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New Forms of Resistance in the Highlands: Reproductive Control, Biopiracy, and Local Knowledge in Guatemala

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Introduction

“Apacín” is the Guatemalan word for *Petiveria alliacea*¹, a plant made into a tea that women drink to prevent pregnancy. Mayan women in Guatemala boil the leaves of the plant and save the pot of tea to drink over a period of three days after having intercourse. In fact, throughout the Americas since precolonial

¹ The history of *Petiveria alliacea* is an intricate one: a plant used for fertility and contraception that grows wild in the highlands of Central and South America, ‘discovered’ by French botanist Charles Plumier after one of his three botanical expeditions to the Caribbean and named by him for James Petiver, a seventeenth-century London apothecary and founder of the Royal Society of London. *Petiveria* was listed in Linnaeus’s 1753 *Species Plantarum*, the primary starting point of plant nomenclature as it exists today. This means that the first names to be considered validly published in botany are those that appear in this book. Fifty years earlier, it was listed by Hans Sloane, founder of the British museum, ‘named’ as a plant that smells of wild garlic in Jamaica, before it was called *Petiveria*.

times, women have made use of plant-based medicine. Many women living in the highland areas of rural Guatemala continue to pass down their plant-based knowledge to their daughters and granddaughters and often opt for plant-based health care despite the availability of Western medical care.

From 2015 to 2016, I conducted a study of local knowledge of Apacín, during which I interviewed two dozen midwives, herbalists, and local healers in the Guatemalan highlands². One *curandera* (healer) informed me that there has always been a market for the many plants she collects and sells, such as *manzanilla* (chamomile) for stomachaches and *apazote* (herb tea) for nerves (Personal Interview “Rebeca” (I), Jan. 3, 2016).³ Members of the community often seek her advice before consulting a doctor or pharmacist since, like many herb sellers, she provides free advice and recipes to the community. Another *curandera* reported that sales are meant only to supplement individual household herbariums because “each woman has her own kitchen”, indicating that many women are knowledgeable about the effectiveness of herbal remedies and their healing properties (Personal Interview “Emilio” (J), Jan. 3 2016).⁴

² Semi-structured interviews, participant observations, plant walks, and focus groups were used to interview *curanderos* (male Maya healers), *comadronas* or *iyom* (midwives or female birth attendants who also treat gynecological and obstetric complaints), along with general community members (non-healers) from four separate villages during the 2015-2016 visit to Guatemala. Interviews began by asking questions about the participants' gender, village, and specialty (*curandero*, midwife or non-healer) and only first names (later changed) were recorded in individual interviews since speaking of women's contraceptive use can be indelicate or uncomfortable.

³ My translation from the Spanish. Transcription of interview: “Vendo mucha manzanilla para señoras y señoritas con dolor del estómago, muchas mujeres tienen ese problema por comer mal, por comer cosas calientes, y a veces usan apazote para problemas con los nervios, es más común venderlo que las señoras que usan manzanilla, porque con la manzanilla, la siembran en la casa” (Interview I).

⁴ My translation from the Spanish. Transcription of interview: “Si, no vendo mucha manzanilla, muchas señoras de las comunidades tienen sus cocinas, cada una tiene su cocina” (Interview J).

An increased interest in plant sources containing contraceptive compounds has changed the pharmaceutical industry, with the goal of locating naturally occurring contraceptive plant sources (Elisabetsky 202; Brooks 2; Bodeker et al. 2). At the same time, global development initiatives cite an increased interest in family planning. Since 2015, the World Bank has increased its family planning resources in rural Guatemala.⁵

This article traces the renewed interest in traditional plant-based contraception by Western pharmaceutical companies and the coinciding efforts of Mayan women to resist the family planning initiatives imposed on them by international organizations operating within a Western medical context. Resistance to family planning began in the 1960s and impeded its spread. Multiple doctors and nurses in APROFAM (*Asociación Pro-Bienestar de la Familia de Guatemala*) clinics throughout the highlands of Guatemala spoke of the 'resistencia' to family planning in Mayan communities (Personal Interviews Q, S, V, W, N, Jan. 14 & Jan. 22 2016). Despite the establishment of a dynamic private family planning association in the mid-1960s, Guatemala still ranks last in contraceptive use in Latin America (Population Reference Bureau 2014, 62-64). In fact, local communities are resisting corporate control of local knowledge by using plant-based abortifacients, such as Apacín, in place of Western forms of birth control, such as 'Depo-Provera', pills, or IUDs.

