Wildflower Counter-Power: Herbal Medicine and the Politics of Plant-Based Embodiment

A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of Master of Arts

Jason Hirsch
Department of Anthropology
July 2018

© Jason Hirsch 2018

Abstracts

To heal with plants is not only to engage a particular medicinal material, but to enter into a conversation with a different form of life. Traditional Western Herbalists in North America relate with plant life in this way as they enact works of healing. In order to do so, they mobilize modes of thinking from the Western tradition that have been suppressed in modernity. Their practice is not nostalgic or backward-looking. They maintain that these nearly-forgotten tools have meaningful relevance in the contemporary, and they place these tools in generative dialogue with emerging science and social theory. Herbalists' medical methods reveal a range of embodied relations in the clinic that are less visible using biomedical tools alone, rendering these relations available for treatment. As medical encounters are also deep engagements with subjectivity, this kind of care simultaneously makes available a range of modes of being, such as relationships with plants. Through their healing work, herbalists regularly bridge the nature-culture divide that has characterized Western modernity, producing a subject capable of seeing to some degree outside of modern Western myths and forms of power. In this way, herbal medicine functions as a mode of ecological subjectification, orienting practitioners and clients toward an anticapitalist and anarchist eco-politics of partnership between people and plants.

Soigner par les plantes n'est pas uniquement une pratique centrée sur une offre médicinale particulière, mais aussi l'amorce d'une conversation entre des formes de vie différentes. En Amérique du Nord, les herboristes traditionnels entrent en relation avec les plantes de cette façon alors qu'ils appliquent leurs techniques de guérison. Pour ce faire, ils et elles mobilisent des modes de pensée qui sont réprimées dans la modernité. Leurs pratiques sont pourtant loin d'être anti-modernes ou motivées par un élan nostalgique. Au contraire, ces herboristes affirment que leurs outils souvent oubliés sont pleinement pertinents pour naviguer le monde contemporain et sont capables de converser tant avec les sciences biomédicales que les théories sociales. La pratique des herboristes permet de rendre visible, et ainsi accessible aux soins, un ensemble de relations matérielles échappant partiellement aux outils biomédicaux lorsque ces derniers sont employés seuls. Puisque les interactions médicales sont empreintes d'une profonde corporéité *(embodiment)*, les soins pratiqués par les herboristes permettent la

concomitance d'une variété de modes d'existences et notamment de relations avec les plantes. Dans leur pratique, les herboristes franchissent régulièrement le fossé qui oppose nature et culture, une opposition qui caractérise la modernité occidentale et qui produit des sujets capables, dans une certaine mesure, de voir au-delà des mythes occidentaux modernes et de ses formes de pouvoir. Ainsi, une pratique de soin par les plantes agit comme mode de subjectivation, orientant herboristes et clients vers une éco-politique anticapitaliste basée sur un partenariat entre les gens et les plantes.

Disclaimer

Herbalists are prohibited by American law from using conventional medical terminology, such as 'diagnose,' 'treat,' 'prescribe,' 'patient,' and 'practice medicine.' The herbalists described in this thesis explained their work to me instead using terms like 'assess,' 'recommend,' 'client,' and 'offer support.' I have followed their conventions in most cases. The convention of medical anthropology, however, is to consider all cultural approaches to health as genuine forms of medicine and evaluate them using similar terms. If the actions of herbalists as represented in this thesis are deemed by any reader to be a practice of medicine in the sense protected under American law, this should be understood as a result of my own interpretations as a writer in anthropology, operating with reference to anthropological discourses, and not as a claim that the herbalists I worked with have made about themselves, with reference to American medico-legal discourses.

Why a disclaimer such as this has come to be necessary will be explored in the pages ahead.

Table of Contents

Acknowledgments

This project has been the work of many minds, and it would not be as it is without each of them. Foremost, I would like to thank Marigold Herbal College for welcoming me into their community and thinking so generously about herbs and culture alongside me. I am indebted to Elixir Herbals for their open embrace of this thinking work as well. Most of all, I am grateful to the very many individual herbalists who shared their connections to the plants with me. Many of their words share space here with my own, and the ideas of each one of them, I can say with honesty, have shaped the direction that this thinking took.

I am indebted as well to the faculty of the Department of Anthropology at McGill University for welcoming me warmly into a field I now call my own, and for offering the depth of their relationships to it as a resource for my own growth. I am grateful especially to my supervisor, Allan Young, who gave generously of his time and expertise throughout the process of my degree, and who guided me through an approach to scholarship that seeks precision and fascination in equal measure. I am indebted to Eduardo Kohn, who grasped the stakes of my project immediately, pushed my thinking deeper on many occasions, and shared with me the pleasure of relating to plants as enchanting fellow-creatures and potent cultural symbols both. I thank Tobias Rees, whose own thinking turned me one hundred-eighty degrees from positions I held upon entering this study on several occasions, for his generosity of spirit in walking with me toward those realizations. I have much gratitude as well for Lisa Stevenson, who helped me to understand anthropology as a practice of the self in which intellectual and emotional depth were inseparable partners. My work owes a special debt as well to a number of scholars who I have known only through their writing, but who have influenced me a great deal nonetheless. That list foremost includes Stephen Gaukroger, Terrence Deacon, Michel Foucault, David Graeber, Silvia Federici, and Bruno Latour.

I have no end of appreciation for Olga Harmazy and Connie di Giuseppe, administrative staff in the Department of Anthropology, without whose conscientiousness, care, and patient instruction in navigating university life I would not have had the freedom that I did to think and write. I thank also the Department of Social Studies of Medicine, which offered me the great gifts of good office space and a

stimulating second institutional home.

I have boundless appreciation for Kathleen Godfrey, Claire Fedoruk, and Emmanuel Précourt-Senécal, alongside whom I learned an art of attention to the thought and writing of colleagues that is generative and empowering rather than evaluative — a true liberation from the relationship to writing one learns through many years of competitive and numerical assessment in school. I am grateful to Mathieu Isabel, for being a friend and a *camarade* in this work in virtually every way that it occupies me. Deep thanks go to Charis Boke, who elegantly played roles of scholarly mentor, peer, and friend simultaneously, and alongside whom I am delighted to walk this path. I have a special sort of gratitude for Matthew Remski, a dear friend and former teacher who opened me intellectually and experientially to the possibility that bodies could be alive and that medicine could point the way. In many ways, this project takes its point of departure from our collaboration. May it continue. This work departs as well from the inspiration, trust, and opportunities given me by Adalsteinn Brown, a long-time mentor who has remained a steadfast supporter of my growth even as I made my best efforts to chart a bewildering path.

I thank my first teachers of herbal medicine, Chanchal Cabrera and Thierry Vrain, on whose magical farm I first engaged a personal relationship with the more-than-human world and recognized a connection to medicine; Keith and Maureen Robertson, who showed me how to locate and cultivate embodied knowledge of plants; and John Redden and Christine Dennis, under whose guidance I deepened my explorations considerably. I thank my parents, for their steadfast support and for their trust, even as my work veered toward a species of deconstruction of their own lines of work. My conversations on these topics with them formed an early crucible of my learning to critique without cynicism, an effort that I treasure and which continues for me in other ways each day. And finally, I thank the plants, for their unending patience with human beings while those among us who became lost try to find our way back to partnership with them, and for being the ultimate inspiration for everything in these pages.

"Medicine is the most closely linked to the whole of culture, every transformation in medical conceptions being conditioned by transformations in the epoch."

— Henry Sigerist (in Canguilhem 1978)

Introduction | Resurgence

Rene and I perched on a curbside ledge to talk through weekend plans. She knew a spot just outside of town, near a swimming hole, where big, beautiful patches of mugwort and St. John's wort plants grew. I told Rene that I'd yet to find mugwort growing in the wild, and that I'd never tasted it either. Her eyes danced a little, and flashed sharply into focus: "Mugwort is a lovely friend!" She regaled me with descriptions of its medicinal actions and the kinds of medicine she hoped to make from the plants we might find.

The day arrived, and she and I, along with our friend Ainsley, walked through wildflower meadows and the forested edges of a pond. We picked stalks of leafy mugwort and sunshine-yellow flowering tops of St. John's wort, and Rene talked me through their botany and their biochemistry as we went. After a swim, we headed back to the car along a narrow foot-path through the meadow. Ainsley and I got to talking about blue vervain, her favourite medicinal plant and one that I had come to know well too. Ainsley halted abruptly, and I behind her. "Wait…" she said. "It's here." The three of us slipped into a slower register, and started looking around through the fields to see if Ainsley's intuition would bear fruit. Not three paces behind her stood a single blue vervain plant, tall, proud, and spindly, its minuscule blue-purple trumpet flowers in full, iridescent bloom.

Looking at it straight on, I could hardly believe we had missed it when we passed. But blue vervain had a way of looking unassuming, until it didn't. "It just pops up," Ainsley said. "It doesn't want to be seen at first." It stood four feet high, but its stalk was only half as wide as a fingernail. Its leaves were deeply, densely green, but thin, waving easily in the breeze. "It's minimalist," Rene added, "but strong." We talked about blue vervain all the way back to the car, and again over dinner together a little while later. "How could you drink blue vervain tea on its own?" Rene demanded of me, a little appalled. "It's so bitter!" Indeed it was, but I loved the taste. For Ainsley and me both, it was the only bitter plant we could regularly tolerate.

Bitter-tasting plants, Rene explained, are generally cleansing, stimulating the body's own eliminative and detoxifying processes. Herbalists have traditionally used them to help people shed excess. Ainsley and I usually steered clear of bitter plants:

being both of us of slight physique, we needed all of the excess body mass we could get. Blue vervain, though, Ainsley told me dreamily, was subtle. Drinking the tea, she had a sensation of upward movement in her body. She felt it stripping away excesses mostly from her thoughts. "It's a poetic bitter," she said. Strongly minimalist, but gently supportive, it was bitter medicine to relieve a troubled thinker's mind. The way Ainsley came across the plant in its environment, the way she understood her body, and the way it helped her understand her mind, wove themselves into a single story. Blue vervain emerged as a complex being with a story of its own, deserving and capable of complex engagements with human beings.

For a number of months over a recent summer, I spent time with a community of people in New England who related to plants in this intimate manner. They were students and practitioners of herbalism, an ancient and contemporary form of plant-based medicine. Plants mattered in these communities because of the ways in which the plants could be used medicinally, but I came to see relationships between people and plants that overflowed the bounds of medical utility. Gradually, I understood this way of life as pregnant with a potent cultural meaning. What, I began to wonder, did it mean to live with such deep investment in this other kingdom of life? The practitioners of herbal medicine I met lived with an expanded sense of who it was they shared their world with.

Philosophical: What Is the World Like?

In the modern West, the question of what the world is made up of is generally presumed to be settled.[1] There is some filling in of remaining puzzle pieces here and there, and occasionally a small revolution in one corner or another. But the overall picture seems clear. Nature, over here, is reliable, fixed, universal. It follows set laws. It is mysterious, but it can be studied and known. Most of all, when it moves, it moves by mechanical law or by instinct — it doesn't much think for itself. Over there, meanwhile, is human culture, free and self-determining, glorious and flawed, capable of being puzzled over but never really pinned down for sure. The two realms interact constantly, but on unequal terms. Human culture is active and intentional; nature may move around, but in terms of agency, it is passive. So appears the arrangement of scientific facts (Descola 2013; Latour 1993).[2]

The life and work of herbalists challenges this neat division. Theirs is a world of flowing interchange between plants and humans, wherein the bodies of both are suffused with thought and active life, and wherein humans and plants accordingly can enter genuine kinds of communication. If herbalists' relationships with plants were a mere matter of medical utility, herbalists might be content to seek a space of tolerance alongside biomedicine in which to carry out their healing work. But for them, there is much more at stake. When debates among rival forms of Western medicine proceed through pragmatic conversations about the safety and efficacy of treatments, these conversations presume a set of shared ideas. They presume shared ideas of what should constitute evidence, and one level deeper, a settled understanding of what the material world is like. Herbalists are happy to engage across medical borders in such conversations, but when assumptions like these are set down as preconditions, they reject the terms of the debate.

What could it mean to reject the scientific idea of what the world is like, and still call oneself, as herbalists do, a practitioner of Western medicine? Science, and its presumptions about the real makeup of the world, after all, have long been popularly understood by Westerners as a deliverance from the perils of superstition. Science is cast as an offering to the world, the property of no one and a truth available to all. Yet there remains the inconvenient fact that its settled definition of what the world is like has been the grounds upon which the West has waged, in the phrase of anthropologist of science Bruno Latour, "its pedagogical wars" (2004, 458). Much blood has been spilled in campaigns of colonization whose justification issued from the need to convince others of this idea, of a material world that turns like clockwork, obeying its own laws, undeterred by human whims or the influence of spirits. Herbalists are all too aware of the threat that hides behind cheery offers to join the scientific consensus: some of these 'pedagogical wars' have been waged against them.[3] No particular idea of what the world is like, Bruno Latour insists, is 'natural.' Each one has to be made, whether by force of argument or force of arms. Each such idea of the world, then, has a history (Latour 2004).[4]

For the herbalists I met, the Western scientific worldview one such idea, effective for some things and not for others, and they posit an idea of their own alongside and surrounding it. At the heart of the herbalist's worldview is a notion of nature as active, intelligent, responsive, and alive. This is not a novel idea in Western history. In fact, as I

hope to show in the pages that follow, it has been actively suppressed, in various forms, for several hundred years. Western modernity, I will argue, has in many ways been constructed specifically against and on top of it. Like a repressed memory, though, it maintains a spectral presence. It haunts the modern from just beyond its horizon, maintaining a charge, or a potency, by virtue of having been pushed away (cf. Freud 1989). Herbalists are carriers of this Western other in its very midst. They are insiders and outsiders simultaneously. They told me often about a burning sense that their practice held something of potent relevance for modern Western culture as a whole, over and above its contributions within the field of medicine. They sensed that what they were doing was capable of generatively re-working Western culture from within. I tried to attend closely to the many ways they spoke of this, and what follows is an ethnography of that sense.

Contextual: Traditional Western Herbalism

Who are these herbalists I speak of? In order to sink deeply into this way of seeing the world, I spent three months living in a community of herbalists in New England. They were clustered around a school for training clinical herbalists, the Marigold Herbal College. The school operates a multi-year program, teaching traditional plant wisdom alongside Greek and Medieval European medical theory and biomedical science. An on-site, sliding-scale community clinic gives final-year students an opportunity to see their first clients under faculty supervision. The school identifies itself with a network of medical practitioners dispersed throughout the United States and Canada and calling themselves Western herbalists. They cross paths at national conferences, and they share a flexible canon of trusted texts. Formally, this healing modality is known as Traditional Western Herbalism. Strictly speaking, herbalism can refer to any medical practice that employs simply-prepared plant remedies as healing agents. The practitioners of Traditional Western Herbalism that I met referred to their practice colloquially as 'herbalism' or 'herbal medicine,' and I will do so here as well.

Traditional Western herbalists in particular are those who draw their plant knowledge and medical philosophy principally from Hippocratic and Galenic humoral medicine of the European tradition, European vitalism of the 1700s and 1800s, and the American eclectic physicians of the late 1800s and early 1900s. Their knowledge comes

significantly, too, from the traditional plant knowledge of European village healers, or empirics. They readily integrate insights from contemporary biomedical science, and many herbalists, including those at Marigold, study scientific disciplines in some depth as part of their training. They borrow as well from the Traditional Chinese and Ayurvedic (Indian) medical systems, which closely parallel European humoral medicine, in an effort to shore up what has been lost from the European humoral form (though not without some self-reflective consideration of the political risk of cultural appropriation). A significant part of their knowledge, finally, comes from the traditional insight of the indigenous peoples of North America (Turtle Island). The terms by which this latter knowledge was obtained are not always known to Western herbalists, nor is it well-known to them which knowledge in particular comes from these sources, and their relationship to this knowledge accordingly is sometimes fraught.[5]

There are myriad forms of herbal healing in all corners of the world, though, and the particularities of Traditional Western Herbalism in North America require some more careful distinguishing. In the first place, Traditional Western Herbalism exists beyond North America, and in the second, there are other North American herbalisms besides the Traditional Western form. Regarding Traditional Western Herbalism in other places, the herbalists I met referred to counterparts in Europe, Australia, and New Zealand whose practice also constitutes a blend of older European medical knowledge and contemporary biomedical science. North American Western herbalists distinguished themselves from these overseas others by claiming a closer affinity to 'folk' and 'craft' forms of practice. They described their counterparts overseas as operating in a more professionalized, clinical, or 'white-coated' form, closer in the eyes of North American herbalists to the biomedical sensibility. They attribute the difference most often to the greater fervour of the American Medical Association and the American state in excluding herbs and herbalists from mainstream acceptability relative to counterparts in other countries. Herbalists often spoke about this to me in two registers — on one hand, they resented their marginalization; on the other, they celebrated the folk practice they had resultantly retained.

Many North American herbalists still do practice in a conventionally clinical mode. They see clients individually in private consultation rooms, administer intake forms, draw heavily upon scientific pathophysiology and biochemistry, and recommend remedies for the relief of specific maladies. But they also note with pride

the time they spend outside, growing and wild-gathering their own medicinal plants; and/or in their kitchens and apothecaries, preparing these by hand into creams, salves, custom tea blends, and alcohol-based extractions (tinctures). North American Traditional Western Herbalism claims another model of practice alongside this craft-clinical form, which eschews the clinic altogether in favour of popular education for home-based self-care, emphasizes the revival of folk wisdom and magic, and prepares remedies primarily for relieving the stresses of everyday life and the pursuit of general vitality. These two forms of practice — the science-based clinician and the forest-dwelling community healer — most often recognize one another as variations on a shared theme. Each invites to some extent the influence of the other upon itself, and they cohere significantly, in very many cases, within the same individual. It is perhaps the overlap between these two modes that defines the North American Traditional Western herbalist most of all.

