in the 2000s as part of a larger Colombian political project called La Red de Semillas Libres de Colombia (RSL 2022). The RSL is a network of rural *campesina/os,* indigenous, and AfroColombian organizations that work with advocates and organizers in other regions of Colombia and the world to challenge intellectual property

regimes (IPR) around seeds. In Colombia, the IPR requires that all commercial seeds not only be registered with the government, as in other Latin American countries ([Wattnem 2014](#)), but that they be tested in accordance with biosecurity protocols to certify that they are free from disease and safe for human use. This means that the seeds are controlled by the state and to be understood through the logics of insecurity/security and commercial value. This displaces epistemologies, social meanings, aesthetics, and community relationships *of* and *with* seeds that have long sustained rural communities in Colombia.

Seed schools have played a key role in challenging the IPR by protecting local varieties of seeds, and discouraging the use of genetically engineered (GE) seeds. In these itinerant, irregularly scheduled events, which can take place at a home, a school, market, or other places, *campesina/os* build relationships between people and seeds. Participants learn about seed and socio-environmental legislation, share and exchange newfound or forgotten local seed varieties, and tell seed stories about their meaning and uses; they talk while showing *why* and *how* pollination matters and seed saving techniques, and sometimes participants are shown where the seeds are growing. Many of the schools end with an often joyful meal made by the participants.

Josefina's excitement about re-discovering seeds and sharing a meal made from them might not be considered a form of technopolitical dissent as it is traditionally understood in STS. In this older view, dissent is frequently conceptualized as criticisms *of* and actions *against* political and epistemic systems, often by forcing the powerful people and institutions to grant concessions such as legal and bureaucratic change. STS has tended to examine these expressions in their confrontational forms in public spheres such as courtrooms or legislative bodies, in which people who are not scientists use lawsuits, demonstrations, and other means to force those in power to meet their demands ([Epstein 1998](#); [Frickel and Moore 2006](#); [Aranciaba and Motta 2018](#); [Chen 2011](#); [Ottinger 2013](#); [Mukherjee 2016](#)). Similarly, analyses of dissent among scientists over scientific or sociotechnical issues often focus on the how and why scientists go against mainstream viewpoints in an explicit fashion ([Moore 2008](#); [Oreskes and Conway 2010](#); [Parthasarathy 2017](#); [Schmalzer, Chard, and Bothelo 2018](#)).

This framework owes much to northern liberal political theory, in which extant institutions are sources of power, and the end goal of dissent is to compel institutions to generate knowledge, technology, and rules that respond to the demands of those outside the institutions. This *institutionalist* perspective on dissent often features expert analysis, including the role of university-trained scientists as critical intermediaries between contending groups ([Bogner and Menz 2010](#); [Frickel, Torcasso, and Anderson 2015](#); [Kim, Kim, and Song 2020](#); [Suryanararayan and Kleinman 2013](#)).

But technopolitical reformation is not only a matter of seeking concessions from the powerful, and dissenting is not only concerned with protestation and institutional targets for that matter. Other perspectives on dissent—such as the ones drawing from the Foucauldian tradition—portray dissent as an expression of autonomy that is always present in everyday life but also takes more explicit forms, and is concerned with how people avoid, in everyday individualized and larger-scale collective activities, being governed in a particular way ([Foucault 1975](#); [Abu-Lughod 1989](#); [Butler 2009](#)). Governance, in this case, refers partly to standards, rules and other discourses, as well as their material expression. It also refers to how groups escape discipline through changing the terms of discourse and practice ([Foucault 1975](#); [Benjamin 2016](#); [Coburn et al. 2013](#); [Pérez-Bustos et al. 2019](#); [Kimura 2017](#); [Green 2020](#)).