⁵ Almost four decades earlier, the World Health Organization (WHO) had established a new program of development and research training on natural human reproduction, which included a task force on indigenous plants for fertility regulation (WHO 2015).

Local Knowledge & the Scientific Community

Knowledge generated outside the Western scientific community is often referred to as 'local,' 'indigenous' or 'traditional,' as opposed to 'scientific.' However, local knowledge may also be termed scientific "because it is generated and transformed through a systematic process of observation, experimentation, and adaption" (Appleton et al. 2011). Sandra Harding argues that 'ethnoscience' applies to Western medicine as much as other forms of medical research and argues that "maximizing cultural neutrality is itself a culturally specific value" (Harding 42). Harding goes on to argue that science in the United States – at least for the last three decades – has primarily served militarism and Eurocentric economic pursuits which, in turn, have succeeded in "continuously moving global resources from the have-nots to the haves" (Harding 53). In fact, historically, as discussed by Vandana Shiva, women's ecological knowledge has been "packaged as a product to be collected, owned, and sold in the marketplace of ideas of the scientific community" without any form of compensation or recognition (Shiva 24).

This is especially true in the context of rural Guatemala. Jennifer Schirmer documents reports by survivors of twentieth-century massacres in the rural Guatemalan highlands, who in her work, describes the way in which soldiers took special care to kill the elders in communities, those who used traditional clothing and maintained traditional customs, as well as other local people deemed to preserve indigenous tradition and strong ties to local habitat

(Schirmer 58). The CEH (Comisión de Esclarecimiento Histórico) referred to these practices as “cultural genocide,” and included “the bombing of sacred Maya lands used for religious worship . . . the burning of *huipiles* [traditional blouses worn by Maya women], [and] the prohibition of ritual burial of the dead” in an effort to destroy traditional Maya practices and institutions in its judgement (Sanford 178-9). Rural Chiché women affected by the war noted that herbalists struggled to maintain traditional healthcare practices after the war ended because of the uprooting of communities and the destruction of forests during the scorched-earth policies of the 1980s (Personal Interview “Angela” (D), 19 Dec. 2015 & Personal Interview “Lucia” (M), 10 Jan. 2016).⁶

Plant materials are often referred to as the ‘raw materials’ for development and biotechnology; however, knowledge of herbs and natural remedies are the products of local innovation by communities that have the knowledge in an organic form. In the case of *Petiveria alliacea*, when information is collected from local communities, it is often then legally protected or patented, which, in turn, results in the financial gains that benefit corporations and scientists alike. *Petiveria alliacea* has recently (2015) been patented as a cancer treatment, and negotiations regarding its ownership between FARMAYA

⁶ My translations from the Spanish. Transcription of the interviews: “Todo cambió para nuestra comunidad ... recuérdese que nos mudamos y luego nos mudamos de nuevo y luego volvimos, y cuando volvimos, era difícil saber dónde estábamos, no había ninguna comadrona, no había nada, no sabíamos cualquier cosa” (Interview D). “No había nada porque no había bosque, se quemaron todo para quitarse de nosotros” (Interview M).

Guatemala and the Scientific Research Council, Jamaica are ongoing (Williams 6).

Recent studies have revealed that of the top 150 proprietary drugs used in the Western hemisphere, fifty-seven percent contain at least one major active compound derived from natural sources (Setzer 21). One of the aims of the pharmaceutical industry is to locate small molecules that regulate the biochemistry of disease cells via 'signal transduction' modes of action (Cohen 309). Dibenzyl trisulphide (DTS) is one such molecule that was first coded in the laboratory when its insecticidal/repellent properties were discovered. This molecule was first isolated from the root of *Petiveria alliacea* at a university laboratory in Brazil in 1990 (Sousa et al. 6353).