Meanwhile, within North America, there are other forms of herbalism besides the Traditional Western form. The divisions among these are primarily along lines of race. Traditional Western Herbalism is a largely white community. This is partly by virtue of its knowledge ties to Europe, but it has to do also with the history and sociology of alternative medicine in North America in the 20th century. In the early 20th century, as I will explain in Chapter 2, scientific medicine (the immediate ancestor of biomedicine) was made into a hegemonic medical form. The many other kinds of medicine that had flourished previously alongside it, including Traditional Western Herbalism, were quickly pushed underground and de-institutionalized. In the 1960s and 1970s, the women's liberation and back-to-the-land movements sought out herbal medicine, seeing affinities between it and their own personal needs and political projects. Through their interest, it gained new life (Hodges 2005; Ehrenreich and English 1973; Brown 1979).

The networks of herbal medicine to which I was exposed trace their lineage through this movement of resurgence, and it is largely the experience of suppression and resurgence that separates Traditional Western Herbalism from Black, Latino, and Indigenous herbalisms in North America. These other herbal traditions were also largely de-institutionalized in the early 20th century, but scientific medicine was subsequently made far less available to people of colour than it was to white people. The lack of access for people of colour to the state-sanctioned scientific created a greater

need among these communities to retain traditions of community-based care. Operating from beyond the ambit of scientific medicine also made for a greater possibility of doing so (Brown 1979; Hodges 2005; Boke 2017, pers. comm.). For those among the Traditional Western herbalists I met who were sensitized to the politics of race, the dearth of people of colour in their spaces is a cause for concern and a basis for critical conversations. So, too, is the erasure of other North American herbalisms in their discourse. Taken together, these two movements of identification situate Traditional Western herbalists further still as liminal figures of Western culture, both inside and outside simultaneously. On one hand, their folk-inspired practice is in part an artifact of their exclusion from American mainstream medicine; on the other, the history of Traditional Western Herbalism's whiteness implicates it in the racial hierarchies through which Western power operates.

There was a prominent generational divide in the community I entered, providing two distinct approaches to the political implications of herbal identity. An older generation, which had been part of or close to the social movements through which this herbalism was re-born, tended to see themselves primarily as 'outside' of Western culture, providing a critical alternative to biomedical health care. They took a more rejectionist stance toward biomedicine and hewed more closely to the forest than the clinic. A younger generation of teachers and students tended more toward a view from 'inside' Western culture, turning with greater openness toward particular forms of collaboration with biomedical knowledge and institutions, and also partnering with social movements working for radical political change. These two generations viewed one another more often through a lens of gratitude than opposition. Leaders of the younger generation prefaced any critique with statements of appreciation for 'their elders,' who had recovered the plant wisdom and taught it to them. But this younger generation seemed to be steering the community in a direction of critical engagement with Western culture rather than retreat, mobilizing their liminal position toward the possibility of re-working it from within.

Not all herbalists, to be sure, fit neatly into these categories. (In fact, as I will explain in Chapter 1, they tend to eschew categories altogether.) Through this work, I will be speaking most directly about the community of herbalists I have known most intimately, the community in and around Marigold Herbal College in New England. Though I contextualize my understanding of these herbalists through varied other

exposures – traveling to meet herbalists from other places, observation at herbalist conferences attended by participants from across the continent (and beyond), reading a diverse collection of herbalist texts, and gathering the impressions of the herbalists I met of how they fit within a wider herbal ecosystem – my understanding has come primarily from this particular New England community. I intend my descriptions, then, to serve not as sociological facts ('*x* percent of herbalists believe *y*'), but rather as expositions of a way of thinking that I believe holds the many kinds of people who call themselves 'herbalist' together. When I speak generally about what 'herbalists' think or do, I intend it in this sense — as a description of a sensibility and a mode of life that I believe a very wide array of herbalists would themselves recognize in their understanding of what it means to be one.

What, in essence, is this herbalist's way of thinking? In my every exposure to herbalism, I saw it characterized at its root by strong and present links between people and plants in the realm of health. From this fundamental premise, as I hope to show, a ramifying series of connections is set in motion. If there is one manner in which the herbalists at Marigold differ from some of their counterparts elsewhere, it is the extent to which they follow and make explicit the logical conclusions of this series of connections toward implications for Western culture as a whole, and especially toward considerations of politics, science, and power. Precisely because the herbalists at Marigold make these connections especially strongly, Marigold is an especially good place to trace out the ways in which they really are implicit in the medical theory of Traditional Western herbalism more generally. My claim, once more, is not that all herbalists are exactly like those at Marigold. Rather, I claim that by virtue of the explicit attention paid to the politics of herbal medicine there, conceptual relationships that have deep and broad roots in herbal medical theory more generally come especially close to the surface, such that they are easier to grasp. I think here with Eduardo Kohn, who finds in the Amazonian forest, densely populated as it is with diverse forms of life, a place where the ways in which forests think are "amplified" (2013, 24).

I produce in the pages that follow, then, what might be called a 'hopeful' reading — more an analysis of potentialities implicit in herbal medicine than an itemized accounting of all the common features of herbal life (potentialities that are, nonetheless, lived out in significant measure by herbalists at Marigold and elsewhere). The politics of herbal medicine, I hope to show, issue from a set of underlying ideas held by

herbalists that have been long-buried in Western culture. In a place like Marigold, one can hear them speak.

Medical: Why Do We Get Sick?

Why should any of these grand ideas about nature matter so much for medicine? Shouldn't medicine be a pragmatic affair? Central, in fact, to any medical practice is an explanation of what the world is like, because medical intervention must be able to answer the grand question that sickness always poses: why is this happening to me?[6] A medical intervention, then, is more than an act of making symptoms disappear. The sick person cannot do all that they used to do in their social world, and so they undergo a change in their understanding of who they are. One of the primary functions of a system of healing, argues the medical anthropologist Allan Young, is to help the sick person and their community understand that what has changed is not the sick person's fault (Young 1976). Medicine functions to exonerate the individual, and allocate responsibility instead somewhere else.

To be able to assign blame in this way presupposes some overall idea of how the world is or should be ordered. Allocating responsibility for sickness is an act of cosmic adjudication. Herbalists, then, have a distinct way of explaining what sickness is and why it happens, which follows from their distinct idea of what the world is like. For them, the material world consists in a living conversation among many kinds of beings; whatever disrupts this dialogue is a cause of sickness. By contrast, in the Western scientific view, the human exists apart from the natural; in this understanding of what the world is like, sickness arrives when some force of nature — a germ, a bodily temptation[7] — arrives to invade the bounded self.

Through allocating responsibility for sickness, medical practitioners transform ideas about what the world is like into value judgments about what it *should* be like. They designate some ways of life as good (for us) and others as bad (for us), making recommendations about how we ought to live accordingly. In herbal medicine, responsibility for sickness is frequently allocated to one or another feature of modern Western living, and herbalists endeavour to help their clients understand some of the ways in which the society they live within mitigates against their wellness in order to

help them adapt most intelligently. In the biomedical view, the situation is very nearly inverted. In this paradigm, modern Western culture may present a particular set of health challenges, but its high standard of living and its scientific knowledge are ultimately the basis upon which good health rests. Sickness is then blamed upon one or another threat from nature, like viruses and bacteria, or the body's stubborn tendency to break down; by extension, sickness is further blamed upon the as-yet-incomplete scientific conquest of these natural threats. Medical practitioners of both types, to be sure, can and do deviate from the idealized paradigms I stake out here.[8] In the pages that follow, however, I will attempt to show that each of these two medical models does indeed have tendencies in the directions I am indicating, owing to its respective path of historical development and its underlying ideas of what the material world is really like.

A quizzical encounter I had during my fieldwork may help me to understand this tendency of certain ideas to lead the people who hold them toward one entire way of thinking over another. Driving through a rural area in New England, I stopped to fill the car up with gas, and the attendant started chatting with me. I took the opportunity to double-check my directions with him. When I told him where I was headed, he replied drily, 'Oh, you can't get there from here.' I looked back at him, perplexed, and found him flatly serious. This was a common rural New England expression, I would later come to learn, for a common rural New England occurrence. I *could* get to the town I was looking for from where I was, but I would have to take a very circuitous route — so much so, in fact, that it would be faster for me to turn around, drive some ways back toward where I had come from, and take a different road. So too with ideas. One *can* arrive at a critique of one or another aspect of modern Western life via biomedical thinking, but it isn't a very efficient route. The historical roads leading through biomedicine have not been built, so to speak, to facilitate that particular kind of onward travel. Herbal medicine, by contrast, makes for quick philosophical connections in that direction. One can follow biomedical lines of thinking and arrive at a criticism of the division between nature and culture, similarly, but one arrives there far faster when thinking through herbalism.

In the chapters that follow, I will attempt to make clear why this should be so. Traveling back through the history of Western medicine, I highlight some of the instances in which these two traditions parted and follow the implications of those

changes in direction for the respective medical practices today. I hope to show, also, that these routes were not running only through the field of medicine. They were connected with sweeping philosophical changes that concerned many areas of European life. To turn one way and not another in the history of medicine, then, was to turn toward and away from whole sets of social ideas. In relating this history, I hope to show just how it has come to be that herbal medicine professes one idea of what the world is like and biomedicine another, and why each tends to allocate responsibility for sickness in precisely the place where the other locates the basic preconditions for health. What emerges from this exploration is a view of Western herbalism in North America as a method of heading back a little ways in the directions from whence modern Western culture came and traveling onward into contemporary life via another route. When I mentioned to Allan Young the very early questions that would become this project, he replied to me, "There are roads not taken, but not lost." For any Western person seeking a different way of organizing collective life, herbal medicine, I contend, is one way of getting there from here.

Political: Changing Selves, Changing Worlds

Indeed, herbal medicine may be not only one way of getting there, but a particularly good one. Allan Young writes further that medical encounters may be able to penetrate more deeply into an individual's ideas of what the world is like than a great many other kinds of experience. Sickness can shake one's sense of the world, and when it does, it compels a response. In such moments, medical intervention arrives with explanations. Both sickness and cure are embodied experiences, such that the ideological provocations and resolutions they offer can penetrate beneath conscious awareness and become deeply inscribed upon a person's sense of self. These experiences are pervasive throughout a culture, touching down at many nodes in an individual's network of relations, and they recur over the course of life. For all of these reasons, sickness creates an opening for deep changes in one's sense of meaning, and medicine functions as a ritual process for organizing and re-organizing one's relationship to the meanings of life. This is true across a vast array of medical forms, biomedicine included. What differs among medical forms, Young argues, is not whether such ritual processes indeed takes place, but just what sort of idea of the world

it is that they provide (Young 1976, 17-19).

In Western modernity in particular, these processes may be doubly relevant. As I hope to demonstrate in the chapters ahead, the structures of power in the modern West operate significantly through control of the individual body and control of the individual's relationship to their body (cf. Foucault 1978, 1974). As a language and as a practice of embodiment, then, medicine may be capable of affirming or repudiating modern Western constellations of power with particular vigour and verve. The living creation of a liberated self, as the psychoanalyst Félix Guattari argues, may be a necessary step in advancing a broader liberation. The particular conceptions of the self and the world on offer in herbal medicine are thoroughly ecological ones, and Guattari suggests that ecological models are well-suited to the task of providing conceptual alternatives in this time and place (2014, 39). He argues that it is a mistake to associate ecology with "a small nature-loving minority…. Ecology in [this] sense questions the whole of subjectivity and capitalistic power formations" (35). In the pages that follow, I hope to show how herbalists look to plants in order to learn ways of being in their bodies and in the world that move counter to some of the operations of power in the modern West. There are particular ways in which a capitalist state tends to think, and these I will explore in Chapter 1; there are different ways in which a field of wildflowers tends to think, and these I will attempt to trace in Chapter 2. The practice of Traditional Western herbalism in North America involves a process of attuning oneself to the latter, and in doing so, one comes to inhabit a different orientation toward the former. This movement will be the subject of Chapter 3.

Historical: Standpoints

As a practice of attuning in this way for myself, I had planned to sit in on classes regularly at Marigold, learning about the plants alongside students. I was unable, however, to gain access to this kind of engagement. The school's faculty, its administrators, and many of its students were excited at the prospect of thinking about their practice with me, but a smaller number of students were highly skeptical of my presence. I was unable to speak with any of these students to find out why directly. From scattered bits of second-hand information, and from observation of the life of the school more generally, I came to think that their reticence or resistance had much to do

with my social locations and what these might say about my intents. I am a white-coded man, and I arrived under the auspices of conducting university-based anthropology. In many ways, I was a symbol of structures of Western power.[9]

I found other ways to engage with the community instead: I sat in on select classes at Marigold, attended conferences and community lectures, traveled widely to meet other herbalists, became a client in the clinic, and attempted to talk with plants (about which more in Chapter 3). Mostly, I talked with herbalists — long, exploratory conversations about what it meant to think, live, and heal with plants in this very historical moment. But the denial of entry from which my fieldwork began continued as a presence through my time there, and I did not want to silence it. I began to conceive of it, alongside indigenous anthropologist Audra Simpson, as informative, and possibly generative: "There was something that seemed to reveal itself at the point of refusal — a stance, a principle, a historical narrative…" (2014, 107).

I came to see the suspicion through which some students viewed me as but a particularly strong variant of a sensibility inhabiting virtually every corner of herbal culture — a skepticism about the capacity of the dominant ideas of Western culture to create conditions for health and for life, comprehend the soul of herbal medicine, or even guarantee the physical safety of herbalists. One difference between the herbalists who welcomed conversations with me and those who exercised refusal, I came to think, was the extent to which they saw me and my interest in their work as representative of and aligned with those dominant cultural ideas.

A stance like this makes sense for those who stand within historical narratives like those of herbalists. Many herbalists identify personally with the witch burnings in late Medieval and early modern Europe, a horrific campaign in which hundreds of thousands of women were tortured and burned. Women could be accused and convicted of witchcraft for practicing midwifery, or for healing others with plants (both of which tended to be women's practices). The witch burnings represent for herbalists an attempt by powerful social groups to eradicate community-based healing knowledge, the people's relationship with plants, and the social power that accrued to women as primary keepers of that knowledge and those relationships.

Why eradicating those lifeways might have become an objective for anyone, I will explore in Chapter 2. For now, suffice it to say that herbalists are not convinced that the ideological motivations beneath the witch burnings were left behind in the Middle

Ages. Rather, they tend to see the suppression of the living relationship between plants and humans that the witch burnings tried to enforce, and the privileging of some kinds of humans over others that it effected also, as central tenets of modern power. I began my fieldwork under the gaze of this skepticism, and it sharpened my attention toward it. When other herbalists welcomed me into their confidence, I tried to attend closely to this very gaze from the inside, and to see what the world looked like through it.

My efforts to inhabit that vantage point extended beyond my fieldwork and into my work with books. Seen from the herbalist's perspective, the history of Western medicine and the philosophy of science take on a different hue. Conventional histories of science and medicine have tended to deride or dismiss the value of older Western medical ideas (Cook 1990). From the standpoint of herbalists, such histories are incomplete. When the histories of herbalists' ideas are re-introduced, a new picture emerges entirely. One sees not only an addition of historical content, but the rise of a new historical question: why did these ideas fall away? When they are simply left out of historical narratives, or treated in perfunctory ways, readers can fall easily into the common presumption that the dominance of biomedical ideas is a direct result of their superior efficacy. From the vantage point of herbalists, this cannot be the whole story. They see gaps in the just-so narrative of biomedical efficacy which that their clinical tools seem to them almost tailor-made to fill. My investigations into the history of science and medicine consider the possibility that there is a social history of the loss of these ideas.[10] To narrate history in this way is to open an alternative reading of the cultural significance of herbalists' retention and ongoing development of this medical theory. The conventional history of medicine would frame their work as a kind of misplaced nostalgia or nihilistic anti-modernity; reading history from the herbalists' vantage point, by contrast, it is possible to situate their lived sense of resurgence meaningfully within the broader sweep of Western cultural ideas.[11]

I understand inquiring from the herbalist's perspective in this way not ask a kind of bias, but as a way of bringing into view certain historical phenomena that are otherwise excluded. I am guided in this effort by standpoint theory, as elaborated by indigenous feminist anthropologist Kim TallBear, who herself draws from feminist philosophers of science Donna Haraway and Sandra Harding. Standpoint theory contends that all knowledge emerges from one standpoint or another, and that an idealized fully objective knowledge simply masks and mystifies a real point of view

that always lies beneath it. A more complete and accurate historical or scientific account develops, according to these theorists, when multiple standpoints are included and brought to account. The viewpoints of frequently-excluded others are especially valuable in this approach, because they offer a commentary upon the normative viewpoint that those at the centre cannot easily see for themselves. Thus a feminist way of knowing is not solely a matter of adding perspectives that have so far been left out, leaving the normative view unchanged; as the total picture enlarges, previous answers may come to be seen as incorrect or incomplete (TallBear 2013, 23-25). Alongside ethnographic explorations of what it is about their practice that herbalists feel to be culturally potent, then, I hope to bring to bear some historical and philosophical perspective on why it might indeed be so.

Anthropological: In Motion and Across

As they repudiate conventionally modern historical narratives, herbalists live out an unconventional relationship to time. They engage a look backward in order to move decidedly into a future. Herbalists value medical theory of the past partly because it helps them to heal their clients, but also because it serves for them as a wellspring of creativity for re-imagining contemporary life.[12] I understand herbalists to be functioning, like the French vitalist physicians to whom they sometimes appeal, as *medicins-philosophes* — healers and philosophers both, engaging via their study of embodiment a much broader range of questions of the day (cf. Makari 2015, 256-268). Much as they reach into the past, then, they are creating something new. Thinking alongside anthropologist Tobias Rees, I see in herbalism not any kind of nostalgia, but "an emergent form of knowledge that escapes in its specificity our established categories of thinking" (2010, 161). In order to attend closely to this movement made by herbalists, I require a particular anthropological approach.