Foucauldians have drawn attention to what are sometimes called "alternative" systems (a concept that also places the powerful at the center of the analysis). This form of dissent encompasses practices that materially address problems and build social relationships that are not under the direct control of corporations or state governance (Hess 2007; Mártinez-Torres and Rosset 2014; Phillips 2016; McCune and Sánchez 2019). Examples include: (i) critical database formation and systems for generating public knowledge about environmental and indigenous issues (Wylie et al. 2014; Environmental Data and Governance Institute 2020; Public Lab 2020; Civic Laboratory for Environmental Action Research (CLEAR) 2020; United States Indigenous Data Sovereignty Network 2020); (ii) utopian communities that aim to use and advance science (Reider 2009); (iii) community technology and collaboration experiments (Fair Tech Collective 2020); (iv) health projects undertaken by communities without major support from NGOs, corporations or governments, such as the redevelopment of midwifery in the USA (Kline 2019), and the local development of low-cost, community-appropriate technologies that undermine the capacities of dominant groups to control knowledge systems (Williams and Moore 2019; Medina, Da Costa Marques and Holmes 2014; Mártinez Torres and Rossett 2014).

Dissent, in these cases, is about building, creating, and sustaining just technosocial relationships, the antithesis of the *gens* of capitalism—its mechanisms and means of creating relationships—that Bear et al. (2015) illuminate. Generative dissent is thus a "yes" that can co-exist with the "no" of more institutionalized forms of dissent. We wish to emphasize the *socio-epistemic process* of making new sociotechnical systems, not only their outcomes, and to emphasize their deeply creative and sometimes often joyful qualities that can revitalize practical knowledge and senses of power and connection between the bios, culture, and imagination that are critical for survival and for future projects and struggles. We refer to this form of dissent as "generative" (see Eglash 2016 for a different use of generative STS).[1]

More formally, generative dissent is concerned with *knowledge making in the present*, but draws on the past, and anticipates the future(s). Generative processes are *reformations of the bios*, conceptualized as revitalized emotional and social capacities to shape the human-nonhuman world. Finally, attention to the generative necessarily requires attention to the *reformations of biosocial kinships and of relationships between those formally trained in a topic, and in a community.* In drawing attention to these qualities, we are extending feminist, indigenous, and critical race STS scholarship that has identified related practices. These include education related to place and meanings (Barnhart and Kawagley 2008), the concept and practice of (the generative form of) alter-life (Murphy 2017), and the emphasis among some STS analysts about the importance of knowledge as something emplaced, that it avoid western notions of time as the starting points for research, and that the knowledge be connected to the values of its producers (Williams 2019; TallBear 2014; Coburn et al. 2013; Gibson 2019; Phillips 2016).

Temporal, kinship, and bios-related aspects of dissent are the profoundly social connections on which human and human-nonhuman relationships are built. We focus in this paper on just one of these

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[1] Eglash, for example, has written extensively about the importance of shifting from an ideal of distributive justice as the goal of social justice projects, to one of generative justice, understood widely as the bottom-up participation in the production and circulation of unalienated value, and the enjoyment of its benefits (Eglash 2016).

qualities: the reorganization of *kinships*, in three registers: between *campesina/os,* and university-trained people and NGOs, between seeds, people and territories, and across genders. We do so by tracing their expressions in the RSL seed schools.

A Feminist Approach to Generative Dissent

Author One: I have been involved with the RSL for the past four years, as a researcher, a colleague, and an activist. This connection with the RSL helped me to develop relationships with communities and individuals that were the basis of my participation and interviews with RSL members. I was a participant-observer for eight non-consecutive months between 2017–2018 and carried out 30 in-depth interviews in Spanish. I spent the autumn of 2017 in Bogotá, traveling in and out of the departments of Antioquia, Valle, Tolima, Nariño, and Cundinamarca with RSL members. I attended national, regional, and local gatherings, seed fairs and exchanges, seed markets, and regional seeds schools. Most gatherings lasted two or three days. In addition to attending the schools, I also met people in their homes and gardens and shared meals with them. The number of the schools that have taken place is unknown since they are unplanned and not recorded.