Guinea-hen Weed (a local name for *Petiveria alliacea*) is also used as a tonic by the Caribs in Dominica and Jamaica. In Grenada, it is commonly used by traditional healers for coughs, colds and as an effective intestinal 'cleaner'. Its active compounds are often cited in scientific papers:

Cudjoe root [a local name for *Petiveria alliacea*] is well established, if only half-remembered, in Grenadian folk botany and medicine, used predominantly for sinusitis and colds, but also for diarrhea/dysentery and gynecological complaints. It has been shown to contain unique sulfur compounds (e.g. dibenzyl trisulphide) with immunostimulant and antiviral activities, both of which have value in diarrheal disease (e.g. Rotavirus) (Whittaker 23).

The plant also features prominently in spiritual celebrations throughout St. Kitts and Grenada/Carriacou (Whittaker 15).

United States Department of Agriculture (USDA) research reports that *Petiveria alliacea*'s high toxicity has led to its use for heart protection, as a fungicide, as an anti-inflammatory, and for hypertension, all of which are currently being evaluated in separate studies and tested in USDA laboratories (Riet-Correa 3). Plant compounds from *Petiveria* are also being examined as possible male contraceptives, female antifertility preparations, and abortifacients. Other university laboratories are studying it to treat rheumatism, gastric disorders, amenorrhea, menorrhagia (heavy menstrual bleeding) and headaches. *The European Journal of Medicinal Plants* published a paper in 2014 which reported that proprietary extracts from Guinea Hen Weed and DTS have significantly inhibited the survival of the HIV virus (Lowe 89). Moreover, the USDA is currently growing samples of *Petiveria alliacea* in experimental plots in Rio de Janeiro, Brazil, which involve using 200 grams of fresh leaves minced and extracted with water through steam distillation in preparations. Additionally, USDA scientists are involved in developing chromatographic analysis, in which active plant compounds for possible medicinal use are analyzed by gas chromatography or mass spectroscopy. Mass spectrometers can identify and break down chemicals in botanical samples by their masses and ratios by considering the quantities of each mass of each compound (Williams 17-18).

In Latin America, contraception and abortion have traditionally been contentious issues, and 'population control' remains an important component of international development policy. The United States has a long history of promoting sterilization and Western forms of pharmaceutical contraception globally; international organizations are making inroads in international family planning programs and birth control efforts. Current debates over the right to control fertility have emerged in Latin America, including over the right to control birth and bodies and maintain access to contraception, surveillance, and monitoring of pregnant and postpartum women.

Local Mayan healers and health practitioners consider illness, healing, and human physiology as a series of interrelationships between nature, the community, and the individual. Ethnopharmacologists explain that *Petiveria* is a plant that should be considered from a culturally relativistic perspective in order to limit its cross-cultural application with an eye toward how concepts of fertility held by indigenous peoples can improve the design of pharmaceutical contraception (Elisabetsky 206). A 1989 study of the Kayopo of Brazil found that many local plants are used simultaneously for menstruation and contraception, information which has been ignored as 'non-scientific,' but at the same time offers a wide range of plant study touted by some as among the "greatest breakthroughs in medical knowledge" (Elisabetsky 207).

A 2007 study at the *Universidad Nacional Agrícola* in Nicaragua by Michael Vílchez Jiménez for example, began with the thesis that bovine milk smells of

garlic, presumably from animals who feed on *Petiveria alliacea*. The study reports that the plant helps to reduce the length of the postpartum period and cites local knowledge to demonstrate the plant's effectiveness as an abortifacient in animals as well as humans (Vilchez 43). In 2007, a study in Cuba on *Petiveria's* immunologic properties advises against the use of the plant in pregnant women, as it can cause abortions (Ferrer 20). In addition, it was discovered that oxytocin contractions were increased when the plant was used (Ferrer 28). The Anamu foundation (based in Florida) attempted to prove the anti-tumoral properties of the plant before the company went bankrupt in 2011. A 2012 study in Indonesia cites *Petiveria alliacea* as a possible cure for tuberculosis (Mulyani et al.) The raw herb is also being used in trials with a warning to pregnant women that its strong sulfur compounds can induce miscarriage (Hernández 641).