I consider herbal medicine less through an analysis of cultural difference, as in the classical anthropological mode, and more through "an analysis of motion" (Rees 2014, 471). I am concerned most closely with the ways in which something culturally novel is being made in herbal medicine, with relevance far beyond the clinic walls, and I endeavour in these pages to follow herbalists' conceptions as they move. I follow them from statistics into poetry, in Chapter 1, toward science and political economy, in

Chapter 2, and on to the interspecies engagements of direct plant relationships and into theories of political change in Chapter 3. All the while, I attempt to trace their general trajectory forward, as they draw old ideas into the present and re-configure that present toward something new. I will not conclude with what that 'something new' is. This is so precisely because it is still becoming. It is in motion. The point, as I hope to show, is less an 'arrival' at a specific image of a future, but rather to learn to live in motion — in responsive, local, evolutionary conversation, with humans and nonhumans alike.[13] The futural images I heard herbalists sharing seemed to centre upon this common trait.

In this approach, I am guided too by anthropologist David Graeber's suggestion of a role for a radical intellectual: "to look at those who are creating viable alternatives, try to figure out what they are (already) doing, and then offer those ideas back, not as prescriptions, but as contributions, possibilities — as gifts" (2004, 12). I would add, offering those ideas 'forward' in addition to Graeber's 'back': herbal medicine struggles sometimes to be legible on a large stage (for historical reasons I will explore in depth), and to whatever extent I am able to use tools of scholarship to aid in translating what they are doing into other languages, I would hope to offer this as a contribution too.

I engage a particular kind of scholarly ethics in order to make these movements. I am inspired once more by Kim TallBear, in her methodological concept of 'studying across.' The term is a play on anthropologist Laura Nader's call (1972) for anthropologists to 'study up,' turning their gaze upon "the colonizers rather than the colonized, the culture of power rather than the culture of the powerless, the culture of affluence rather than the culture of poverty" (inTallBear 2014, 5-6). In studying up, TallBear found she "could not adequately care for… [her] subjects" and felt the need "to study a community in whose projects [she] could be invested" (2014, 5-6). If studying up is studying the powerful, then studying across is working with people who are crafting new possibilities for living and thinking that one feels inclined to help come to fruition. I understand this not as a way of conferring an academic imprimatur upon a given lifeway as correct, but as a service of clarifying and theoretically grounding something that is already manifest, such that it might become a somewhat sharper tool in the hands of those who wish to wield it, and a more accessible one to those who might not have come across it otherwise.

I do indeed find myself, as TallBear writes (quoting Neferti Tadiar), "already caught up in the claims" that herbalists "act out" (2014, 5). I come from a family of

biomedical professionals. When I first encountered plant-based medicine in my twenties, quite by accident, I found myself constructed as a self in a wholly different light than that to which I was accustomed. In biomedical and herbal systems both, I had experienced humanistic kindness — it was not a matter of care on one side and disregard on the other. The difference, I believe, issued rather more from the medical theory itself. Different understandings of what the world is like were being carried across in each, conveyed to me consciously and subconsciously through the ways each explained and approached my body (cf. Agledahl et al. 2011). It took me many years to conceptualize my experience in this manner; seeing through the perspective of herbalists, and reading the history and philosophy of medicine accordingly, has helped me to think about it as I do.

I understand the movement of herbalism ultimately — as a student of herbalism must — through wildflower analogy. One herbalist told me that she takes inspiration for her activism from dandelions. Dandelions don't move quickly, and they don't stand very tall. But they can grow through barbed wire, she told me, and crack through the prison walls. So, too, do I understand the herbalist's underlying idea of a world suffused with intelligent life. It operates quietly, but it seems irrepressible, somehow, in modern Western history. No amount of paving it over seems able to put it finally to rest. In the life and work of herbalists, it lies in wait just beneath the surface — poised, they sense, once more to surge through.

1 | Poetics: The Individual and the Statistical[14]

"In the matter of statistics… the first concern is above all to lose sight of man taken individually…. He must be stripped of his individuality in order to eliminate everything that this individuality might accidentally introduce into the question….

In applied medicine… the problem is always individual… it is always a single person with all his idiosyncrasies that the physician must treat. For us the masses remain completely outside the question."

> — Francois Joseph-Double, academic physician from the Faculty of Montpellier, speech to the Paris Faculty of Medicine, 1835 (La Berge 2005, 92)

I re-filled my water, found a washroom, and dashed up two flights of stairs. I craned my neck this way and that looking for the right room. This way — a long, empty hallway of classrooms. That — a picture window, opening on to thick forest. It was the sort of place that a herbal medicine conference had to be held. A rural college, big enough to host hundreds of herbalists and their boxes of products, but far enough from the beaten path to have wilderness in walking distance. There had to be ample parking, and there had to be wild plants.

The class that would begin shortly had never run before at the Herbal Summit, this annual gathering of herbalists from across New England and beyond. There had been much excited chatter about the class in the weeks preceding. A number of other teachers had requested that their own classes be scheduled at a different time, afraid of losing all of their students to it. The lights dimmed, and the title slide flashed onto the screen: "Clinical Competency for Trans Health." The first presenter, Nina, stepped toward the podium. Nina was a graduate of Marigold Herbal College and a trans woman; the other presenter, Karen, was one of Marigold's directors.

Nina got underway, ambling between impassioned rhetoric and nervous apologia. Karen stood back, leaving space for her former student to step into her knowledge. Together, they presented herbal medicine as a field that both needed to grow into a deeper understanding of how to care well for trans people, but which had theoretical prerequisites for that kind of growth embedded within it. They referred workshop participants to a companion website, which read in part:

> Herbal medicine has always been the medicine of the people, a medicine of resistance, and it is time once again to sharpen our skills and engage our hearts in service of collective liberation…. Many easy changes—and a few more extensive conceptual shifts—can help make our practices and classes safer, empowering places for trans people. We invite herbalists to consider their potential role in dismantling the healthcare (and other) systems that harm transgender clients.

Midway through the class, a hand went up from the audience: "How do you know," the questioner asked, "whether someone is *really* trans, or just confused?" Karen parried, calmly but firmly: "*They tell you*. If they say they are trans, they are trans. Period." The class moved on, but the conversation continued afterward.

Karen and Nina learned that the questioner, Brenda, was a biomedical healthcare worker, and that her nephew was a trans man. She wanted to know, she said, what her nephew's 'real' gender was, so that she could ensure he got access to the right kind of health care — that is, so that she could assign him appropriately to a gendered category of medical risk. In biomedical thinking, there are established risk categories for women and for men — breast cancer a higher risk for women, prostate cancer a higher risk for men — based on large volumes of clinical trials. How, Brenda wondered, was she to know how to recommend the right lifestyle changes and diagnostic tests for her nephew, if she didn't know his 'real' gender? Karen insisted, once again, that trans people themselves must be the sole authority regarding their gender. But a gap remained for Brenda between her nephew's self-report and the clinical-trial-based categories populating her medical toolkit.

Karen tried speaking directly into the gap. She told Brenda that she might be having a hard time giving authority to her nephew *because* she was trying to understand him according to categories. Brenda was struggling, Karen suggested, because she didn't have a way to help someone in the clinic without assigning them to a category. Nina had begun the workshop with an explanation of gender as a continuous spectrum, rather than a discrete pair of categories. Human experience, she insisted, had to be seen as fluid and multiple. As Nina told painful stories of being misunderstood in medical settings, she wasn't angling for new gender categories. She was arguing that bounded categories were not an effective way of thinking about gender at all. Taking in the workshop as a cisgender man, I understood Nina to be asking on the surface for me to deepen my understanding of a kind of person different from myself, but on a deeper

level to re-think whether any person, myself included, was best captured as a 'kind' of person at all.

I caught a ride home from the Herbal Summit with Karen, and we talked more about Brenda's question:

> Having standardized, statistically-derived risk factors, or interventions, or diagnostic procedures, at certain ages, for particular populations, who engage in particular *things*… sure, there's a sort of average. You're going to catch a number of fish with that net. To me, it is challenging to potentially apply some of these statistically-derived, characteristic-driven diagnostic or treatment protocols to a trans person. But those challenges actually invite us to say, 'Let's just stop trying to apply these broad categories to *any* group of people.' That fish net has big holes. What if, instead, we just practice an individualized medicine, that begins by talking to people, and says, 'Who are you, and what's going on? What do you see? What do you feel? What's happening in your body? What's happened in *your* family specifically? What do you eat? What's your exercise level? What do you care about? What are your priorities?' All of those things. And I think that everyone, regardless of gender identification, would be much healthier and happier, and medicine would be more effective, if we treated them that way.

Karen continued:

> I'm still interested in the fact that a person has a family history of cardiovascular disease, and they smoke, and they're sedentary; I'm still thinking about how to support their cardiovascular health. That's all based on those particular tools [of statistical categories], what we know about how humans *tend* to work. But also, I want to look at this individual person, and what is true for *them*…. The tools in my box that I prioritize a bit more are that sort of very deep personal inquiry about exactly what their life looks like, what's important to them, what actually brings them joy, and for what purpose.

Neither Karen nor Nina claimed trans-inclusiveness as the exclusive preserve of herbalists. After all, the premise of their workshop was that herbalists had work to do in order to learn to attend appropriately to trans health, and Brenda's workshop question could be seen as coming from a desire to care well. But in Karen's description of her practice, it is not only the medical practitioner, but also the *medical concepts* that are capable of beholding a client according to the way they define themselves or not. In the philosophy of herbal medicine, Karen attempted to explain, there is a path that leads that way. Thinking in categories, she argued by contrast, can set up a kind of roadblock.

The conversation ended in agreement and impasse both. Brenda moved a little further toward recognition of the meaning and value of according people the right to determine their own identities. Karen could see how Brenda's questions came in part from a desire to care well for her nephew and for all of her patients. But this was as far as they could travel together. Brenda didn't know how to apply her medical toolkit to individuals beyond their respective categories, while Karen was insistent on the

importance of medical tools that could. Somewhere deep in the conceptual apparatus of their respective forms of medicine lay a disagreement that they found impossible to bridge. And though it played out on the very contemporary terrain of clinical competency for trans health, it closely tracked the contours of a debate that has characterized Western medicine for the better part of 400 years and Western science more generally for even longer before that. The long history of Karen and Brenda's impasse can tell us a great deal about what went on between them, and what went on between them can tell us a great deal about the predicament and possibilities of herbal medicine today.

What Is a Disease?

In the 1600s, a bitter dispute raged in Europe between two groups of physicians. The matter at issue was just what a disease, in fact, was. Traditional opinion had held that disease was always particular to an individual. It followed a unique course in each case, influenced by the specific makeup of the sufferer, the part of the body afflicted, the local environment, and the time of year. This venerated tradition was traced by its keepers to Hippocrates, the great ancestor of natural (as opposed to supernatural) medicine in Europe. In its Medieval form, this medicine hewed most closely to the highly systematized interpretation of Hippocrates that had been made by the Roman physician, Galen, in the 2nd century, and the further refinement of Galen's system by the great Arabic physician, Avicenna, around the year 1000.

But in the 1600s, the authority of the Galenic system came under challenge, chiefly from the followers of a Swiss physician named Paracelsus.[15] Where the Galenists understood disease to be a state of a particular body, in relation to its particular environment, at a particular time, the Paracelsians suggested instead that diseases might be standard, universal entities, existing independently of any particular person, and following a predictable course in each individual case. For the Galenists a person could *become sick*, in this or that sort of way, but for the Paracelsians, a disease was a *thing* that a person could *have*. (Gaukroger 2006, 346-347).

I replay this academic medical debate some 500 years on because it served as a flashpoint for upheavals whose origins lay far beyond medicine. The roots of the dispute between Galenists and Paracelsians over what a disease was — and thus, as

we'll see, those of the dispute between Karen and Brenda as well — reach all the way back to a fundamental disagreement in European thinking over how to organize and understand the things that make up the world. That is, it was not just a debate over medicine, or even over science, but over the question of what should furnish the ultimate source of order and meaning in European life, and who should have the right to furnish it. The way this debate was settled retains relevance for the state of power and knowledge still today, because Western culture is still more or less organized according to the terms of its resolution.[16]

Origins

When Galen made his systematic interpretation of Hippocratic medicine, in the 2nd century, he used the philosophy of Aristotle as a scaffold, and we can understand the makeup and the fate of Galen's medicine a little better through a quick foray into Aristotle. For Aristotle, every material thing was composed of a unique blend of the earthly elements of air, water, earth, and fire. Each object thing had its own intrinsic tendency, or motivation, based on the particular combination of elements that constituted it. So, for instance, things full of earth element tended to fall and things filled with air would tend to rise (Lindberg 2007, 37-53). Following Aristotle's mold, Galen believed that each part of the body, too, had its own intrinsic motivation, drawing toward it what it needed, and repelling what was harmful to it. When disease struck, for Galen, it could be understood as a state of disequilibrium among these drives, and the job of the physician was to bring them back into harmony with one another (Lindberg 2007, 125-131).

Just as Galen had done in medicine, through most of its history, the Catholic Church integrated its own teachings with a form of Greek philosophy. For Church leaders, this was a way to neutralize the possibility of a challenge to the Christian authority over knowledge. Christianity, after all, could claim expertise on the topics of revelation or sacrament, but it lacked a method of its own for studying the natural world. Church leaders thus selectively incorporated and domesticated aspects of Greek philosophy that they thought could complement Christian thought (Lindberg 2007, 37-53, 139-156; Gaukroger 2006, 47-59, 232-236). For almost 400 years before the medical dispute of the 1600s, Christian thinking, like Galenic medicine, had been married to

Aristotelianism. But gradually the synthesis between Christian thinking and Aristotle came undone, and the origins of our Medieval medical dispute lie there.

Aristotle's philosophy had not been the first choice of Christian thinkers for buttressing their theology. His vision of a material world enlivened by its own activity had tended too strongly toward paganism for the early Church leaders' taste. They preferred the philosophy of Plato, which split the world into two realms, a transcendent realm and an earthly one, just as the Christian doctrine of heaven and earth did. For Plato, as for Christianity, the transcendent realm was the ultimate source of truth, and the things of this world derived their life and motivation from it. For several hundred years, this synthesis of Christianity and Plato was the dominant form of European thought. But by the 1200s, Aristotle's philosophy had grown in popularity once more, and the Church was forced to grapple with it. Theologians attempted a new graft, this time between Christian thought and Aristotle. It held for a few hundred years, but in the end, the active material world of Aristotle proved impossible to contain. By the start the early Church leaders' fears were realized. Aristotle's philosophy spread, and it legitimated and gave rise to a host of new philosophies describing a world animated with hidden and occult powers, or a world in which all matter pulsed with divine energy. Orthodox theologians and philosophers feared for the stability of Christian monotheism, and they cast about for a new approach (Gaukroger 2006, 47-83; Lindberg 2007, 194-226).

The Mechanistic Philosophy

The problem was posed most acutely by Marin Mersenne, a French Jesuit monk and polymath, in the 1620s. Mersenne argued that these animated philosophies had to be cut off at their root, specifically by attacking the notion that individual things had their own motivating force. If this idea could be removed, then any explanation of life or motion would need to refer to a separate force from a separate realm — something like a Christian God. Such a philosophy would come to fruition in the work of one of Mersenne's close collaborators, the French mathematician, René Descartes.

Descartes' starting point, following Mersenne's concerns, was the removal of any notion of motivation from material things. He returned to an ancient Greek idea that all matter was composed of tiny particles, and that everything important about nature

could be learned by studying their interactions. He proposed using the laws of mechanics to do so, suggesting that God had designed the world to function predictably and reliably, like a machine. All questions of meaning and motivation, then, were to be removed from philosophical consideration, and reserved for treatment by religion. All that mattered for understanding the natural world was to know how it worked. Descartes' system came to be known as *mechanism* (Gaukroger 2006, 253-257). And though it differed from Plato's vision in a great many respects, it fulfilled a similar role with respect to the Christian idea of how the world and its meaning should be understood: it reconstituted the division between the material realm and a transcendent one (Makari 2015, 21-22). Mechanism was able to answer Mersenne's challenge of separating active powers from matter, and soon it would find its way into medicine. The mechanistic idea of a world divided would underwrite a challenge to Galen's idea that the motivation of disease could be found in the suffering body and its environment themselves, rather than in a separate realm.

In short order, mechanism ran into challenges. An array of phenomena and experiences proved to be difficult to capture through the laws of mechanics alone. When other philosophers posed challenges to Descartes and his followers accordingly, they responded by hewing ever closer to the split between matter and mind. They developed and refined what would become one of mechanism's most enduring operations: *reduction*. Any problem that could not be solved using the laws of mechanics would be *reduced* to the scope of mechanical tools of inquiry. Whatever phenomenon did not fit within this scope would be relegated to the realm of religion, or simply eliminated from serious consideration altogether. Those qualities of an object that could be measured mechanically — such as mass and volume — were considered by the mechanists to be its 'primary' qualities, and anything else was marked off as 'secondary,' and reduced from view. Sensory perceptions, for example, were considered by the mechanists not to be properties of objects themselves, but of interpreting minds, and thus of secondary importance for philosophers of the material world. The phenomenon of 'life' fared even worse under mechanism — it was eliminated from the field of investigation altogether. Mechanistic inquiries into the nature of living things considered them to function just like machines (Gaukroger 2006, 324-326, 340).

The Rise of Experiments

The new system of mechanism gained wide acclaim — not so much because of its explanatory power, which proved rather limited beyond a set of highly idealized phenomena (Gaukroger 2006, 325). Rather, it spread because it satisfied the need of a number of influential groups to return to a vision of a world divided in two, like the one that married Plato's philosophy with the Christian idea of heaven and hell. The first of these interested groups, naturally, was the leadership of the Catholic Church and those invested in its continuing authority. But the Church alone had been unable to stem the tide of Aristotelianism for nearly two hundred years. Mechanism grew to prominence because it had the support of at least one further group, a subset of philosophers who were dissatisfied with Aristotelianism as well. Led by the vision of Francis Bacon, this second group was imagining a new type of philosopher, one that would come to be called the 'scientist.' Bacon's visions would be influential in the development of the Scientific Revolution and its privileging of the method of experimentation. Together, the Catholic Church, the mechanists, and the scientists sponsored the rise of mechanism over Aristotelianism. The specific interests of each group in the mechanical philosophy is visible in the Paracelsians' challenge to the Galenic idea of disease.