I formally interviewed thirty people, including (i) seed savers, (ii) scholar-activists, (iii) non-academic allies (e.g., NGO members), and (iv) RSL organizers. The ideas reflected in this paper are the product of my relationship with RSL members, who have taught me and my co-author how to do research with them, and how to build reciprocity in our work together.

Author Two: I am a white US-born faculty member at a US university who served as Author One's dissertation advisor. I have never traveled to Colombia, and thus, I am doubly distant from the empirical components of the project, and doubly implicated in the politics of circulating socio-epistemic knowledge between unequal political epistemic regions. I do so with humility, and position myself as a learner as much as a writer and creator of knowledge. In the paper, we draw on my knowledge of the politics of technoscience and on food politics, and on my developing knowledge of the history and political sociologies of Lima, Peru, rural Colombia, and urban centers in Chile that my graduate student projects and my commitment to reorganizing epistemic politics have demanded of me. I have also redeveloped my capacities to read Spanish. We have co-developed our ideas.

Working on the project together has been an imperfect effort at emphasizing the generative in knowledge creation, since we are working to challenge the authority/subordinate dynamic between advisor and student. Together we have placed the joy of knowledge creation at the center of this project, and we understand our analysis of the RSL to be partial.

The RSL, Seed School Formation, and the Legacies of Itinerant Politics

The RSL was founded in 2013, following the 2012 Colombia-USA free trade agreement that included new laws for commercial seeds in Colombia. Colombia's penalties for those who break seed laws are among the harshest in Latin America. These include jail time of up to eight years and maximum fines of USD 40,000 (Law 1032 2006). To contextualize how much can the penalties impact a rural person, in Colombia, the minimum wage is USD 263 per month; most *campesino/a* make much less income. It would take about 150 years for a *campesino/a* to be able to pay such fine. The RSL is part of a larger network of environmental, indigenous and *campesino/a* rights, food and land activism in Latin America and around the globe, many of

which are known as "food sovereignty" movements, of which La Via Campesina is among the best known ([Mihesuah and Hoover 2019](); [Martínez-Torres and Rosset 2014]()). It is seeds themselves that are the central focus of the RSL. Organizing around and with seeds, the RSL aims to generate capacities for communities to thrive culturally, economically, and epistemologically, rather than being subjugated to the demands of international agribusiness and security systems. RSL organizers have proclaimed that seeds should circulate freely across Colombia in order to counter the concentrations of knowledge in the seed certification system ([Hernández Vidal and Gutiérrez Escobar 2019]()).

Seeds are distinct from soil, water, and plants themselves in ways that make them particularly important for understanding generative forms of dissent. They are small and strong enough to produce life, but extremely vulnerable and delicate. They can be carried around, so that this form of life moves from one place to another. Yet not all seeds can be planted anywhere, and not all seeds grow and develop homogenously. Although mobile, seeds are rooted to; territories, and sowing techniques, to light, wind, and water, but also to the particularities of the space and time that surround and traverse seed planting. In the RSL seed schools, participants create life-giving ties—to land, seeds, and meanings.

The seed schools were formed after *campesina/os* learned through mass media, Facebook, telephone calls and texts, and meetings in their schools about the new laws. Communities joined together to form the RSL to protect local varieties of seeds, to expel GE seeds from the national territory, and to abolish the IPR. The seeds used at the schools are not registered with the government, and it is not illegal to share knowledge about them—only to plant them commercially without registration. These rural people affected by the seed laws are a large portion of the Colombian population, of whom 30 percent identify as *campesina/os.* Of the 11 million people who live in rural Colombia, about 9 million live from family-based agriculture ([Universia 2014]()). Among *campesina/os*, illiteracy is relatively high: 8.4% cannot read or write, and primary education is the highest level of education for more than half of the people older than 40. Almost 40% of rural people live under conditions of multidimensional poverty, understood as monetary scarcity, and lack of access to health care and education, among other factors ([DANE 2016]()). Poverty is in part a legacy of the land tenure structure created in colonial times and maintained afterward in the *latifundio* system characterized by huge parcels of privately-owned land, worked by landless *campesina/os* (Molano 2015). Today, the system is mostly maintained: USAID has estimated than 0.4 per cent of Colombians own 62 per cent of the country's best farmland ([Flores, 2013]()). These land, educational, and economic arrangements and histories place seeds into a fraught context, in which people's ways of rural living are insecure and under threat.