Family Planning Services

In the 1970s, a reduced natality rate through massive population control campaigns became a national priority in Mexico and many Central American countries, including Guatemala. Midwives were identified as intermediaries to implement national planning services in their communities because there was no additional cost for their services in the governmental health care budget (APROFAM 2013). APROFAM (*Asociacion Pro Bienestar de la Familia* or The Association for Family Well-being) is the major family planning agency in Guatemala and is partially funded and supported by USAID (United States Aid for International Development). APROFAM trains technicians to work in rural

areas in family centers where they supply women with Western-based contraceptives. These family planning initiatives are also supported by the UN Population Council and the United Nations Fund for Population Assistance (UNFPA). Even though family planning services in Guatemala have remained fairly active, they have not had a significant impact on Guatemala's fertility rates. These organizations based out of the US view high fertility rates in Guatemala as a repercussion of poverty and underdevelopment (Aprofam 1994, 41).

Some scholars have looked at the cultural irrelevance of family planning initiatives in highland Maya communities, citing a lack of understanding of Western family planning methods within indigenous communities (Daniulaityte 5-8; Brambila 7; Ward 60). Others have commented on the lack of understanding between the service providers and the indigenous communities. Research from the Population Council, APROFAM and UNFPA cite Mayan communities' "lack of knowledge about everything related to reproduction" or a "basic knowledge about reproductive health" (Ward et al. 3; Toj et al 7). Interviews in rural APROFAM clinics in early 2016 revealed a dismissal of 'natural' planning methods in rural communities, such as a necklace for counting that allows women to track their cycles and avoid intercourse during suspected ovulation days and a complete lack of information regarding plant-based contraception (Personal Interview "Elizabeth" (Q), 14 Jan 2016; Personal Interview "Ramona"

(R), 14 Jan 2016; Personal Interview “Sara” (S), 14 Jan 2016).⁷ One health practitioner I interviewed complained of the low rates of contraceptive usage among rural women: “What we have in Guatemala is a problem of fertility; I wish they [rural women] understood that they can get the injections [Depo-Provera] and be done with it” suggesting that some clinics have little patience with non-pharmaceutical contraception (Personal Interview “Sara” (S), 14 Jan. 2016). Development practitioners and researchers make their own assumptions about what Mayan people know and do not know about biomedically defined human reproduction, and attempts to measure Maya knowledge according to Western standards and knowledge bases inevitably fosters inequality between the service providers and the recipients. On the contrary, what I found in the rural communities in the Guatemalan highlands surrounding Chiché is that as women have managed their fertility with plant-based contraceptives for centuries, though Western health care practitioners would find these methods ineffective.

Similarly, beliefs about sterilization may relate to the Mayan holistic understanding of body and self. Maya community members fear a ‘loss of strength’ that comes from the surgery (Personal Interview “Mariela” (H), 20 Dec

⁷ My translation from the Spanish; Transcription of the interviews: “Algunas mujeres usan ese collar con 28 cuentas, pero realmente no entienden cómo usarlo” (Interview Q). “Algunos dicen que pueden contar los días en su ciclo sin el collar y evitar quedar embarazada, pero quién sabe” (Interview R). “Esas cosas alternativas que usan son simplemente estúpidas y no funcionan y luego tienen diez hijos y no saben por qué. Lo que tenemos en Guatemala es un problema de fertilidad; me gustaría que [las mujeres del campo] entendieran que pueden recibir las inyecciones [Depo-Provera] y ya está hecho” (Interview S).