It may seem surprising to find the early promulgators of the Scientific Revolution cast as allies of the Church. Historians have oft written of the Scientific Revolution as a victory of rationality over religion. But more recent histories, less occupied with presenting modernity as triumph, have challenged the conventional view (Cook 1990). The architects of the Scientific Revolution, in many cases, were in fact deeply religious. When the scientists differed from the Church, it was less often because they were atheists and more often because they were adherents of a different kind of Christianity, the emerging Christian sect of Protestantism (Gascoigne 2010).

Protestantism, especially the Calvinist variant in which Francis Bacon was educated and raised, encouraged lay practitioners to adopt values and habits that the Catholic Church had previously reserved for monks. Austere self-discipline, self-abnegation, and the effort to reveal God's glory through every human act — these monastic attitudes were to guide the Calvinists' conduct in every kind of life. For merchants, for instance, this meant a scrupulous, frugal, and ambitious attitude toward business, so as to reveal the glory of God through the extent of their human

productivity (Gaukroger 2006, 220; Weber 1930). For philosophers like Bacon, the Protestant ethic translated into a preference for a philosophy that was practical, more focused upon dominating nature and turning it toward human ends, than upon understanding nature for its own sake or for contemplating how humans ought to live a good life. Bacon and his followers developed an aversion toward the Aristotelian philosophers' tendency to construct grand theories. These seemed to the early scientists insufficiently industrious, or even blasphemous. Comprehensive, systematic knowledge of nature, they thought, ought to be reserved for the mind of God alone.

This new type of philosopher, the scientist, sought instead to build knowledge one little bit at a time, testing nature empirically as they went. Emphasis on the practical and the piecemeal drove their interest in the method of experiment. For scientists, mechanism's division of the world between mind and matter was an effective tool. It allowed them to look upon the material world as a passive object for them to decipher and make productive, and in so doing demonstrate, in their eyes, the glory of God on earth through human creativity. Using the mechanistic philosophy of a divided world, the scientists could accomplish all this without the risk of suggesting any active or divine power other than the Christian God. Any knowledge they uncovered about the workings of this mechanical world would be but more proof of God's glorious and benevolent design (Gaukroger 2006, 165-168,205-209,223; Gascoigne 2010).

The division of the world into separate realms — one for mind, the preserve of the Church; the other for matter, to be taken up by science — thus became a central infrastructure of the Scientific Revolution. Seen in this way, science emerges not as a mechanical system devoid of meaning, but as one plank in an overall social philosophy *preoccupied* with meaning. To read the Scientific Revolution from the standpoint of herbalists is to recognize in it not only an innovation in *method*, but also a conservation of one kind of *meaning* and a suppression of another. The Scientific Revolution was centrally concerned with preserving a realm of inquiry in which Christian teachings about the nature of the world could be safe from any challenge by the idea of an active material world. In the mechanistic worldview for meaning to exist, it needed to be placed in a category apart. The world could be meaningful *only* if meaning was abstracted from natural things themselves. And so it would be with disease.

The Fate of a Mechanistic Medicine

The new model of disease proposed by Paracelsus and his followers in the 1600s fit this new model of meaning. They proposed disease as a *category*, abstracted from suffering individuals themselves. The notion of disease, like the rest of the world, was split in two. The ultimate reality of a disease in the Paracelsian conception was to be found not in the particular situation of the sufferer, but in an idea, as it were, in a separate realm.[17] When disease manifested materially, in an individual sufferer, the disease was presumed to adhere to universal physical laws, making it amenable to study using the laws of mechanics. Following the new scientists still, the Paracelsians sought to deal with diseases pragmatically, by seeking powerful and definitive cures.

On each of these counts, the Galenists disagreed. The Galenists remained philosophers of the traditional sort, seeking a comprehensive understanding of the natural world in order to advise their clients on how to live in harmony with it. Rather than dominating nature, Galenic doctors sought to understand how one might live in balance with it instead. They were far more interested in advising their patients in the prevention of illness than they were in curing it. Cure, for them, need arrive only when harmonious living had failed (Cook 1990). To the Galenists, the Paracelsians' intervention formed part of an attempt by the new field of science to take over the traditional practice of medicine. Both Francis Bacon and René Descartes had hoped, indeed, that their philosophies would produce pragmatic results perhaps most of all in the development of a new kind of medicine (Gaukroger 2006, 346-349).

By the close of the 1600s, the debate over what a disease was had been decisively resolved, and it was the Galenists who emerged victorious. The Paracelsians had sought to replace the Galenic system with their abstract disease categories just as mechanism was replacing Aristotelianism, but whereas scientists and philosophers could get by for some time on the explanatory promise of a theory alone, when it came to medicine, theory had to produce immediate results for patients. Perhaps ironically, it was in this very practical terrain where the Galenists remained superior. More ironically still, it was their philosophical sensibility that made them so.

Medical practice required of physicians that they have a functional definition of what it meant to be healthy or ill, and this the Paracelsian idea of disease could not provide (Gaukroger 2006, 346-350). It may have been straightforward enough to tell health from illness in a spectacular case like syphilis or the Black Plague. But most of the

time, the difference between health and illness is much less plain. The Galenists, unlike the Paracelsians, had a subtle answer: individuals were healthier to the extent that their bodies responded harmoniously to changes in their physical and social environments. The Galenists, that is, had a norm of health to which they could appeal in order to help clients become progressively healthier. The Paracelsians, in essence, had a problem of meaning. With all meaning relegated to the mind and the heavens, in the mechanistic mode, it was difficult for Paracelsians to say what it *meant* for a material body to be healthy. Unless there was a clear, identifiable entity they could name and banish, there was little they could do to help someone feel better. What it means to be healthy is precisely the sort of question that the reflective and earthly Aristotelian approach was well equipped to answer, and precisely the sort that mechanism, through its operation of reduction, set out to eliminate from view.

Karen's conversation with Brenda at the Herbal Summit replayed, in many ways, this 1600s debate. Brenda needed an abstract category, like a fixed gender, in order to provide medical care. She needed an abstract understanding of individuals to match abstract categories of disease. For Karen, a category-based understanding was too rigid. It wouldn't allow her to see the needs of an individual body, with its own particular relationship to health. In the 400 years in between, the relative power between these two positions has inverted. Now, Karen's position is marginal and Brenda's is dominant. Later in this chapter, I will trace out how this change occurred. Some years after the 1600s, I will show, a scientific medicine would find its own answer to the fundamental question of medical meaning. When it did, it would resurrect the Paracelsian notion of disease as a category (Rosenberg 2002). As scientific medicine grew toward the biomedicine practiced by Brenda today, its adherents would come to consider the Galenic position outmoded. For Karen, though, it mattered little whether the Galenic worldview was new or old. What mattered to her was whether there was something valuable it could help her do. In this instance, that was considering her clients as individuals rather than referring them to categories. In the Galenic worldview, Karen retains access to a set of concrete medical tools that help her attend to trans people according to their individual self-definitions -- and, as she emphasized to me, to every other kind of person's self-definition, too.

Jason: You're saying you do have a pretty systematized approach to make things very

individual.

Karen: Yes.

Jason: And that's *constitutional medicine*.

Karen: Exactly.

Poetic Medicine

The consultation room was spartan, and warm. Cream-coloured walls bore green accents; a floral-print couch posed against the far wall, looking old enough to contain many stories, but sturdy enough still that it beckoned me to tell it more. A warm cup of dandelion root tea sat on the dark wooden end table beside me. Dandelion root, one of the students had told me, could be used for relieving eye strain. Drifting around the room, my eyes alighted upon whole leaves imprinted upon the wall, hiding coyly behind a cream cover. I gazed out the picture window over forested, rolling hills. Standing, I could see dandelions growing wild on the edge of the parking lot, abutting onto hedgerows of planted herbs in the garden below. Downstairs, the classroom buzzed with activity. But here, in the Marigold treatment room, time slowed enough for each part of me to find its own rhythm, and its voice. Sarah, a teacher and practitioner at the school, walked in to join me. Cup of tea in hand, she swirled and closed the door behind her.

We weren't there to talk about my life, though I nearly wished that we were. Instead, we talked about what herbal medicine meant to Sarah, and how she mobilized those meanings with her clients as a form of care.

Sarah: Often, clients tell you a lot, but not everything. There's just a lot of trauma….

Sarah told me about a client she had seen a few months prior. This client, Vanessa, had come to see Sarah with a range of gastro-intestinal issues, and heartburn in particular. Vanessa had a fair amount of knowledge of herbal medicine, and she arrived at her consultation knowing what she was looking for. Vanessa wanted Sarah to focus closely on her gut discomfort, and she had some starting ideas of which herbs would be right. But Sarah could see from Vanessa's intake form that there might be a little bit more than digestive issues at play. Sarah saw a scatter of symptoms affecting other body systems, not enough to constitute a clear alternate plan of treatment, but enough to suggest to Sarah that she listen to Vanessa in a subtler tone. Sarah decided on a herbal formula aimed mostly at repairing the internal surfaces of Vanessa's intestinal tract, but she added in linden, too, which has indications for the heart.

Vanessa came back for a follow-up several weeks later, and most of her digestive

troubles had cleared up significantly. The heartburn, however, was still strong. Sarah had expected her first line of gastro-intestinal herbs to have tended to the heartburn also; seeing it hadn't, she decided to follow her other hunch. Sarah took some of the main gastro-intestinal herbs out of Vanessa's herbal formula, let the linden remain, and packed the rest with hawthorn berries and rose — both classic medicines for the heart. Vanessa was flummoxed: "Why are you giving me these? They have nothing to do with the gut problems I'm experiencing!" Sarah replied, "just take the time to smell the dry tea before you make it and as you make it, and see what it does."

Two weeks later, Vanessa came back to clinic to follow up. This time, she had a story. Sarah recounted it to me:

> Vanessa said to me, 'the first time I sat and smelled that, I had this complete emotional breakdown, you know, like, on the floor, crying, for the better part of a day.' I was concerned: 'Oh no, that's a lot!' And she replied, 'No, but it was really good!' Because she had really built up a lot of walls around this particular trauma that she'd had, that she then shared with me. It was just really blocking her. Emotionally blocking her. So even though I might not always put those herbs in a gastro-intestinal formula, she needed something more on the emotional level.

Sarah sent her client home with a rose flower essence — a low-dose extraction of the flower alone, used by herbalists to draw out particularly those medicinal constituents of a plant that act upon the psycho-emotional plane. Taking the flower essence, Vanessa's emotional unfolding continued. She returned to the clinic one month later, her heartburn dissipated, and a deep connection forged with rose.

> Sarah: Everyone has trauma (some more than others), and we never want to push them to divulge anything. That's not our place. But the herbs often help people get to a place where they can look at it again

What strange magic happened here? In one sense, Sarah was following intuitions and hunches, holding them in the background as she watched Vanessa's case progress. But she was also in dialogue with concrete systems of medical reasoning that helped her to integrate diverse clinical observations into a coherent picture. I asked Sarah if she could let me into that process a little bit, inside her medical reasoning. How, I asked her first, did she decided to turn toward rose and hawthorn as remedies?

> Sarah: "[I]t just enabled [Vanessa] to see that she needed a little bit… more, you know? Looking beyond, 'It's just my gut.' Oftentimes, the gut gets really tense and constricted

> when you're holding a lot of tension in other places, when you're guarding against something. Sometimes coming into it in that mental or emotional way can really physiologically allow release in other areas.

So far, Sarah was speaking mostly in scientific physiology, the same system of understanding of the body used in biomedicine. Her language may have been softer than stereotypically biomedical prose, and she may have considered Vanessa's emotional life more centrally than might be the biomedical norm. But she was describing an essentially mechanical, cause-and-effect physical process still. Digestive problems, Sarah explains here, can be caused in part by a high level of physical tension in the digestive organs, tension that can be a subset of generalized, systemic stress.

But if all that Sarah had to work from was this generalized stress mechanism — this catch-all locomotive called 'stress' driving the physiological train — she might not have been able to help Vanessa get very far. She could have told Vanessa to reduce her stress in general, but that alone would have offered Vanessa little guidance in finding the source of her tension. Using only the mechanical approach, Sarah had no way to reason from Vanessa's fairly commonplace complaints to her utterly particular personal story.

Sarah had said that Vanessa needed a little bit *more*, needed to *look beyond* 'it's just my gut.' Where, precisely, should she look, and how could Sarah figure out how to point the way? I pressed Sarah further:

> Jason: What made you think about heart things? Was it because it was *heart*burn?
>
> Sarah: No, it was the way she carried herself. It was *constitution*, the way she carried herself. It was… there was some… I could sense a tension, a little bit of anxiety.

Now Sarah started to diverge from the physiological stress story. She started referencing some of those other symptoms that she had noticed in Vanessa's intake form, and further, a set of qualitative impressions that Vanessa had made upon her. These disparate presences — some clear, some spectral — didn't fit neatly into a story of linear cause. To broaden her understanding, Sarah turned to *constitution*. She made use of that form of medical reasoning preferred by the Galenic physicians, the one that enabled them to understand disease in its particularity rather than in the abstract. As she did, Sarah would transition from treating a disease category to treating an embodied process — from treating *heartburn*, that is, to treating *Vanessa*.

Constitutional Medicine

'Constitutional medicine' is a catch-all term used by herbalists to refer to a system of thinking like the Galenic approach. It is premised upon a close observation of patterns in nature and the location of those patterns analogously in the functioning of the human body and mind (Descola 2013, 200-228). In *Airs, Waters and Places*, Hippocrates writes, "he who desires to seek knowledge of medicine correctly should observe first the seasons of the year and what happens in them, for they are not like one another; rather, they differ widely from each other. And they differ also in their intrinsic changes." Galen, in his commentary upon the text, elaborates: "Hippocrates means that the bodies are like the air surrounding us, for the bodies are likely to be hot and dry in the summer season and cold and moist in the winter," and so on (Galen 1982, 11-13).

Each person, according to Galenic theory, is made up of the same material as the rest of nature — the four Aristotelian elements of air, water, fire, and earth. As the elements combine in different proportion in each and every object, determining its intrinsic tendencies, so they do in humans. The unique combination of elements in each person determines their individual nature, or *constitution*. Through this broad, philosophical conceptualization of the operations of nature, the Galenic physician can describe overall patterns and tendencies of living systems; by tracing their unique manifestations in each person, the physician can render those overall patterns utterly particular. For crossing between the two, the Galenic system provides a map — a set of well-trodden, linking lines — that gives the practitioner a place to start. The many possible kinds of connection between the body and its environment resolve into a set of four *constitutional types*, into one of which each individual most closely fits.

These constitutional types, in theory, could be hardened into the same sort of abstract categories that Karen decried in her back-and-forth with Brenda. Indeed, in some moments in history, they probably have: part of the Paracelsian critique of the Galenists in the 1600s was an accusation that the Galenists had become overly dogmatic (Cook 1990; Griggs 1997, 32-87).[18] But constitutional systems have a built-in tendency away from that sort of hardening, for at their centre lies the principle of *change*. Like the seasons, the elements that compose each person are understood to be in constant motion, and the relationship between changing individuals and changing environments is *itself* in motion as well. When a constitutional system remembers this dynamism at its

root, its components must of necessity be customizable in the clinic room, capable of fluid adaptation to the particularities of the person at hand. Using this sort of patterns-in-motion thinking, Sarah was able to settle a diverse and idiosyncratic set of clinical observations about Vanessa into a shape that she could feel and see.[19] Constitutional medicine of this kind is not omnipresent in North American herbal communities, even though it is central to teaching and practice at Marigold. I give it such pride of place here nonetheless because it appears to be a growing force in the culture of herbalism at large. High-profile writers and teachers advocate 'recovering' this form of thinking for widespread clinical use. I include it so centrally, too, because it forms the historical precedent for the herbal medical theory of vitalism (about which more toward the end of this chapter and in Chapter 2). Vitalism, in my observation, informs the majority of herbal practice currently. Looking closely at constitutional medicine in this way will help us understand both the rising tide of constitutional thinking and the philosophical underpinnings of the vitalist thinking currently in widest use.

Vanessa's Constitution

When Vanessa had entered the clinic room, Sarah had noticed that she was, "*tense*, scattered everywhere. You know, very visibly holding that tension…. [S]he just very visibly needed some…*grounding*. She was all over very scattered, and needed something to pull her in and ground her." Sarah saw in these movements a reminiscence of the movements of air. Airy people, in the Galenic system, tend to fall prey to blowing erratically this way and that, or to floating away from the situation at hand. They can become scattered, and ungrounded. Vanessa had told Sarah that she experienced quite regular anxiety — a jittery instability, a keystone indicator of air-element types of imbalance. Vanessa also reported sometimes having heart palpitations, a cardiac expression of that same jittery affect. Sarah felt Vanessa's pulse. She found it 'choppy,' like wind-agitated waves, rather than smoothly-rolling and reliable.

Sarah saw signs of a fiery temperament in Vanessa, too. Like fire, which burns away any material it can find into smoke and vapour, people of fiery temperaments are fixated upon transforming the world around them. They are goal-directed, sometimes to a fault: they can be rigid. All the while that she was responding to Vanessa's chief complaint of digestive trouble, Sarah started to wonder what might happen if she

looked upon Vanessa's very single-minded focus on her gut health as a symptom in itself — a mental rigidity, mirrored in rigid tension throughout her body. Fiery people, too, can easily become hot and inflamed, coming to suffer problems like heartburn. In conversation with Sarah, Vanessa wouldn't release her hold on her idea of what was the matter with her, and her fiery heartburn hadn't released its hold on Vanessa either. Sarah also examined her client's tongue. She was struck by "a super-red tip," one of the indications of imbalance in a fiery constitution.[20] A fiery constitution can manifest upon the tongue in many ways, but a red tip at the end specifically indicates fiery individuals with a sensitive and delicate heart. Vanessa's bodily tension, she had told Sarah, showed up especially in her chest.