RSL techniques for defending their ways of living with seeds include institutional dissent, such as lawsuits and other formal legal methods that draw on ethnic rights, but at its heart are seed schools, where *campesina/os* recover, regenerate, and exchange seed knowledge that is tied to, and not appropriable from, the people who use the seeds ([Demeulenaere 2014](); [Kloppenburg 2004]()). These seed knowledges are not "indigenous" in some transhistorical sense, for the agricultural practices of *campesina/os* have been shaped by centuries of interactions with groups who live outside their community.

At the seed schools, participants bring seeds that are not registered under the new seed laws and share their knowledge and relationships with the seeds. Conversations interweave discussions of beauty, seed growth needs, tastes, uses in food or medicine, and personal and collective meanings, as we show in more detail later. These community-driven and distributive epistemic projects provide communities with what they need now, and they refuse such dichotomies as epistemic/social, colonial/indigenous, and

expert/*campesina/os* that have been used to control seed and planet epistemes ([Subramaniam 2014](#); [Phillips 2016](#); [Gan 2019](#)).

As a form of dissent, the seed schools did not emerge *de novo*, nor are they derived from rural education projects in other parts of the world. They are in part a legacy of the 60-year armed conflict between the state and the Fuerzas Armadas Revolucionarias de Colombia (FARC), which produced unprecedented waves of physical and psychological violence against rural inhabitants and prevented them from articulating and acting on their shared interests. Violence extended in the 1970s and 1980s, when other guerilla groups, state paramilitaries, and private militias paid by drug cartels, killed, tortured and terrified *campesina/os,* creating an atmosphere of fear in which dissent became a risky, and often a deadly, practice. More clandestine ways of addressing political needs were commonplace. Groups met in secret, and rarely in the same place, in order to avoid attracting attention and to blend political meetings into other everyday activities. Itinerant seed schools are a legacy of this model of doing politics by other means. The military, socio-economic and environmental violence that *campesina/os* have been exposed to has not only killed many of the wisest members, but also dislocated entire communities that have shared practices and knowledges from decades to centuries past ([Bravo, Toro, and Velez, 2014](#); [Escobar 2011](#); [Kalmanovitz and López 2006](#); [Lyons 2018](#)).

A second quality of seed schools is their reliance on the knowledges of rural *campesinas* and *campesinos* rather than on experts—a reliance also rooted in another aspect of rural Colombian political life— from rural pedagogies that emerged in the 1930s. These schools and pedagogies, like similar projects in other parts of the world, rejected the knowledges of elites, and sought to revive knowledges that were being forgotten and often directly suppressed by government efforts to use elite-produced technologies and knowledge ([Freire 2000](#); [Fals Borda 1987](#); [Roberson 2002](#); [Hammond 1999](#)). Campesino University (CU), created in 1962, is the most important forbearer of the RSL seed schools ([Acevedo 2011](#)). CU organized rural people so that they could participate in public decision-making processes, and become organizers of communal and cooperative ways of life and work. In the 1970s, CU was also connected to other processes of *campesina/os* organization and education of Latin America, including the *Campesino a Campesino Movement* (CCM). The CCM in general, and the CU in particular, at first allowed *campesina/os* to have safe spaces for debate, to experiment, to learn, and to create and contest in ways that were not threatened by state or para-state repression and official politics. Yet, the violence that we described earlier upended these schools in the '80s and '90s. Nonetheless, legacies such as the *campesina/os*-driven knowledge model have played a key role in RSL seed schools, and in shaping the kinship forms that generative dissent in/around seeds have taken.