2015 & Personal Interview “Rebeca” (I), 3 Jan 2016).⁸ Contraceptive methods offered in APFORFAM clinics, such as IUDs, are often seen as very dangerous to other bodily organs inside the body (Personal Interview “Mariela” (H), 20 Dec 2015 & Personal Interview “Rebeca” (I), 3 Jan 2016).⁹ Participation in the chain of reproduction is a crucial factor in the Maya construction of gender identities. Even fertility for the growing of corn is seen as resulting from the union of male sexuality with a feminized land (Wilson 91). Depo-Provera, a hormonal birth control method given by injection, is actively promoted in Guatemala, as it has been throughout the Global South. APROFAM cites its suitability for indigenous areas (1994, 2004 and 2012), and injectable methods of drug administration have even been seen at times to have a mystic popularity throughout Latin America (Toj et al. 50). However, Depo-Provera has a number of problematic side-effects, including the absence of menstruation, which is especially difficult for Mayan women who believe in its importance for the maintenance of general health, and its imbalance a sign of a dangerous condition (Personal Interview “Juana” (B), 19 Dec 2015; Personal Interview “Iliana” (C), 19 Dec 2015 & Personal Interview “Rebeca” (I), 3 Jan 2016).¹⁰

⁸ My translation from the Spanish. My transcriptions of interviews: “No quería que me operaron porque no quiero, pues, no quiero la falta de fuerza” (Interview H).

⁹ “Cuando operan en las mujeres, sufren bastante, tienen problemas después, especialmente por cesárea” (Interview I).

¹⁰ My translation. Transcription of my interview: “Cuando, Sí, es muy cierto, es que ... si no baja la regla, hay otros problemas con el calor adentro,” “Una mujer...se puede desmayar, se puede fallecer... la regla es muy importante para la salud,” “Unas del campo se entran en ese tiempo, pero puede ser peligroso si no viene la regla, las señoritas que no la tienen a las 16, pues, yo los doy muchas hierbas para que venga” (Interviews B, C, I, 2015).

Maya conceptualize bodily processes, including female fertility, not in the mechanical terms of the Western medical tradition, but in terms of hot/cold states and equilibrium between the two. Female fertility can be regulated in a natural way with plants, rather than with modern contraceptives, which from the Maya perspective, are damaging to health and equilibrium altogether. Nevertheless, expansion of access to sterilization is among the top priorities in the strategic plans of family planning initiatives in Guatemala (Population Council 2010). Natural child-spacing techniques are still the norm, as many local people cite concerns about the ill-health of closely-spaced children. Still, very little research exists on the use of plant based contraceptives in NGO literatures, highlighting an enormous disconnect between not only the lived realities of women in the countryside and family planning programs, but also the scientific work on these plant-based contraceptives.

The World Health Organization (WHO) currently estimates that one-third of the world's population has no regular access to pharmaceuticals (WHO 2004, 2012). Approximately sixty-five to eighty percent of the indigenous populations worldwide depend on traditional systems of medicine and medicinal plants as a primary source of health care (WHO 2012), so it is difficult to say that the Western medical tradition influences family planning services in an equitable manner. Among international development organizations, there is an increasing interest in locally initiated programs that provide scientific support to traditional health care systems. The development of phytomedicines (plant extracts) from a

country's own natural resources are viewed as worthwhile projects (Cordell and Colvard 100).

APROFAM (*Asociación Pro Bienestar de la Familia* or the Association for Family Well-being), an affiliate of the International Planned Parenthood Federation, is the primary source of funding for information and clinic operation in Guatemala. The head of APROFAM in Chiché in 2015, Norma Tol Soc, continues to recommend natural methods when women are resistant to using injections or pills, citing that these sources have very few side effects on women. Most rural women, she posits, do not attend a clinic in the urban area and do not have access to contraception and little knowledge of human reproduction (personal communication, April 2015)¹¹. The organization works through community distributors, but mostly through local clinics in urban areas; therefore, outreach to rural communities is still difficult. APROFAM also travels to the *aldeas*, but rarely, and many health practitioners report that they are not welcomed there. Midwifery training in Guatemala also takes place through APROFAM, sometimes in partnership with NGOs, such as UNICEF.