Taken together, Sarah saw a scattered and ungrounded client rigidly focused in one direction, holding tightly in her chest around a vitiated and unstable heart. Sarah wondered whether there was something emotional that Vanessa was protecting — something that had shaken her sensitive temperament. Sarah suspected that Vanessa might have been mobilizing a fiery single-mindedness in her life, likely unconsciously, to keep that something from surfacing. In the first herbal formula Sarah made for Vanessa, tailored toward digestive health, Sarah had included just a little bit of linden. Linden is a gut-healing herb, but it is treasured by herbalists as a heart tonic too. It is a common choice when symptoms of air and fire imbalance are strongly present together, and especially when they gather in the cardiac region — as in Vanessa's agitated pulse, her heart palpitations, and the muscular tension in her chest. Sarah's formula tended overall toward Vanessa's particular digestive problems, but her choice of linden pointed instead toward these patterns in Vanessa's overall embodiment. When Vanessa came back for her follow-up with no change in her heartburn, Sarah felt emboldened to follow her own gut, and she headed more strongly in this broader therapeutic way.

In her second formula, Sarah chose to lead with rose. Rose is cooling, capable of relieving the intensity common among fiery people. But it is also *astringing* — it binds together tissues that have become flaccid or loose. Sarah explained: rose "holds in, it stabilizes, it binds. I was just feeling that rose is… it's going to pull her in, stabilize her enough, *bind* her enough to where she felt safe to explore other things too." Sarah didn't know exactly what it was in Vanessa's life that was making her carry such stresses and contradictions, but she used the qualitative reasoning of constitutional medicine to make a match between the particular natures of this person and this plant. She hoped

that rose might cool Sarah's fiery nature enough to allow something less straightforwardly logical into her vision, while holding her delicate, airy emotional self tightly enough together that she wouldn't fight the emergence of something difficult and new. Rose, Sarah conjectured, might be the 'heart medicine' Vanessa needed, supporting her to explore an emotional tension that she wasn't letting herself (or her herbalist) see.

And about that, Sarah was right. Vanessa's body responded instantly and powerfully to the medicine, long-held tensions starting to unravel upon meeting rose by smell alone. By dint of her particular makeup, Vanessa was particularly able to benefit from the particular makeup of rose. It was a close match for a profound pattern in Sarah's individual way of being in the world — her unique constitution — and she responded to it in a profound way. In herbalist parlance, we would say that Vanessa 'got the message' that rose had to offer. "Rose," Sarah told me, "is now *her plant*."

None of this was linear, but it was patterned. Constitutional medicine provided the templates, and Sarah mixed and molded them to suit Vanessa's shape. Vanessa's description of her heartburn may or may not have sounded vastly different to Sarah from any of a hundred other cases of heartburn she had seen before, but in Vanessa's general embodiment, and in her life story above all, her heartburn would be utterly unlike any of the rest. The constitutional templates Sarah accessed could stretch wide enough to cover Vanessa's mental, emotional, and overall physical states, so that a complex and multifaceted picture of *Vanessa's* heartburn could emerge. 'Heartburn' was not an abstract disease category for Sarah; using constitutional medicine, she was able to see heartburn as a lived experience, as something utterly particular to Sarah's own body and life.

Poetry Is a Tool

What constitutional medicine helps herbalists do, above all, is hold divergent realms together. It is a good way to think if one has the idea that mind and matter are connected. As she thought through Vanessa's story, Sarah criss-crossed mind, body, and world on the backs of metaphors. It was by virtue of her ability to see Vanessa as a multifaceted being, a mixture of many kinds of things, that Sarah could draw connections between digestive trouble and trauma and capture Vanessa with such

exquisite specificity. Sarah was not relegated to trafficking in abstraction. The metaphors of constitutional medicine capture a being in motion, in dynamic conversation with many kinds of things. They are more than quaint analogies or rhetorical flourishes: they are functional thinking tools, doing heavy lifting in the clinic room.[21] This web of poetic logic spins the underlying idea of a unified world into a clinical method and a mode of engagement.

Consider, by analogy, the way that the anthropologist Michael Jackson has observed the work of metaphor in his fieldwork among the Kuranko in Sierra Leone. The Kuranko often explained their personal relationships to Jackson using the metaphor of a path. Gifts were given, especially to in-laws, "so that the path does not die" (Jackson 1989, 146). When relations between people were strained, others would say that "the path is not good between them" (145). The metaphor of the path, Jackson insists, is not merely descriptive. Jackson tells us that the Kuranko villages he lived among were organized into clusters of houses connected across open spaces by a maze of paths and lanes. The grass that grows in these open spaces, Jackson tells us, holds its shape when it is trodden on: it bends this way when one walks this way across it, and that way when one walks back. These paths themselves, he writes, are the physical residue of social connection in village life.

The metaphor of the path is used as well in a number of African languages, Jackson tells us, to describe a very different kind of movement — the flow of blood, breath, and heat inside the human body. Without good passage along these pathways, a person cannot survive. So too, Jackson tells us, for Kuranko village pathways. Kuranko people traverse the village paths to visit one another, but also to cooperate in food production, perform basic services for one another, and organize hunting expeditions. The movement of people across these village paths is encouraged by bonds of neighbourliness and kinship, but it is also fundamental to the village's economic life. In this simultaneity of uses, Jackson writes, the metaphor of the path binds together different realms into a single concept, uniting their purposes in Kuranko thought. It expresses an understanding that sociality and survival are mutually interdependent. It holds within it the vital knowledge that social reciprocity in the village is the basis of material well-being, the condition of continued life.

Jackson argues that metaphor is a vital and pragmatic tool for understanding how to live, for it encodes knowledge of the interpenetration of self, society, and

environment upon which every culture survives. Metaphor does this work for us everywhere. In Western scientific anatomy, Jackson points out, we have tear *ducts*, urinary *canals*, and blood *streams*, linking personal health to the waterways that have for millennia facilitated economic exchange. By reciprocal association, we understand that both kinds must remain unobstructed if we are to be well. So too, he writes, for 'capital flows,' and the information superhighway, new objects that piggyback upon older images to insinuate themselves into our understanding of what our culture wants us to prioritize as we organize our lives. Metaphors of the body and the brain as machine, similarly, prepare our understanding of ourselves as beings physically dependent, in the modern age, upon industry.

Through this poetic logic, Michael Jackson explains, we turn fundamental observations about the particular ways in which we relate to the material world into available units of common knowledge. As we think casually each day with these images, we come to understand, unconsciously and by osmosis, who we are through them. In our very structures of thinking, we are made up of our culture's relationships to the world around us. They orient us subconsciously toward how we ought to act and how we ought to be. Among the Kuranko, Jackson writes in a final example, initiation rituals were described through metaphors of cultivation, ripening, and harvest. Maturity was linked metaphorically to the growth of rice. But the growth of the rice, in turn, depends materially upon a mature and co-operative attitude among Kuranko men, the very sort the Kuranko would attempt to inculcate through initiation. The self and the world, said the Kuranko, must "move well together" (149). So too, says the Galenic view, in medicine.

Thinking medically, we can choose to ignore this sort of poetic logic. In biomedicine, certainly, poetry has gone out of fashion. But if we do ignore the poetic way in thought, Jackson suggests, it is at our peril. For these metaphors are useful tools not only because they encode knowledge of the relatedness of separate realms, but because they thereby become abacuses for working out problems in between them. When a tricky problem appears in one area — say, a tense physical body, or heartburn — and anxiety builds up around it, deploying metaphors permits us to transpose the problem onto an adjacent area — say, a past trauma in emotional life — where there may be more freedom for movement. Perhaps, reciprocally, clearing Vanessa's heartburn could have loosened her emotional trauma. Equipped with these malleable

metaphors, though, Sarah didn't have to choose between the two. She was able to move around the many parts of Vanessa until she found a way in (Jackson 1989, 137-155).

Had Sarah considered her client as a part of a fixed category, referring her heartburn to a statistically-derived principle of how 'heartburn,' in the abstract, operates, she might not have been able to find such a subtle fit. Rather than reducing idiosyncrasies in Vanessa's heartburn down to a common disease definition, Sarah exploded them, seeking poetic connections to Vanessa's emotional life, her family life, her worries and fears, her income, her ecology. Poetic medicine permits individualization precisely because it allows for crossing realms in this way. Sarah could ask, in rich and subtle ways, not only whether or not Vanessa had heartburn, but *what sort of heartburn it might be*. Consequently, Sarah was able to help Vanessa with problems that she hadn't intentionally brought into the clinic and which she may not have even known about herself. That was so because Sarah was seeking not only to pinpoint Vanessa's medical situation, but to understand globally, philosophically, the situatedness of *being Vanessa*.

Three essential principles of constitutional medicine helped Sarah to help rose to help Vanessa to open her heart. First, that each thing in the world is unique. Second, that each thing in the world is changing, in dynamic conversation with its surroundings. Third, that each thing is related to every other thing, across great chains of similarity, and that these chains can be meaningfully, if not completely, mapped and perceived.[22] These three propositions correspond closely with the Aristotelian worldview upon which Galenic medicine was based.[23] They are deep ideas about what the world is really like. Deep ideas like these, and the thinking systems that emerge from them, matter in this way: they highlight and reveal particular relationships in the material world, and what is seen can be acted upon. Thinking with these ideas, Sarah saw Vanessa as a being embedded in ecological conversations, and so she was capable of treating her as such a being in subtle ways. Through the lens of these ideas, a different world appeared to Sarah. These deep ideas mattered because of what they enabled Sarah to *do*.

From Individual to Statistical

"To define abnormality in terms of social maladaptation is more or less to accept the idea that the individual must subscribe to the fact of such a society, hence must accommodate himself to it as a reality

which is at the same time a good" (Canguilhem 1978, 283).

Sometime in the centuries between the end of the debate over what a disease was, and Vanessa's consultation with Sarah, this method of constitutional medicine and its underlying ideas about the world fell definitively out of fashion. And in order to deepen our understanding of the conflict between Karen and Brenda with which we began, and the meaning of Karen and Sarah's continued use of constitutional thinking, we will need to understand how and why it fell away.

In the 1600s, it was precisely the broad philosophical vision of Galenic medicine that allowed it to triumph over the Paracelsian idea of abstract categories of disease. Galenic physicians were able not only to match remedies to symptoms, but also to guide their clients toward an understanding of what it meant to be well and thereby how they might achieve it. The Paracelsians had some technical ideas for combatting diseases, but little sense of how those ideas might fit into a broader sensibility through which their they and their patients could make meaning of the bewildering experience of being ill. After all, for the mechanists and experimentalists who inspired the Paracelsians, meaning was to be a matter for the Church.

Over the ensuing two centuries, though, science evolved a value system of its very own, taking over from the Christian conceptions of the world in which modern scientific thinking began (Gaukroger 2006). When it did, the Paracelsian model of categories of disease would find more fertile soil in which to take root. From the 1600s through the 1800s, great social and conceptual upheavals swept across Europe, affecting virtually every domain of life (Foucault 1974, 2007). The ground of meaning shifted, across the society entire, from the individual to the statistical. Just as Galenic medicine had its basis in the deep ideas of Aristotelian philosophy, so the new value system of science had origins far beyond its own domain.

Science of the State

Though the dispute over the nature of disease had been settled in favour of the Galenists, a possible synthesis position quietly emerged toward the end of the 1600s, in the work of an English physician named Thomas Sydenham. Sydenham was a committed Galenist, working within its systematic philosophical understanding of

health and disease. But he began to keep meticulous records of his clinical results, in the same manner in which the scientists recorded the results of their experiments. By comparing across cases, he started to identify patterns, or types, of disease. Unlike the Paracelsians, who operated upon the paradigm of mechanism or chemical science, though, Sydenham continued to view these disease patterns through the lens of Galenic ideas: he looked upon the patterns in his notebooks in connection with broader environmental patterns and sought to re-apply these to individual variation. He hoped that, in keeping numerical records, he might identify mathematical regularities that could help him refine or selectively challenge some of the received Galenic wisdom (Gaukroger 2006, 350-351), rendering the system more effective.

Sydenham's approach proved popular, especially among the military doctors, surgeons, and other non-elite medical practitioners who didn't have the same grand academic pedigree as the Galenists. Through the late Middle Ages, Galenic medicine had burrowed deeper and deeper into its vaunted philosophical understanding. Physicians sometimes spent up to 14 years studying Greek and Roman classics in the university before they could practice. Medical reasoning had drifted gradually away from the grounding in environmental change proper to its Hippocratic roots, and some of its pattern observations hardened into dogmas. Herbal formulas became more frequently exotic and complex. Physicians were accused of being more interested in the grand system's totalizing internal perfection than in responding to the needs of the suffering individuals in front of them. For practitioners of humbler beginnings, medical statistics offered an avenue for legitimating their suspicions that some elements of the Galenic system could and should evolve. They were encouraged by the dissections in the mid-1500s made by the great anatomist Vesalius, who found inconsistencies between his cadavers and the classical Galenic anatomy. His findings lent credence to the impetus to medical reform, by supporting the heretical contention that Galen could in some instances be wrong (Griggs 1997, 43-53).

Through the 1700s and 1800s, the use of statistics in medicine grew, but Sydenham's synthesis would not be the winning model. Rather than becoming integrated into a Galenic view of life and nature, statistics came to replace the Galenic mode of thinking altogether. In conventional histories of medicine, this change is often narrated as a victory of rational and scientific thinking over religion and superstition (Cook 1990, 401-405). But those histories that present modernity as a triumphant march

of scientific and technological innovation can overlook the extent to which science and technology are shaped by events and ideas from other realms. The standpoint of herbalists, inspired as it is by the value that constitutional medicine offers them in their clinical work, compels a search for a more complex story.

A history focused primarily on the evolution of science might incline one to think that medicine became statistical when medicine became scientific. In fact, when statistics arrived to medicine, science itself was not significantly mathematical at the time. For several hundred years, mathematics and the study of nature had been quite separate pursuits (Gaukroger 2006). Rather, statistics arrived in science and in medicine simultaneously, spreading through European thought from a different point of origin altogether. Where the large-scale use of statistics began, in fact, was politics. Beginning in the 1600s, in the emergence of the modern form of the state, large-scale counting increasingly became a technique and philosophy of governance. This history is still visible in the word itself — *state-istics*, or 'the science of the state' (Porter 2005; Foucault 1974, 139-142; Donnelly 2005, 252; Oxford English Dictionary 2012).

Society: A New Source of Meaning

Through most of the Middle Ages, the dominant form of economy in Europe was feudal. Sovereigns raised wealth, and thereby armies, through their control of land (or through the control of groups, like the Church and nobles, who controlled land). But in the 1600s, European states began undertaking expeditions of trade and pillage overseas. As they gained increasing proportions of their wealth through these means, the primary form of power changed. Rather than control of land, it was the control of the terms of trade that began to form the basis of sovereign power. Control of the terms of trade was enhanced when a state exported more than it imported, which depended in turn upon the quantity of goods it could produce. The quantity of goods a state could produce, finally, was dependent on the size and strength of its labour force. Thus, as European states transitioned from the Middle Ages into modernity, their power ceased to depend upon control of land primarily, and began to issue from the control of their populations instead.

For the first time in European political history, the subjects of the state were not just so many scattered and largely irrelevant individuals: their welfare and their

conduct became a central object of concern for the state. The strength of the state depended upon its ability to make its subjects live and work in ways that furthered overall economic productivity. The sovereign's subjects emerged to the state for the first time, then, as a mass — not as a collection of individuals, but as a singular category, a *population*. That is, it mattered little what this or that *particular individual* did, but it mattered a great deal that enough individuals, on average, were acting in the ways the state desired.

A new approach to governance emerged to suit this new economic reality, and statistics was its centrepiece technology. Statistics was known first, in fact, under the moniker of 'political arithmetic.' It was employed as a technique of mass observation, a means for the state to track the size and the strength of its population. It permitted the state to view individual bodies as parts of a mass productive force. In this way, for the first time in the history of European governance, the total mass of subjects under the rule of one state became a *society*, rather than collections of communities, and individual bodies became *social objects* for the pursuit of the goals of the state (Gaukroger 2010, 268-269; Foucault 1974, 137-139; 2007, 109-110; Porter 2005, 396)

These great economic and political changes were noted with consternation by very many philosophers, for they posed a novel set of moral problems. In the feudal period and prior, moral value could be judged effectively according to an individual's actions. But as feudalism gave way to mercantilism, and mercantilism in turn gave way to capitalism, philosophers saw a growing divide between a set of seeming public goods that the new forms of economy produced, and the morally suspect individual acts that seemed to encourage it. They valued the growing size and scale of capitalist society, and the great wealth it made for members of the upper classes, but they looked with concern upon the miseries inflicted upon the working poor and the personal materialism and avarice of the owners of capital that seemed a necessary part of producing it (Gaukroger 2016, 267-283). The mercantilist state had split life into two distinct levels — that of the individual, and that of the total mass of *society*, and in the domain of morality, it seemed that the two were at odds. What produced abundance at the social level seemed to require immoral acts at the individual one. Christian morality and meaning, which was ordered around the individual relationship to the divine, did not immediately know how to adapt.

A consensus emerged among moral philosophers through the 1700s. In essence,

they adapted to the state's split between the individual and the social with a similar movement of their own. To the existing sphere of individual morality, they added a new sphere of morality for *society as a whole*. The new phenomenon of large-scale commercial activity was given its own separate set of moral values. At the scale of society, these philosophers looked upon the astonishing material output of mercantilism and considered it to be a moral good. Whenever an individual action had some bearing upon this material output, that action could now be judged at the social level. If it tended to increase commercial output, whatever its individual moral status, an act could be morally validated in its own right. So long as one was participating in the great project of growing commercial society, individual morality need no longer apply.