Regenerating Kinships: Las y los Academicos, Estudiantes, and NGOs

In Colombia, the introduction of GE seeds and the legacies of 1960s technological developmental models of rural politics privilege the modern, expert natural scientist who is supposed to deliver knowledge to *campesina/os,* continuing a pattern of colonial domination in which rural people were considered ignorant ([Escobar 2011](#)). These practices result in *campesino* knowledge loss, cultural disruption, and political dependency—issues that were never fully addressed even by the rural schools that emerged as part of leftist rural interventions in the 1960s–1980s.

When seed certification was first imposed on commercial farmers, *campesina/os* quickly realized that their knowledges would be displaced. As Gabriela said in a 2017 interview:

> What we realized [when the seed laws were imposed], above all, was that they were pretending to make us, to make people believe that it was only the scientists in their white coats who knew things about the seeds and who could earn a living from that. And that was outrageous! For how long have we been learning about seed varieties, seed harvesting, seed conservation, seed reproduction? For how long? And what has been the cost of that? We have compañeros killed because of that! So we said no. We decided to focus on the seed. To show them that *that* knowledge is not our knowledge, that it is because *we know* that we can grow [their] food! (Gabriela, interview, 2017).

The RSL schools have reconfigured these forms of epistemic domination by building socio-epistemic ties with what *campesina/os* call "las y los academicos" [the academics], that is, social and natural scientists who are supportive of their work and objectives, with "las y los estudiantes" (Ph.D., masters, and undergraduate students whose own interests and life trajectories have drawn them towards this kind of work), and with NGO members who are willing to finance some of the RSL work, to protect them from threats from armed organizations, and to provide materials for workshops, large scale meetings, and RSL-sponsored street markets. The RSL members do not refer to any of these people as "experts," nor, as we show, do they single out biological scientists as major allies.

Many of the *campesina/os* said that *las y los académicos* and *las y los estudiantes* are valued because they assist the RSL in ways that the RSL controls contributing knowledge, and building community capacities. For instance, at a session in Tolima, academics and students were using participatory approaches to help participants create histories, meanings, uses, and ways of growing local seeds in their territories through mapping, and demonstrating how to grow a particular seed. In many of the schools that Author One visited, *las y los académicos* and *los y las estudiantes* played a key role in training participants in participatory methods. They also engaged in generative dialogues with *campesina/os* by listening and learning.

The RSL also values the academics because they are *mobile* and can *distribute* knowledge about organizing and seeds to other regions and communities that are part of the RSL, helping to build epistemic and political relationships. This quote from Miriam, a 24-year-old school participant was typical of the views of RSL members:

> Los académicos share ideas about how to run the schools that help us organize better. They also tell us about other experiences in other places we have not been to, and that is also very helpful. So, we value their presence a lot, insofar as they do not try to take the lead (Miriam, interview, 2018).

The importance of the mobile academic in matters of epistemic dissent can also been seen in other environmental and peace (Conde and Walter 2022; Behrends, Park, and Rottenberg 2014).

In many STS studies of dissent, the expert is considered as such because of their narrow but deep knowledge. However, in the seed schools, the academic and student participants very often had transdisciplinary education. Fernando Castrillon—a self-described radical agronomist who studied at the Medellín campus of La Universidad de Nacional de Colombia and who was an active participant in the schools—said in an interview that when he was an undergraduate in the 1980s, the curriculum was designed to create "holistic and responsible agronomists." He emphasized that courses such as sociology,

anthropology, and political economy were constitutive of his approach, and that he engaged with popular struggles, respectful of *campesina/os'* knowledges and practices:

> Without those courses, I would have never been the person I am now. I am here today [. . .] because thirty years ago I was at *La Universidad Nacional* reading books such as *Causa Popular, Ciencia Popular/Popular Cause*, *Popular Science* and discussing them with my fellow *compañeros*. The participatory approach that I help facilitate in these sessions, however, has evolved a lot since then, especially because my biggest teachers in life have been campesinos themselves. . . (Ferdinand Castrillon, interview, [2017]).