Conclusion

Petiveria alliacea is an important plant to many people of the Americas. It is not only 'important' as a cancer treatment, but like much of the natural world,

¹¹ Original communication in Spanish: "Sigo recomendando métodos naturales cuando las mujeres son resistentes al uso de inyecciones o pastillas porque tienen muy pocos efectos secundarios en las mujeres. La mayoría de las del campo no tienen acceso a la anticoncepción y poco conocimiento de lo que estamos hablando" (April 2015).

it represents knowledge that local communities have that is periodically being removed, stolen, and transferred to laboratories and reclaimed as the knowledge of individual scientists, universities, and corporations. More importantly, women of the Americas continue to resist Western based family planning practices. Through their work in maintaining this knowledge and passing it down from generation to generation, as well as in finding the plant and making use of it in their everyday lives, they are resisting the theft of this knowledge by refusing to share it with those outside their communities. This directly implicates the boundaries of health and illness and the body in particularly gendered ways, or as Laura Mamo and Jennifer Fosket argue, is “reshaping women’s experiences of lived embodiment” (Fosket 926). The use of *Petiveria alliacea* highlights the contemporary processes of the intensification of control over women’s bodies and the increasing medicalization that serves to reshape embodiment itself. Where our relationship to a disconnected ‘nature’ was once external, it is now a transformation of our internal nature (biological processes and the transformation of “life itself,”), and we have seen how this is the current trend and continual shift under globalizing capitalism. Indeed, unsanitary depictions of menstruation and childbearing have been pervasive in the Western medical tradition, and connect more deeply to the perception of the dirtiness of physicality, particularly of women and colonial subjects. What we have seen in recent decades, as it is framed by neoliberal globalization, is a simultaneous increase in medical control, where a prescription is necessary for the morning

after pill, pharmaceuticals are made acceptable in day-to-day life, and life forms are controlled and patented.

In Maya culture, menstruation is a sign of both fertility and of women's ability to continue their roles and responsibilities inherent in Maya culture, realized in everyday interactions. Indigenous female knowledge that is hidden or kept out of the view of the dominant society is treated as such within the community itself. For example, "women's knowledge" is a phrase often repeated when discussing pregnancy, birth, and breastfeeding. The women I interviewed were not surprised at my ignorance of their understanding of bodily processes and were eager to explain them to me, and many often pointed out that city-trained medical personnel cannot treat women. "The old women are special healers of female ailments, and know how to cure us," one younger woman told me (Personal Interview "Angela" (D), 19 Dec. 2015)¹². She had sought assistance from midwives for the births of her three children and had used an *herbario* and a local healer to cure illnesses in her family.

Ultimately, what is demonstrated by this non-Western worldview among the Maya K'iche' and Kaqchikel, is that medicine and food are not separate life pieces, but integral parts of a holistic understanding of health and bodily care. During my research, market-based herb sellers often asked whether I wanted Apacín as a food condiment or a remedy; either way, one woman said,

¹² Transcription of interview: "Las comadronas, las ancianas son curanderas especiales, especialmente para el dolor femenino, y saben curarnos" (Interview D).

the plant has excellent effects (Personal Interview “Marta” (N), 10 Jan. 2016).¹³ “Womb inflammation” in much of the Latin American literature on women’s health suggests that plant-based abortifacients and emmenagogues are most often used for a wide variety of women’s health complaints. In rural Guatemala, food and medicine are one and the same, maintained and valued as part of women’s knowledge base. In Western contexts, we rarely recognize the possibilities of plant-based remedies and their political function. Yet for other parts of the world, these understandings, long missing from Western scientific study, are very much part of women’s knowledge and everyday lives.

¹³ Transcription of interview: “No importa si lo quiere para comida o medicina, tiene efectos buenísimos de cualquier manera” (Interview N).

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