This new moral idea took its defining form in an extended poem entitled *Fable of the Bees*, penned in 1714 by the Dutch philosopher and political economist Bernard Mandeville:

> It is certain that the fewer Desires a Man has and the less he covets, the more easy he is to himself; the more active he is to supply his own wants, and the less he requires to be waited upon, the more he will be beloved and the less trouble he is in a Family; the more he loves Peace and Concord, the more charity he has for his neighbour, and the more he shines in real Virtue, there is no doubt but that in proportion he is acceptable to God and Man. But let us be Just, what Benefit can these things be of, or what earthly Good can they do, to promote the Wealth, the Glory, and Worldly Greatness of Nations?… [S]uch is the calamitous condition of Human Affairs that we stand in need of… Plagues and Monsters… to have all the Variety of Labour performed in order to procure an honest Livelihood to the vast Multitudes of working poor, that are required to make a large society: And it is folly to imagine that Great and Wealthy Nations can subsist, and be at once Powerful and Polite… (Gaukroger 2016, 272).

In Mandeville's conception, individual virtue could make a person happier and more peaceful in their own life, but it could not produce wealth or glory for the nation. These 'social goods' require moral 'plagues and monsters,' like ruthlessness and avarice, for their creation. He writes that 'vast multitudes of working poor' are needed in order 'to make a large society,' and then he argues that growth in the total wealth of society is good for the poor too, for they need to be provided with jobs.

Mandeville's critics generally agreed with his starting premise, that the large-scale commercial society required individuals to act in ways that previously would have been considered immoral. They argued accordingly against the morality of the large-scale commercial society. The French political philosopher Jean-Jacques Rousseau insisted that immoral individual behaviour would indeed spread throughout a large-scale commercial society, and that this was a clear argument against the construction of

such a society. Years later, Karl Marx would argue that these new commercial values with which Mandeville was trying to grapple — the values of scale, complexity, national glory, and wealth — were merely the values of a certain class (Gaukroger 2016, 267-283).

Mandeville's *Fable of the Bees* became the major source text for the moral philosophers who developed the idea of a social morality into finished form, among them Jeremy Bentham and John Stuart Mill. The resulting system of morality, called utilitarianism, rose to prominence in capitalist Europe. Utilitarianism stated that whatever action promoted the greatest good for the greatest number of people was a good action, no matter how that action appeared when measured against traditional Christian morals. In utilitarian philosophy, the large-scale commercial society was not a subject of moral evaluation, but the basis for moral evaluation itself. The commercial society was viewed so completely as a good that the goodness of other actions could be evaluated in terms of whether or not they enhanced it. In time, governments stopped attempting to legitimate their actions through claims to moral virtue as they had done before. Instead, they began to appeal to a 'national interest' — ultimately, the expansion of the commercial economy — as the chief public good (Gaukroger 2016, 268-300).

As utilitarianism developed, its architects had to confront the vexing question of how they could measure an individual's contribution to the social whole in order to give it the kind of moral valuation they were imagining. To do this, Jeremy Bentham turned to the new technique of statistics. He developed his theory of utilitarianism in such a way that it would be amenable to calculation. Goodness was measured in terms of its 'amount' — that is, in quantitative, rather than qualitative, terms. Mercantilist politics and utilitarian morality made it possible to move human beings to move over from the 'mind' to the 'matter' side of the mechanistic divide. The body had always been seen as matter in the mechanistic conception, but the human self was originally part of mind. Ethics and morality had been the preserve of the Church. But as the state started to view individuals as part of a mass of raw material inputs into processes of production, and as a morality developed that judged human acts according to numerical output rather than character, it became possible to see the masses as essentially passive and lifeless. The Church had long been concerned with preventing rival claims to truth, for example from Aristotle's philosophy, but when utilitarianism presented a rival claim to the definition of morality, the Church did not put up the same

sort of fight. The new idea of the social may have wrested control from the Church over an important dimension of human affairs, but it did not provoke the same kind of religious panic as had ensued in the debate during the 1600s over what the world was made up of. It would seem that the Church's deeper need was to retain a worldview in which the material world was not alive, a worldview with which the new social morality was profoundly compatible.

In the new idea of the social realm, then, a basis for an entire new kind of meaning gained a footing. It was an idea that underlay the European Enlightenment and that exerts a powerful force over Western culture still. That basis of meaning is the *progress of society* (Gaukroger 2016, 17-19). Before this historical moment, the concept of 'society,' as a single mass of subjects constituting a state, did not exist (Foucault 1974). Systems of European meaning in the Middle Ages consisted in the individual relationship with the divine or in relationships with nature or nature spirits. This new meaning system of *social progress* meant, chiefly, the growth and development of scientific knowledge. The new economy, the new form of the state, and the new morality were all compatible with this aim. They permitted the conversion of more and more areas of life into the sort of thing that experimental science was capable of studying — that is, machinelike matter (Gaukroger 2016, 17-19).[24]

In the massifying logic of the social, individuals were converted into standardizable units. In pursuit of social progress, more and more of what had once been considered 'human,' or part of the mechanistic category of mind, was shuttled back over to the category of matter. Anything that could be conceived of as matter — that is, having standard, mechanical operations — could be studied through the new approach of experimental science. The quality of a person's actions could not be counted, but the quantity of their material output could. The meaning of an individual's independence in their work could not be counted, but their labour-time certainly could. Following the worldview of Francis Bacon, social progress ultimately consisted in growth in the extent of human domination and control of the natural world (Gascoigne 2010).

Statistical Medicine

Through the end of the 1700s, interest grew steadily in the ways that mass

counting could answer basic questions about everyday life. Rates of suicide, crime, and age of marriage were found to have mass-level regularities from year to year. A new set of sciences — *social* sciences — emerged to uncover the truths of these specifically social phenomena. The new social sciences did not ask what intrinsic motivation had inspired the many separate individuals to act in these ways, but what factors at the social scale caused mass phenomena (Gaukroger 2016, 268-300; Hacking 1992, 145). Using statistics, truth could be found, and meaning made, without any reference to the individual. When statistics arrived finally in medicine, this whole other idea of meaning arrived with it. It came embedded with a new way of thinking about what it meant to be human. A new way of understanding what it meant to be healthy would follow close behind. The meaning of health that matched this new social understanding of the human was much more consistent with the idea of disease held by the Paracelsians, which they had derived, after all, from Descartes' mechanism and the experimental philosophy of Francis Bacon — as a category, operating mechanically, that affected individuals in standard ways.

This new form of meaning made its way into medicine through the 1800s. Up until this point, when doctors like Thomas Sydenham experimented with tracking their cases and looking for patterns, they had still needed to situate their findings within the Galenic approach. Thus far, there had been no other way to think about what it meant to be healthy or ill. 'Healthy' and 'ill' had been qualitative, normative terms, difficult to capture entirely through counting. They varied by individual, and they were situated in locally-specific and changing ecological contexts. But the statistical method had now acquired a philosophical basis of its own, in the emerging form of meaning, and the French mathematician Alphonse Quetelet would develop a statistical philosophy of medicine that matched it.

By the late 1830s, Quetelet was the leading authority for the medical community on the use of medical statistics. He began to advocate at this point for a specifically statistical definition of what it meant to be healthy. In Galenic medicine, the environment had served as the reference point against which health was measured: to be healthy was to be in a state of harmony with the local environment. The Paracelsians' idea of disease floundered in the 1600s because they had no alternative standard against which health could be defined. They had no reference point for health to match their abstract disease idea. Quetelet's new medical philosophy began with the provision of

such an alternative reference point: he posited the *social mass* itself as the new standard against which to define health. Following the logic of the time, Quetelet insisted that social patterns represented an independent source of truth about what it meant to be human, capable of rivalling traditional sources of meaning. Quetelet's innovation was to extend the social idea of what it meant to be *human* into a social idea of what it meant to be *well*. To be a social human was to be a part of a social mass; to be healthy, in Quetelet's idea, would follow similarly.

Quetelet set out to create this statistical standard by calculating population averages for physiological markers, such as height, weight, and chest size. He then treated the midpoints among these groups of measurements — their statistical *averages* — as definitions of healthy stature for *everyone* (Gaukroger 2016, 283-300). His statistical averages were not, to him, merely abstractions from a group of individuals. They were a new kind of social fact. He turned the 'average height of men' into the 'height of *average man'* — an imaginary new character, produced from the aggregate of many real individuals, to serve as an ideal model for the health of all.

To refine his averages, Quetelet borrowed a technique from astronomy called standard deviation. In astronomy, standard deviation was used to account for inconsistencies among measurements of a planet taken from different telescopes. It reduced measurement errors in finding the real location of a *single object*. But when Quetelet applied the technique to medicine, he used it for measurements of *many different human beings*. In doing so, he treated the real diversity of individuals as a measurement error. Medicine, in Quetelet's hands, went from an assessment of particularity and variation to a search for the location of a single object: behind the real diversity, for Quetelet, loomed the mythical figure of 'average man.'

Quetelet wanted physicians to compare each client they saw to his tables of averages, and to consider their clients healthy or unhealthy to the extent that they diverged from this new mythical figure called 'average man.' In this maneuver, Quetelet went even a step further than the utilitarians or the state administrators had gone. They had created a new social sphere alongside the individual one. It was not presumed that individuals ceased to have individual identities or morality, but only that they acquired social ones alongside. Quetelet, though, took a truth from the social sphere – the average height and chest size – and claimed that it could fully explain the life of an individual. Quetelet understood 'average man' not just as a device for identifying social

health patterns, but as a universal rule for assessing individual health (Gaukroger 2016, 283-300; Hacking 1992, 147-148).

For Galenists, health had been an ideal to strive for. A balanced relationship with nature was a moral or medical *norm*, just as Christian morals had been idealized norms. But Quetelet, following the statistical thinking of the time, redefined 'norm' from *ideal* to an *average*. Health was no longer a matter of growing toward an ecological relationship ideal, but of becoming like the other members of the social mass. In Quetelet's idea, to be healthy was not to aim toward a norm, but to become *normal* (Canguilhem 1978). For Quetelet, the definition of health was being within the 'normal range' (Gaukroger 2016, 283-300).

As he engineered these changes in medical philosophy, Quetelet cast out three fundamental building blocks of the Galenic understanding. First, he foreclosed the capacity to attend to physical, mental, and emotional considerations simultaneously. A statistical medicine could only evaluate the signs of the physical body, because it needed quantities it could count. Any immaterial quality would have to be translated into material and quantitative terms before it could be considered medically relevant (Gaukroger 2016, 295).[25]

Second, by defining health according to a statistical average, Quetelet eliminated individual variation from view. Galenists recognized each body as unique, and they took its uniqueness as a starting point for devising uniquely-tailored regimens and treatments. But Quetelet's statistical methods re-defined individual difference as either statistical error or markers of disease. A quantitative medicine had to treat each individual as a data point to be standardized in order to generate its averages. It had no method of accounting for individual variation.

Third, by ruling out individual difference, Quetelet was ruling out individual *context* as well. For Galenists, it was not only individual constitution that made for individual difference, but differences in local environments. Basic to the Hippocratic ideas at the root of Galenic medicine was the health effects of local environmental change. But all of this variance, too, was homogenized in Quetelet's 'average man,' a standard that cut across differences in context. In Quetelet's system, the very heart of Galenic medical care — the relationship between the individual and their physical and social environment — was eliminated from medical view. There were no tools for revealing it.

Thus, Quetelet's quantification cut away from medicine the possibility of considering of mind-body interrelation, individual narrative, or the physical and social environment. The basic template for this sort of movement had been laid down by Descartes and his followers in the two hundred years before: it was a basic operation of *reduction*, where any phenomena that cannot be explained by the tools at hand are relegated to a different category of analysis or considered unimportant and dismissed entirely. Certainly, physicians in the quantitative mode could still ask their clients about these things. But if physicians limited their medical thinking to standardized statistical models, they could not make these three considerations into objects of *medical* attention. Finally, in Quetelet's formulation, there emerged a standard body, corresponding properly to standard diseases and standard treatments. One could now say, in a manner fully consistent with mechanical philosophy, that what it meant to be well was to become more normal. To be healthy was to be capable of serving as a member of the social mass, contributing to social progress.

Resistance and the Vitalists

A quantitative medicine of this sort did not come to dominate the field overnight. The legitimacy of statistics in medicine was a topic of considerable dispute in medical circles, with the two leading medical centres of France taking opposing positions. The faculty of the Paris medical school was in support of quantification, while the Montpellier medical school faculty was hotly opposed. The Montpellier school was the home of the emerging medical philosophy of *vitalism*, an evolution of Galenic medicine. Vitalism, in part, was a response to the criticism that Galenism had become dogmatic. Vitalists aimed to refresh and re-invigorate constitutional medicine by returning it to its Hippocratic roots, and by integrating it with what they saw as most useful in the emerging sciences of anatomy, chemistry, and physiology. For the new idea of medical statistics, however, they had little affection (La Berge 2005, 93-94; Cook 1990).

In 1837, the Montpellier physician Benigno Risueno d'Amador travelled to the Paris medical school to deliver a lecture on the subject. In his presentation, Riseuno d'Amador argued that medical quantification was an anti-scientific practice detrimental to clients. For him, both the art and the science of medicine dependend upon direct empirical observation, which was compromised by references to abstract medical

averages. Chiefly, for Risueno d'Amador, statistics were inappropriate for medicine because they could not take account of variability, and variability, for him, ought to be at the heart of medicine. Diseases changed in character and intensity; individuals, similarly, were always changing. Variability, Risueno d'Amador claimed, was the first law of nature and of life, and thus also of disease. Statistical methods, he contended, tried to "fix" disease at one point in time, rendering static something that was fundamentally transient (La Berge 2005, 93-94).

Risueno d'Amador argued passionately in support of the 'medical minorities' whose interests were lost in statistical testing. When a given therapy was declared effective based on its efficacy for the statistical majority, he asked, what about those for whom it did not work? When a medicine was shown to be largely ineffective, what about those for whom it had turned out to be just right? What of those who would be harmed by a medicine that had been deemed, in the majority, to be safe? In the statistical imagination, these minorities were reduced to measurement error, incorrect deviations from the truth of 'average man' to be eliminated through averaging. But for Risueno d'Amador and those who thought like him, individual variation was a real phenomenon, and standardized protocols would always and necessarily be wrong for a certain segment of the population. He pleaded for his colleagues in Paris to recognize how medical statistics homogenized and erased from view the real therapeutic contexts — individual constitution, personal life story, physical and social environment — that could explain these very differences. By contrast with statistical studies, he maintained, the traditional case study method allowed the physician to understand *why* particular treatments were appropriate for particular clients (La Berge 2005, 95).

For the Paris medical faculty, broadly supportive of quantification, Risueno d'Amador's warnings were no great cause for alarm. Already they were eager to move away from the notion of disease as variable and particular to the individual. They had embraced the old Paracelsian idea of disease as a universal category; by the 1860s, they were teaching this idea of disease in the Paris medical schools. Their very goal in taking up the vision of the standard disease was, in the words of historian Ann F. Laberge, "to transcend the subjective, the local, the idiosyncratic, in order to embrace the universal, to strive for the replicability of disease entities, regardless of culture" (La Berge 2005, 99). This was at odds in every way with the Montpellier faculty's neo-Hippocratic approach.

This debate over the future of medicine was not entirely black and white. Some members of the Paris faculty, following the mold of Thomas Sydenham, saw statistical methods as complementary to individualizing ones. Statistics could, for example, serve to highlight for the physician which clients were in the medical minority, alerting them to the need for a specialized approach. Risueno d'Amador, for his part, was not opposed outright to scientific approaches in medicine either. As a vitalist, rather than a strict Galenist, he was an enthusiastic advocate of integrating the new sciences of pathological anatomy, medical chemistry, and pathophysiology into constitutional medicine. He imagined such a synthesis as a "'vitalistic neo-humoralism,'" and he celebrated it as a promising future for medicine (La Berge 2005, 99-101). It was specifically quantification that he rejected from among the new scientific approaches to medicine, and specifically because of the ways in which he thought it undermined medicine's capability to attend to individual variation in nature and human life.

In a speech at the Montpellier medical school in 1844, Risueno d'Amador made clear the full breadth of his concern. He noted that quantification had been taking place at this time not only in medicine but across French society. He saw in that movement an effort by the central state to standardize and rationalize all of social life. As the individual faded into the mass, to Risueno d'Amador's eyes, a great dehumanization was taking place. His sentiment was shared widely by urban French physicians at the time, who noted collectively the systematic dehumanization of certain groups in particular, namely workers, hospital clients, and the poor. To these physicians, urban society itself seemed to be sick. The position of the Paris medical faculty in the quantification debate can be understood, too, in light of its position toward quantification as a broader social trend. The Paris faculty was integrated with the highly rationalized Parisian public hospital system, and the faculty was broadly sympathetic to the burgeoning bureaucracy of the emerging French central state. Against quantified medicine, Risueno d'Amador emphasized the importance of local cultures and local knowledge, and the connections between these and their particular local environments; to these, centralizing logic of the new state could not relate (La Berge 2005, 101-104).

In the 1600s, when the idea of disease as abstract category first emerged, there was no context against which physicians could measure the success or failure of their efforts. But by the end of the 1800s, the situation had changed. A new context had taken shape, one within which abstract categories made sense. That context was *society* — the

very new phenomenon of a massified population in a large-scale commercial state. This mass became the reference point, the standard against which health could be gauged. If one's quantitative health measures deviated from the statistical norm, medical intervention would be indicated. If one was within the normal range, individual complaints could not be meaningfully interpreted in medical terms.

As the reference point for health changed, so too did its objective. For the Galenists, the goal of wellness approximated the ancient Greek notion of the 'good life' of virtue and well-moderated pleasure. To live in a well-balanced way in relation to the vicissitudes of life was to be wise and to be healthy (Foucault 1986, 1974). In the large-scale commercial society, the goal of health instead was the maintenance of the labour force — the ability of a sufficient number of bodies to work, and a sufficient number of non-working bodies to support them. Medicine became a *social* affair, aiming toward the objectives not only of individuals, but also, and increasingly, of employers and the state (Foucault 1990). The Galenists' goal in the clinic was the restoration of personal balance; for quantitative medicine, the goal was to make the individual, statistically speaking, *normal*. The client's own subjective experience — their personal narrative — became meaningless as medical information. Unless it could be converted into a quantitative measure, the client's experience could not be compared in any way to the statistical normal, and thus, in the strictest sense, could not be understood in relation to health.