Thus, people with university education operate differently in this form of dissent than what other STS studies have found: they are themselves already-politicized, not people who assist in a technical sense alone, or without knowledge of the stakes in assisting others. Examples of these roles for academics are not limited to the Global South; other examples include the Technoscience Research Unit at the University of Toronto (TRU 2020) and the Northeastern University Social Science Environmental Health Research Institute (NEJRC 2020), and CLEAR (2020) where academics with investments in epistemic justice play a key role.

Generating Socio-epistemic Ties Between Seeds, People, and Territory

A second kind of kin-based, generative socio-epistemic relationship is produced through the creation of human-seed-territorial relationships. While Gabriella, whom we quoted earlier, argued that *campesina/os* already know how to care for seeds, some elders who grew up during the "Green Revolution" of the 1960s and '70s have forgotten (or perhaps never learned) how to save, recuperate, and circulate local seed varieties that grow without enormous amounts of pesticides. Others know only about the seeds in their own fields and gardens.

People find out about seed schools by word of mouth, and announcements by the RSL. Schools regularly last three or four days, and the sessions are always participatory and free, and are led by seed savers, many of whom are owners of a small piece of land (5 to 10 hectares); others are renters of more or less the same amount of space. Before each session, the participant is required to follow and record what they have been doing with the seeds they bring. Participants choose their way of recording, with many preferring photography. In some cases, when seed savers do not have access to a camera, and/or cannot read and write, they make drawings or find ways to remember the process they followed and re-construct it orally. Some people may see each other again at other events, others may not, but the relationships are held together by continual exchanges with others, in which the knowledge is distributed (Hernández Vidal 2022).

This scene at a regional seed school in Antioquia captures how territory, seed, and people are tied together socio-epistemically. Author One visited the region during the summer of 2018. For two days, she participated with 40 other people in a seed school taking place in one of the seed savers' house. As at other seed schools she visited, the scene was lively—chickens, children, bees and bugs were moving around and tiny forests were growing through the walls of the house, blurring the boundaries between the built environment and "nature," while the loud music was making both people and plants dance. Seed school participants were excited, introducing each other spontaneously. Seed school participants were excited, introducing each other spontaneously. During the two days, we ate together three meals a day. The meals

were cooked by the daughters and friends of the seed saver[2] who was hosting the meeting, but some school participants also joined the cooking when they felt excited about a smell or a flavor, and they wanted to learn more about it. The food was cooked with local food that was grown with saved seeds. Peoples' willingness to share stories about the seeds they brought to the school was noteworthy. The stories they told always involved their kin and their territory, and sometimes the seeds even acquired mystical components (ibid., 2022).

The distribution of knowledge outside the schools can be seen in the experience of Carlos Andrés, a 14-year-old seed saver in Cundinamarca, recalled the following during one of the seed school sessions:

> When I began to go to the seed schools and seed exchanges, my family did not pay much attention to it. They kept growing their two varieties of potatoes to which they, as everyone in this region, apply up to seven rounds of pesticides. But one day I came home with many potato seeds a seed saver from Cauca had shared with me in one seed school I went to. My granduncle was so astonished that he told my grandma to lend us her patio to see if we could grow those potatoes there. He did not know how to, though. I mean, how to do it without the poisons. So I taught him everything that I have learned so far. Now we have six varieties of potato growing healthy in that small plot (Carlos Andrés, interview, 2017).

Because much of the knowledge that is shared is also practical, it is not amenable to the human-nonhuman distinction on which technoscience was originally built: the separation of the person from the knowledge, such that it might be turned, imperfectly, to an "immutable mobile" (Latour 1987). Here, knowing about people is deeply connected to knowing about the seeds.

These interactions produce epistemic vitality for the network by ensuring that ways of knowing, using, and appreciating seeds are distributed and valued through a knitting together of epistemes that were learned in different ways and in different spaces, depending on age and other things. This process of learning about and re-territorializing local seed is thus multiplied generatively—community, kin and territorial relationships are both strengthened and reorganized, and the seeds themselves are also given new possibilities for life in different areas of Colombia.