The quantitative way of practicing medicine, as any, brought certain material relations effectively into view. It was very good, for example, at tracking infectious disease. For conditions like cholera or tuberculosis, there was indeed something outside of the body, and something somewhat standard, that caused disease. The Galenic focus on the individual missed the specifically collective properties of epidemic disease. An abstract category of disease was effective in apprehending these, and statistics proved to be an invaluable tool for tracking the spread of infection through a mass population. But as with any conceptual tool, it would also leave something out.

This 'something left out' is what was beneath the dispute between Karen and Brenda. No matter her caring intentions, there was something that Brenda's medical concepts could not reveal. That something was the possibility of unpredictable individual variation — in this case, in terms of gender — being meaningfully interpretable in medical terms. Neither medical approach is more 'true,' but they have different consequences. Each is based on a different set of deep ideas about how the

world operates, and each reveals something about the workings of the material world. Karen and Sarah keep both tools in their medical toolkits, because it gives them access to a more complete and more complex view:

> Karen: Are we really upset that no echinacea looks the same? Are we really so upset that when an echinacea grows here, it has the same chemistry, but really different proportions, at different times, in different circumstances? Depending on when you meet it, it's going to taste different; it's going to offer different things; it's going to thrive in some times and less so in others. It changes over time, as a perennial. We allow for that! And I feel like, in our work as physicians, pharmacists, nurses, herbalists, whomever… we're human beings first, and *we* have that kind of diversity, whether we want to admit that or not.
>
> I understand that there's a desire to believe that medicine as a practice is as standardizable as the echinacea that you buy from Wal-Mart, which has been extracted and re-combobulated and put into pills with exactly the right percentage that everyone agrees is the 'most efficacious amount of alkaloids,' and therefore it will do what we say it's going to do. In that case of that bottle, maybe we really can count on that. But in the case of the physician that's churned out of medical school, there's still the human element. There's still their individuality, regardless of their consistent education, regardless of trying to make all circumstances, all the terrain, exactly the same. It isn't. And I think we also know that the way they're going to interact with their clients is not homogenous. And the results of the client, even to the same physician or the responses, will not be homogenous. And the fear of acknowledging that that's true has dominated medicine for the past hundred years.
>
> We're just starting to see book after book and study after study suggesting that, *no*, the individuality of the doctor, acknowledging the humanity and the individuality of the client, is a strong, important, significant, necessary area to pay attention to. In fact, if we don't pay attention to it, people do less well. And I think that herbalists have always been much more comfortable with this idea that… we're humans, and what we do will always be unique to ourselves, our place, our time, and who we're interacting with.

Galenic ideas may have gone out of fashion, but Karen and Sarah insist on retaining them still. They give Karen and Sarah access to a different kind of medical practice, a different kind of ethics, and a different kind of care.

2 | Matters-of-Fact: The Herbalist's Way in Science

"The laws of physics and chemistry do not vary according to health or disease. But to fail to admit that from a biological point of view, life differentiates between its states means condemning oneself to be even unable to distinguish food from excrement…. What distinguishes food from excrement is not a physicochemical objective reality but a biological value."

— Georges Canguilhem (1978, 220)

"[T]otally autonomous science is an attractive ideal, but we do not live in an ideal world…. [F]or most of its history, the question has not been whether science will function as handmaiden, but which mistress it will serve."

— David C. Lindberg (2007, 150)

Enchanted as I was by Sarah's poetics, I walked around town sometimes with my head spinning. I felt transported to another world. Under the spell of constitutional metaphors, the boundaries between my liver and the weather could blur, but I had grown up seeing these two realms as strictly, reassuringly divided. I was used to thinking of the operation of my body as something that could, and should, be plainly seen. I ran my hands atop the rosebushes lining the river. I thought of people I knew from home who lived solidly in that scientific understanding. I wondered what they would make of this quasi-mystical plant world I was living in. Would they see it as fanciful, and not really as seriously medicine? Would they be able to access the clinical benefits of constitutional medicine if they weren't ready and willing to inhabit Medieval metaphors? Did it take a leap of faith to cross this gap between scientific reasoning and Sarah's poetics? Certain as they were of the value of their ideas, I knew that herbalists were always up against the skepticism of the medical mainstream. I wanted to know whether there was a question of belief separating the two approaches, or whether herbal medicine and biomedicine could somehow be understood in similar terms.

For most of the herbalists I met, science and Sarah's poetics weren't in any kind of conflict. Karen invited me to sit in on one of their third-year classes in advanced pathophysiology, "so you can see how we do the weaving" between the two. The topic of the class was irritable bowel disease and ulcerative colitis, and as I took my seat in

the back of the classroom, photographs of an ulcerated intestine, taken from an internal scope, were projected on a giant flat-screen television at the front. Beside the screen, a leggy, dried stalk of a blue vervain plant was pinned to the ceiling, stretching across the front of the room as a kind of verdant charm. Through her lecture, Karen pivoted cleanly from clinical trials and biomedical diagnostic criteria to constitutional metaphors of heat and dampness and the vital force of the liver. The combination made perfect sense to everyone around me, but I still wasn't sure if there was anything other than a smooth and astute gap-jumping operation between two solitudes at play. I wasn't seeing a way for the same movement to be made by someone who wouldn't be willing to accept the equivalency of the two systems as a matter of faith.

I carried these questions with me into Marigold's summer carnival, an annual fundraiser for their low-cost community clinic. It was a cheery affair. Folks entering bore wide grins, excited to be at a plant celebration. Volunteers from the community painted little plants on children's faces; a few of the teachers served up clever alcohol-free cocktails made with herbs from the Marigold garden. A couple of students drew phosphorescent blue drops of essential oil out of a heap of chamomile flowers using a battered old three-foot-tall copper still. When fair-goers crossed the parking lot threshold, they were entering a different little world. In the afternoon, I worked the admissions tent. A couple walked up to enter, learned that it would cost more than they had on hand, and turned away looking dejected. The Marigold teacher working beside me whispered in my ear: 'Go easy on them; they're muggles!' She meant, she told me, the *Harry Potter* term for 'normal' folk — non-wizards. We did go easy on them — we took what they had to offer, and we welcomed them in. But that teacher's instant recognition of these two as a different sort of folk showed me starkly how there is indeed something that one 'gets' about plants. A distinct sensibility grows up around those who have gotten it and who share in the plant love; for this teacher, its presence could be visible in a person at first glance. Growing as I had been into that sensibility myself, I enjoyed my day at the carnival immensely, but it didn't help me much in understanding how herbalism could reach beyond this happy world of wizards, or whether my muggle friends could find a matter-of-fact way to relate to the healing I had seen on offer.

I was scheduled to help out soon afterward with some work at Marigold, and I headed there with these questions still circling in my head. I forgot them instantly once

I climbed the stairs to the clinic apothecary on the second and the smell of a hundred herbs hit my nostrils at once. A small, sunlit room, the apothecary was lined ceiling to floor in jars of dry herbs and alcohol extracts and filled in by lab benches, beakers, and mixing bowls. I started working, and started chatting, with one of the school's other teachers. In not too long, the questions that had been on my mind found their way back to the surface. I asked her: what was the primary goal for herbalists, to make people feel better, or to re-connect them with nature? What if, I asked, someone came into clinic who wasn't especially enamoured with plants and didn't feel any particular desire to learn to be so? What if they just wanted their stomach to feel better? What if they just wanted to be able to get back to work, and do the same things everyone else around them could do – that is, to be 'normal?' Would you try to give them a nature connection anyway? The teacher was a little flummoxed at my question: "It's just… a different system! You can't compare it…." I started asking questions a little further into the tension arising.

As I did, another of the Marigold directors walked in, and I put the question to her as well. She described herself to me as "the resident aging hippie: every herb school's gotta have one!" Cassandra was equal parts peace-and-love and no-nonsense. When she walked into the apothecary, as per usual, she got right to the point.

> Cassandra: There's no tension! We *are* nature. So it's the same thing. The way to heal is to re-connect the body with natural rhythms.

Simply and sweetly, I had an answer. To see the world as herbalists did, one did not need to look through the language of poetics or convert to a magical other way of life. Poetics revealed a certain set of material relations that were difficult to see with statistics, but those relations, herbalists insisted, were real properties of the material world itself. And so they could be seen and understood in many different kinds of terms. In her straightforward equation, Cassandra was introducing me to a second language used by herbalists alongside constitutional poetics, one they find similarly effective in revealing living interconnections among disparate realms. That language is science. Eventually, I would come to understand that a lecture like Karen's on irritable bowel syndrome wasn't hopping back and forth between two wholly different worldviews — it was weaving the same underlying worldview through two different kinds of speech. All the students nodding around me in Karen's classroom, well-

schooled in this double discourse, were seeing through to the common root.

Why was it so difficult for me to see this integration at first? 'Science,' in common parlance, means two different things: it refers to a method, and it refers to a worldview, too. Herbalists separate these two meanings from each other, and I came to understand the herbalist's way in science once I grasped the division. As a method, science had been designed by Francis Bacon and the experimentalists to explore nature in a different manner than the Aristotelian philosophy it was meant to replace. Against the broad, overarching visions of the philosophers, Bacon wanted to investigate linear relationships of cause-and-effect. Where the philosophers asked *what is it like*, the experimentalists wanted to ask *how does it work* instead. Rather than reasoned argumentation, Bacon's experiments convinced through demonstration — they showed piecemeal material relationships that anyone could observe as a matter of fact.

As a method, science was a kind of technical tool, and in this way, the Scientific Revolution was very much like other scientific revolutions that had taken place in many other parts of the world and in European history before it. Like those others, the Scientific Revolution of late Medieval Europe arose to contribute new tools of inquiry and new technologies toward the solution of some cultural concern. Uniquely among them, though, as the historian of science Stephen Gaukroger argues, the Scientific Revolution was driven considerably by religious considerations. The amalgam of its new method of inquiry with this religious drive produced a distinct set of scientific *values*. While other scientific revolutions tended to fade away once the cultural concerns that had provoked them were addressed, the late Medieval European one *took over the prevailing culture itself*. Its values became culturally dominant (Gaukroger 2006, 3-43). What I did not understand at first about the herbalist's way in science, and what I set out in this chapter to explain, is how it looks toward one of these two faces of science and mostly turns its back upon the other.

Herbalists are very happy to make use of science as a *method*, as a tool or a language for explaining the world. Alongside the *what is it like* that constitutional poetics helps them explore, they are eager to engage the question *how does it work*. Doing so expands the ways in which they can render visible the material relations that matter to them. For Sarah to mobilize poetics to help Vanessa, for example, she didn't need to know *how* the elements of fire and air cohered in the remedy of rose. She only needed to be able to reason, through a set of broad and overarching connections, that this is what

rose *is like*. But she was equally capable of explaining to me, in a language of cause-and-effect, that rose was astringent because of its tannins. She could pull her organic chemistry textbooks down from the shelf to show me molecular diagrams, and explain *how* tannic compounds interacted with mucous membrane tissue. As tools, *what it is like* and *how it works* form a natural pair for herbalists. But from the worldview and the value set of science, there are large components they firmly reject. For herbalists, as Cassandra says, human beings *are* nature. Western science, since Descartes' idea in the 1600s, has split the natural and the human into two. When herbalists engage with science, they unhitch, as it were, the train car of science from the locomotive of mechanism, and they drive it with their idea of a unified world instead.

There is indeed a herbalism of a whole other reality — a herbalism of wizards and muggles and sparkly summer carnivals, of ancient poetry, of iridescent flower photographs lining cream-coloured corridor walls. There is a whole life of plant love that a conventionally science-minded person might find difficult to swallow. But herbalists don't see themselves primarily as missionaries for that subculture. When Cassandra tries to connect people to nature in clinic, it isn't because she is trying to win them over to a different way of life. It is because she believes that the human connection with nature is a material fact, one whose comprehension is necessary for effecting a deep kind of healing. Just as much as she can explain that fact in terms of constitutional poetics, she can say it too in the Western vernacular of science. More than a different reality, then, herbalists were trying to show me how the very same reality looks quite different when it is viewed in a different light. Seen from the herbalist's vantage point, science itself provides a different view.

I went straight back to Cassandra to see if I could catch another glimpse.

We Are Nature

I found Cassandra in her office in the upstairs clinic area of the school. She was looking through presentation slides on the microbiome, preparing for the lecture she was giving downstairs in the classroom later that day.

> Jason: I remember when we were working in the apothecary, I was asking about whether there's ever a conflict between…. You know, some people come to herbalists, and they come seeking a nature connection *as* their healing, and I think some people also come because they want to feel better, and they don't have that other intention… or they don't

have it yet.

Cassandra: Or they don't have it yet because they've been to lots of different practitioners who haven't solved their problem yet. And they think, 'well, maybe I'll try an herbalist,' but they don't realize that, coming to see an herbalist, we're going to try to connect you with nature.

Jason: Right! So, I was kind of wondering about whether there's a kind of conflict — not a conflict, but a tension —

Cassandra: Or a disconnect?

Jason Yeah —

Cassandra: People don't want to be connected to nature??

Jason: Maybe…. Not that they don't *want* to be, but that they don't yet know that they want… you know, if the herbalist philosophy is, like, 'we've gotta connect people back to nature,' maybe that's also kind of a political or cultural desire, in general —

Cassandra: It is.

Jason: So then, for the individual, they may just be, like, 'I'm not coming here for an ideology; I'm just coming here because my knee hurts, or my stomach is upset.'

[…]

Cassandra: [*Laughing*] Well, I can see why, if somebody doesn't realize that nature's important to them…. I mean, just most people, honestly, in our culture, most people have been disconnected from nature, and many times, multigenerational disconnection from nature. And they're in whatever thing… I mean, I'll just pick up my laptop here — they're on their *thing*. They don't see the tree, or the bird. Then, yeah, I take a different approach. I don't say, 'you need to go out in nature.' My students ask me this all the time: 'how do you deal with people with their, you know, if they don't want to do….'

And my usual strategy is education. I feel like if I explain how something works, or why something is important, then people might recognize that, 'yes, this might be a good thing for me.' So, for example, 'why is my stomach upset all the time?' Maybe this person used antibiotics and they don't have good gut flora. It wouldn't really be their stomach then, but you know what I mean. So, I might explain either the biology or the physiology of the problem, and why nature's important, or what the nature of the situation is, or what the nature of the person's being is, in terms of constitution. So I'll relate things to an individual's personal nature, as it were. You know, and how things *work*. This morning, I was talking to a client explaining digestion, and what stomach acid is for, and what it does, and where it comes from. So even if it's not the nature 'out there' that I'm helping connect people to, it's understanding something about their *own* nature. And we can put -ology words on that — physiology, biology, you know. We don't have to call it 'nature….' I guess that's an answer to your question — *people's* nature, not just the 'big picture' nature…. If we want to keep well, we can't deny that our body is nature.

Cassandra waved away with the tension I felt by pointing out and collapsing a gap I had set up unwittingly between the body and the natural world. My question itself had already assumed that nature was something different from the self and outside of it, such that being connected to nature or not was something a person could *choose*. But for

Cassandra, matter-of-factly, the disconnect in my question betrayed a misunderstanding of how the world really works.[26] The body *is* the natural world, for Cassandra, and so is the mind. The only question is whether or not a person recognizes this reality yet. For Cassandra, connection with nature wasn't a particular medical or cultural style, but the basic condition of life. To strengthen this connection was the fundamental operation of healing. For the herbalist, *we are nature* is the starting point of healing work.

For someone who doesn't share Cassandra's understanding, they might think of connecting to nature as a kind of hobby they might pursue, like going camping or walking in the woods. For Cassandra, this is only a little part of the picture. When she wants to help her clients understand the way she will approach their treatment, she tries to teach them what nature is for her. She does this matter-of-factly — not by asking them to take on a new belief system, but by presenting them the plain physical processes of their own bodies in the Western vernacular language of science. There is plenty of room in herbalism for poetry and mysticism and magic, but Cassandra's point is that herbal medicine can be understood as well without them. It can be understood without asking anyone to step outside that common myth structure of Western culture known as science.[27]

Herbalists choose to use scientific methods because it helps clients of a more rationalist bent to open themselves to herbal healing. It helps them to reach the very sort of people that I doubted would be willing to consider Sarah's poetics. But herbalists engage with science too because they find it clinically useful — that is, because it brings new things into view. Where constitutional medicine offers them broad and comprehensive perspective, linking disparate realms together, science parses the fine-grained connections, illuminating linear chains of cause-and-effect. Where poetry connects through a felt sense of resonance; matter-of-factness builds its bridges brick by visible brick. Seeing herbalists approach poetics and science side-by-side in this manner (and often, indeed, interwoven), it became clearer to me that I needed to think of science as a particular method of analysis, the method of the matter-of-fact, and not in terms of its worldview. In either language, herbalists could express their own worldview that *we are nature*, and their underlying idea of what it means to heal. As Cassandra might say, they can put *-ology* words on that.

Observing the herbalist's way in science gave me a clearer sense of science as a historically particular form of inquiry, shaped by the ideas of particular individuals and

groups. It has evolved historically in tandem with a particular worldview. This much, I hope, has become clear enough through Chapter 1. What I have in mind for the present chapter is to extend this understanding a little farther, by showing how science, as a method, can be refashioned to run on a different set of values than it currently does. How? One of the consequences of the conventional form of science, which sees the world as split in two, is that it's very hard to cross from one side of that world to the other. But herbalists, as we know, reject that particular burden. To say *we are nature* is to span the gap between matter and mind, and herbal science uses demonstrations of the plain operations of the body itself, matter-of-factly, as the vehicle for crossing back and forth between them. The integration of mind and body – the 'body's intelligence,' in herbal science – is demonstrated empirically. No magic or sleight-of-hand is needed, only looking plainly at nature from a different point of view. Constitution sets out an alternative understanding to conventional science. It describes *what it is like* for matter and mind to co-exist in the same element, the same qualitative descriptor, the same body. The herbal way in science explains *how*: it is a language of cause-and-effect. It showed me *how* to get from mind to body and body to environment; *how* herbalists traffic back and forth between poetry and conventional science; *how* a muggle might apprehend the underlying idea that the body and the world are in conversation and alive.