Generatively Gendered Socio-epistemics

The seed schools also generate new forms of gendered kinships. Feminist political ecology (Fortmann 2014; Mies and Shiva 1993; Rocheleau 1996) has shown that women's reproductive work in rural spaces is often unpaid, and that certain kinds of agricultural activities such as the growing of food for self-consumption are feminized. They have also emphasized the general asymmetry in land tenure structures that favor men over women in the Global South, in such a way that knowledge about many kinds of plants is lodged in men's sociomaterial relationships. Other analysts have also pointed out that advanced capitalist relationships have deeply transformed traditional *campesina/os* life by displacing men's work away from the family unit toward a capitalist wage labor system (Bernstein 2010; Bernstein and Byres 2002; Lenin 1964; Kautsky 1988). As

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[2] A seed saver is a person who cares for seeds in a given community. This work of care varies from place to place and it is tied to the needs of the place where seed savers live and the grassroots organization they are involved with.

Villulla ([2014](#)) shows, the transgenic model of agriculture weakens communities and family structures by using men as mobile workers that go from camp to camp. Because women remain at home—the system reinforces their spatial, socio-economic, and political domination—while the men's wage system deepens the precarity of *campesina/os* families, including by increasing hunger ([Carney 2015](#)).

Interviews confirmed these experiences among participants in the schools; they explained that there were fewer men at the schools because men were away working in order to "bring the money home." However, because the women take care of *huertas*, or gardens built in the back of the houses, they play a role in the socio-epistemic life of seeds. In the *huertas* men grow a variety of vegetables and herbs that are later transformed into food for the family or into medicines. Planting and cooking is therefore a daily combined exercise for these women that requires ingenuity, resourcefulness, and patience.

The feminization of spaces such as *huertas* and kitchens provide women the experience and knowledge on which to base participation in the seed schools. But they did not come to fully recognize this until they were invited to participate in them and in the larger political project of the RSL. Carmela, a 60-year-old, partially disabled woman who participated in one of the schools said:

> It was because we began to get together with other women to talk about what we did at home that I began to understand the value of what we know, of what we practice. And then, when we saw that this is what the movement needs at a larger level, we learned too that we need to stay and stand for it, because it is for us that people's families in this country are going to survive (Carmela, interview, 2018).

The schools bridge and extend women's relations with the seeds at home—as plants, food, and medicine—to a larger political scene that centers them as subjects whose knowledge is key for the achievement of community control over seeds and agriculture. Importantly, the gendered sociality that often appeared in the seed school sessions also allows feminine relationality to become one of the drivers of each of the activities carried out in those spaces, opposing more individualistic logics encountered in formal education settings.

However, some women also expressed concern that while women had valuable knowledge, men made decisions about the land. And they recognized as well that *huertas* could not substitute farms as means of rural agricultural existence. For instance, Laura, a 25-year-old participant said:

> There are two things that worry us: first, men are still the ones who end up deciding what to do with land. And if we want food sovereignty, then huertas are not really enough. We need to change the whole system of production, not only a tiny piece . . . And the other thing is that to be honest, we women know a bunch about medicinal plants and traditional medicine, but not very much about other crops for proper food production. For that we need men's knowledges, not only their power, but their knowledges too. How and when to get them to understand that? That is the question we are trying to answer now (Laura, interview, 2018).

The seed schools have not upended class and gender relations at the household level, but they have helped make the situation visible and thus, also help *campesina/os* to dissent from the gendered organization of work, epistemes, and family, while creating ways to slowly build a space in which political epistemics are a principle and not an exception. Moreover, they also build solidarity, self-esteem, and nets of knowledge and resources among women via their active participation in the seed schools. For example, one 32-year-old seed saver pointed out that in the schools, women began to talk not only about seeds, food, and agriculture,

but also about their own personal lives. This enabled topics such as professional ambitions, personal frustrations, and sexuality struggles to emerge and be discussed.

Dissent as Socio-Epistemic, Feminist, and Generative

In the RSL and its seed schools specifically, dissent is not narrowly understood in the formal liberal sense of "being in opposition" to a formal political and legal system. Thus, it is not only a matter of generating capacity to directly influence legislatures, the judiciary or political parties, or of enrolling experts as intermediaries to plead a case in and through these political bodies, as many institutionalist studies of dissent emphasize (Mukherjee 2016; Aranciaba and Motta 2018; Frickel, Torcasso, and Anderson 2015; Kim, Kim, and Song, 2020). While the RSL does intervene at a legal level, here we have shown how seed schools are an important means of building territorial, epistemic and social ties that distribute and knit together ways of knowing. In the case of Colombia, generative dissent is a response to a specific legal regime that builds upon longer histories of rural epistemic and other politics that are the result of warfare, past rural pedagogies, and contemporary *campesina/os*-driven ways of knowing.

Although generative dissent has a number of distinct qualities, here we have emphasized it as a form of expressing kinship. Kinship is a complex term, and thus we do not wish to overextend the metaphor. However, if kinship can be understood as mutual care and responsibility over the long term, then the RSLs work to organize epistemes, territories, seeds and people together in ways that allow them all to thrive can be said to be a form of this relationality. Organizing relationships with seeds, as Phillips (2016) argues, is a matter of feeling as well as knowing, which she argues is essential for articulating life with and from seeds that relies on epistemic and economic privatization, or logics of securitization.

We wish to work with a concept of dissent that works in multiple directions. The family of practices to which generative dissent is tied are widespread in STS, including forms of dissent that are hardly disruptive, but are nonetheless consequential for reorganizing socio-epistemic systems. These include Kimura's analysis of how Japanese women used socially-acceptable gendered forms of knowledge and care to address food irradiation after Fukushima (2017); and Pérez Bustos' (2019) analysis of how the circulation of textile knowledges produces material and epistemic kinships. Many others are more explicit efforts to reorganize epistemic systems, but not through direct institutional attacks. Latin American and other popular education and dissent projects for example, circulate practical, critical and more abstract knowledges in ways that are hard for the powerful to dislodge (Martínez-Torres and Rossett 2014; McCune and Sanchez 2019; Benjamin 2016; Vernooy et al. 2020; Green 2020). Generative projects, moreover, also create material systems than can take on an obdurate material character, serving as models and sources of knowledge and imagination (Reider 2009; Williams 2019).

Finally, gendered life is a critical part of the generative nature of the seed schools. Women play important roles as participants, facilitating the thinking, feeling and sharing that enables people to learn about each other, seeds, and territory to ensure that seeds thrive. They articulate non-hierarchical relationships with NGOs and *las y los académicos y las y los estudiantes*, and they come to see themselves as subjects of epistemic and political economies in their own homes, and beyond. Kinships are not the province of women, and nor is care—itself a complex term. Yet women's roles in the generative dissent at the seed schools has parallels in other kinds of care and affective work that STS scholars have emphasized in other situations and settings, including in agriculture (Lyons 2018; Puig de Bellacasa 2015; Martin, Myers, and

Viseu 2015; Schraeder 2010). Because care itself has not been closely associated with dissent in STS; here, we wish to articulate that connection.

More broadly, generative forms of dissent—of which regenerating kinships is one example—are practices that are closely tied to an older Latin root of the word dissent: to "differ in sentiment," or to "differ in ways of knowing." These two meanings—sentiment and ways of knowing—are axes around which generative dissent is operative. *Campesina/os'* use of imagination and a willingness to learn and share what is known (both formal and informal socio-epistemic exchanges about seeds, land, and culture) demonstrates their reciprocal care for people, seeds, knowledges, and territories over long periods of time. Those engaging in generative dissent speak a language that is different from institutional frameworks for understanding dissent; and provides possibilities for seeing dissent from the Global South, indigenous, feminist, Black and other places; and frameworks that can give hope for new socio-epistemic relationships, that are not directly confronting institutional power, but which distribute care for the past, present and future in multiple registers of life.

Acknowledgements

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