These linear paths back and forth have an ancestry in Western thinking. The herbal approach in science, as this chapter shows, draws from a long history of scientific efforts to trace the continuities between humans and their environments. This alter-history of science will form our point of departure. There exists alongside it, as I will show later on, a history of why those paradigms of science that have led toward the presently dominant one have tended to look the other way. The question at hand is not, then, whether the kind of work that herbalists do can be made visible matter-of-factly, but whether the kind of work they do is what the conventional approach in science is trying to see — and if it isn't, then why that should be so. Exploring these questions, I hope to deepen our understanding of what it might mean — medically, scientifically, politically — that herbalists insist upon keeping this particular idea of a living world so squarely in view.

A Brief History of Life

In the 1800s, the Montpellier physician, Benigno Risueno d'Amador attempted to integrate the emerging sciences with traditional Galenic healing ideas. In doing so, he was taking part in a prominent movement in European medicine known as *vitalism*. Vitalism, in turn, was part of a broader scientific philosophy called *sensibility*, which rose in the 1700s and 1800s. Sensibility was a response to the mounting failures of the philosophy of mechanism through the late 1600s. Mechanism, we recall, had viewed the material world as a kind of machine. Its critics argued that this view of the world left far too much unexplained, and some of them proposed instead that matter had a life of its own. Rather than privileging the machine-like aspects of the natural world, sensibilists and vitalists focused on the ways in which living beings seemed capable of *sensing* the world around them and responding to it. By comparison with mechanism, sensibility saw a world that was far more independently alive.

The rise of sensibility did not represent a turn away from science. Just the opposite, in fact: it arose in response to a mounting series of scientific experiments whose results the philosophy of mechanism could not, as a matter of fact, explain. Mechanism could not account, for instance, for Newton's theory of gravity, published in the late 1600s. Newton explained his gravity as an *invisible force*, rather than a mechanistic play of levers and pulleys. The newly-discovered electricity, similarly, was presented as an invisible force, which a machine-like perspective could hardly explain. It was most of all in the field of physiology, though, that the theory of mechanism was found wanting. One famous experiment demonstrated that muscles reacted to irritation with a force much greater than that applied to them. Scientists saw a kind of *responsiveness* on the part of the muscle, rather than a straightforwardly mechanical transfer of force (Gaukroger 2010, 389-390). Around the same time, in another famous experiment, scientists dissected a small sea animal, the freshwater polyp, while it was still alive, and found that the whole animal could re-grow from each part. As muscle did, the very tissues of the polyp itself seemed to react and respond to their surroundings, irrespective of any centralized template. The mechanists' explanation of life had been that all living beings were divinely pre-formed, such that they developed and grew mechanically according to an original design. But no model of a pre-formed

machine seemed capable of explaining these new experiments. The experiments suggested instead that the very tissues of living beings bore a kind of independent intelligence (Gaukroger 2016, 106-109). Matter, it would seem, was intrinsically alive.

The great philosopher, John Locke, in his *Essay Concerning Human Understanding* (1689), set out to codify this emerging set of understandings, and in it he coined the phrase, *thinking matter.* He made peace with the Church, which had strongly contested any notion of living matter previously, by praising God throughout the *Essay*, extolling the divine wisdom in having placed the capacity for thought in matter (Makari 2015, 123-127). This doctrine of sensibility, and its emphasis on the responsive interactions of material things, moved to the centre of European science, guiding the directions of inquiry and the design of future experiments.

In this era of sensibility, medicine emerged as a privileged sphere of scientific investigation. Its experimental material, the human being, seemed ideal for the observation of responsive, living interactions. Following the thinking of the day, physician-philosophers (*medecins-philosophes*) explained these living interactions by way of an invisible force — a *vital force*. Adherents of the approach came to be known as *vitalists*. Crucially, for most vitalists, the vital force was not any kind of mystical entity, like a new form of Galenic humour or Christian soul. Most vitalists were not concerned about whether this vital force 'really existed.' One of the theory's originators, physiologist and physician Paul Joseph Barthez, said that he had taken as his model Newton's gravity, an invisible force that was useful because of the observable phenomena it helped explain (Gaukroger 2016, 140). That these particular phenomena of *thinking matter* were difficult to apprehend when the world was imagined as a machine, did not make them, for the vitalists and sensibilists, unscientific in the least.

Not only was the study of these responsive relationships accepted within the mainstream of experimental science, but the rise of sensibility was in fact synonymous with the rising authority of the experiment itself. When Francis Bacon proposed an experimental science, the experiment did not have its own authority. Bacon's science was closely connected to the philosophy of mechanism. Mechanism, intended as a total replacement for Aristotelian philosophy, was conceived terms analogous to Aristotelianism – it was an over-arching vision, replacing Aristotle's four elements with tiny particles hitting each other as a basic motivation for everything that took place in the material world. Experimentation was simply a method for working within the

overall mechanistic philosophy.

But mechanism lost its authority toward the end of the 1600s, and it was owing, as we have just seen, to a series of contrary experiments. Though experimentation as a method had a long history prior to Bacon's uses, it had never before exerted this kind of intellectual and social force. As mechanism faltered, John Locke proposed that no overarching vision of the world was needed any longer. Knowledge could be built up by experiments, one little bit at a time: experiment, that is, could stand on its own authority. Locke's *Essay* marked a shift in the accepted authoritative language for making knowledge claims, from *what nature is like* to *how nature works* (Gaukroger 2016, 123-141). When Cassandra explains health and healing to her clients through plain, observable demonstrations of *how their bodies work*, she is drawing from this mode of scientific expression, the matter-of-fact demonstration whose highest expression is the laboratory experiment. This way of making claims about what is true rose to prominence in the late 1600s, and it continues to hold sway in the West today.

The Germ and the Terrain

As the 1800s wore on, the balance of medical opinion drifted away from vitalism. The centre of French medicine moved from Risueno d'Amador's home of Montpellier to the centre of quantitative medicine in Paris (La Berge 2005). In part, the reason for the shift was that the vitalists dismissed as irrelevant to medicine any experimental trajectories or tools that did not keep the vital force centrally in view. Among these were chemistry, which vitalists argued did not insist on integrating chemical reactions back into an overall living process, and the microscope, which they disliked because it could not perceive an organism as a whole. As a result, when there emerged experiments that challenged the validity of the vital force as an explanatory concept, vitalists had a diminished toolkit for defending their idea in the experimental language of the day (Gaukroger 2016, 162-169). Nevertheless, the interactions among body, mind, and environment privileged by the vitalists were plainly visible still to a wide array of observers. The philosophy of vitalism faded from prominence, but the material relationships they had been focused upon found empirical expression in new terms.

In the latter half of the 1800s, attention in medical research gathered instead around the germ theory of Louis Pasteur. Germ theory identified single micro-organisms as causative agents in epidemic diseases. On its surface, germ theory seemed to oppose to the vitalists' emphasis on the living body and its connection with its environment. Disease appeared finally to be an external entity that attacked the body, operating in more or less standard ways. But a number of physicians and scientists suggested that the germ might be just one part of the equation. They pointed out that some people got sick upon exposure to infectious microorganisms while others did not. Some bodies, it seemed, were capable of resisting infection. In a vivid demonstration of the capacity of the healthy body to resist infection, German chemist Max von Pettenkoffer and several of his associates drank large quantities of cholera-infested water, seeking to prove They suffered no more than a few mild cases of diarrhea (Dubos 1987, 105). Other scientists, meanwhile, observed that some geographic areas were proving more fertile breeding grounds for disease-causing germs than others, even within the very same city or town (Szreter 2003).

Along these lines, physiologist and surgeon René Leriche argued in the early 1900s that "the disease is not a sudden and monstrous creature which grafts itself on the individual and then lives on it as a parasite…. It involves an active although involuntary cooperation of the sick person. Without this collaboration, it could not exist, or at least it would disappear very quickly" (in Löwy 1998, 266). Similarly, Claude Bernard, the great physiologist of the 1800s, is famously reported to have quipped, "The microbe is nothing, the terrain is all" (in Löwy 1998, 257). For many doctors and scientists, the germ and its potential virulence always had to be understood in relation to its contexts — to the relevant bodily and environmental *terrains*. Through the concept of terrain, the vitalists' idea of the body as active and responsive survived into the late 1800s, and along with it, the Galenists' idea of disease as an individual, living process of a body in its environment.

Indeed, even Louis Pasteur himself was quite convinced of the importance of attending to terrain. His own experimental work focused upon the germ because he thought that it offered a faster route to resolving the urgent problem of the epidemics gripping his nation,[28] but he insisted throughout his career on the scientific importance of the questions of terrain (Dubos 1950, 314). Pasteur wrote, for instance:

> If you place this child [born of tuberculous parents] under good conditions of nutrition and of climate, you have a good chance to save him from tuberculosis…. There exists, I repeat it, a fundamental difference between the disease in itself and its predisposing causes, the occasions which can bring it about….
>
> How often the constitution of the wounded, his weakened condition, his mental state… are such that his vital resistance is not sufficient to oppose an adequate barrier to invasion by the infinitely small (in Dubos 1950, 315).

Elsewhere, concerning his landmark studies on infectious disease in silkworms, Pasteur wrote:

> if I were… to undertake new studies on silkworms, I should like to concern myself with the conditions which increase their general vigor…. I am convinced that it would be possible to discover means to give the worms a higher level of physiological robustness and increase thereby their resistance to accidental maladies (in Dubos 1950, 315).

The large number of micro-organisms present in the silkworms' digestive tracts seemed, to Pasteur, "more an effect than a cause of the disease" (in Dubos 1987, 93-94). The true 'disease' was the physiological condition of susceptibility, the effect of which was the ability of micro-organisms from the environment to take up residence there (93-94). Pasteur's laboratories hosted a major research program in terrain, overseen by his close collaborator, Ilya Metchnikoff. Metchnikoff's program evolved this thinking about *terrain* into the concept of immunological resistance, which affiliated researchers attempted to devise infectious disease therapies to strengthen (Löwy 1998, 257).

Pasteur's theories, meanwhile, were appreciated initially much less by his fellow researchers or by physicians than by a cadre of public health reformers, called the hygienists, who were focused upon terrain (Latour 1988, 13-58). Inspired by the old Hippocratic idea of tending to the environment, they advocated for reducing pollution and poverty in the industrial city as a means of battling epidemics (Foucault 1974, 148; Rosen 1958, 9). Their ideas were widely respected, and their members filled the ranks of government health departments. But their critics accused them of lacking focus, arguing that the hygienists could point to anything and everything in the industrial city a potential source of ill health and infection. Their critics expressed concern that there would be no end to the expense of the hygienists' public works programs (Latour 1988, 19-22). In response, the hygienists gravitated toward Louis Pasteur's germ theory and promoted it widely. It enabled them to make claims about which particular areas within the total environment were most likely to cause disease. Now they could find cholera micro-organisms in the contaminated water supply, and tuberculosis in the cloistered

air of crowded factory floors and tenement homes (Latour 1988, 13-58), and more credibly call for comprehensive government interventions to improve the environment in these ways. Through the last decades of the 1800s, as the synthesis program of germ and terrain was implemented, the rates of death from infectious disease began to plummet (Szreter 2003).

All Roads Lead to Mechanism

Into the 1900s, once more, though, these broader contexts of health began to disappear from view. The germ-targeting vaccines were credited with the achievement of eliminating Europe and the United States' burdens of infectious disease, even though most of the reduction in mortality took place before the majority of major vaccines were invented, likely as a result of the hygienists' joining of germ and terrain together (McKeown 1976; Szreter 1988). In medical research, meanwhile, immunologists drifted away from Metchnikoff's idea of general immunity, which captured the body's overall state of vigour, and toward the idea of specific immunity, which focused instead on individual antibodies that could be recruited to combat germs (Löwy 1998, 257-258).

Once more, then, a moment of synthesis between a new scientific idea and a valued, older philosophical one fell away. As Sydenham's synthesis between the Galenic humors and medical statistics had been rejected in favour of a broadly quantitative medicine, and the vitalists' synthesis between experimental science and thinking matter ended in a turn back toward the idea of a lifeless world, so, too, the hygienists' synthesis of terrain-focused Hippocratic epidemiology with Pasteur's germ theory was minimized in favour of a valourization of bacteriological research alone. The philosophy of mechanism had been left behind at the close of the 1600s, but it seemed to continue to exert a certain hold. The balance seemed to tilt continually toward the notion of an abstract, universal, and mechanical understanding of disease that downplayed the role of context. From the standpoint of a general history of science and medicine, one might take this trajectory as a kind of proof that the mechanical notion of disease had continually paid off in experimental results. One might presume it to have been a superior idea, in technical terms. But from the standpoint of herbalists, that would be a history of glaring omissions. Something truly vital, from their point of view, would be persistently left out.

Herbalists told me repeatedly about the gaps they saw in conventional science. As they did so, I was reminded me of the mechanists' operation of *reduction*, the movement of unpalatable questions out of scientific consideration. When vitalism and sensibility fell away in the 1800s, there was no explicit revival of the philosophy of mechanism. No new grand theory arose to take their place. And yet, as I watched herbalists work and listened to their descriptions of how the world operated, and as I read and re-read the history of science with their worldview in mind, it seemed to me that something like the mechanists' operation of reduction had continued to function all through the 1800s and right up to the present day. It seemed that matters of great concern to herbalists – a living material realm, thinking matter, interconnections among mind, body, and environment – were continually pushed out of the frame.

In the course of exploring this question, I picked up another sort of history of medicine, recommended to me on a number of occasions by herbalists themselves — Marxist feminist scholar Silvia Federici's *Caliban and the Witch*. It introduced me to a third group that had, alongside the Church and the experimentalists, shared an interest in the 1600s in advancing the mechanistic idea of a world divided in two. That group was the late-Medieval merchant class, or the bourgeoisie. The nature of their interest in mechanism seemed to me quite relevant for the question of that philosophy's seeming endurance hundreds of years after it had been formally repudiated. Among the three groups interested in the idea of a divided world, only the merchants seemed to have both the will and the means to retain it into the 1800s and beyond. In the case of the Church, by the 1800s, when sensibility fell away, its influence over questions of scientific knowledge had been considerably diminished.[29] In the case of the experimentalists, they had seemed equally willing to proceed upon an underlying idea of a divided world in the 1600s, as they had upon an idea of a unified one in the 1700s. For them, what seemed to matter was whether or not the reigning idea of what the world was like was arranged in such a way that they could experiment upon it. Sensibility, with its interest in a living material world, seemed satisfactory to them. But the bourgeoisie, Federici argues, maintained a strong interest in the idea of the material world as a machine through the 1800s and beyond. Through the 1800s, as the underlying ideas of the philosophy of mechanism seem to have crept back into force, the bourgeoisie, Federici claims, was just coming into its maturity and power as a into the 1800s, the bourgeoisie was coming into its maturity as a class.

Caliban and the Witch is principally a history of the great and terrible witch burnings that took place across Europe from the late 1400s through the early 1700s. I had not often seen these horrors presented as a pivotal event in histories of the modern West, but in the historical narratives of the herbalists I met, they were absolutely central. I commonly met herbalists who traced the lineage of their practice through these accused witches, so much so that they identified personally as reincarnations of them. In very many cases, Federici explains, an accusation of witchcraft was made on the basis of a woman having used plants to heal. I met herbalists who carried deep personal grief or deep rage about these crimes. In Federici's history, the witch burnings emerge as a landmark moment in the origins of Western modernity. They were, in her rendering, a brutal enforcement of the idea of a world split between matter and mind, sponsored by the interests of the rising merchant class. It was in the interest of this class, Federici claims, that notions of living matter, kept alive principally in women's practices, no longer hold significant sway.

Thinking Matter and the Origins of Capitalism

In the late Middle Ages, as I argued in the first chapter, there was mounting scholarly belief in a world animated by magical energies and hidden powers. This trend posed a problem for the Church, because it challenged the Church's control of official knowledge. Silvia Federici claims that magical beliefs like these had circulated among common people for long prior, though, and the Church had never been very bothered by it. Nor, for that matter, had it much concerned the great philosophers. All that changed, she writes, in the late Middle Ages. Quite suddenly, the Church and other influential social groups became very much concerned with the magical beliefs of common people.

It is hard to understand the sudden change, Federici argues, when it is viewed through the history of grand philosophical ideas, as we have largely been doing thus far. But it makes a great deal of sense, she says, when viewed instead in the context of the intense social struggle that was taking place between common people and elites at the very same time. Federici's book is a history of the connections between these social struggles and philosophical ideas. Elites came to care a great deal about how common

people saw the world at this historical moment, Federici argues, because those elite groups were seeking to make far-reaching changes in how that world was both socially and philosophically arranged. If those wholesale changes were to work, she argues, elites needed the great masses of common people to change accordingly.

Revolt and Enclosure

Through most of the Middle Ages, Europe was organized and ruled through a feudal economy. This feudal system had arisen at the end of the Roman Empire, replacing the Roman economy of outright slavery. Under feudalism, peasants were still owned by lords, but they received customary rights to a piece of land in exchange for performing a certain amount of labour on the nobles' land. Peasants earned rights also to access and use vast common lands, where they could fish, graze their animals, gather wood for timber and fuel, and assemble for socializing and celebrations. The lords were sometimes exploitative, imposing arbitrary taxes, and the peasants employed various measures of resistance in response. Generally, though, peasants were able to sustain themselves and their families on these arrangements and keep a little time for leisure as well. When they rebelled, it was usually in pursuit of small improvements within the same overall regime.

The power relations between peasants and lords shifted considerably, though, after the Black Plague in the mid-1300s. Thirty to forty per cent of Europe's population died in less than a decade. As a result, the ratio of peasants to nobles shrank, while at the same time, the quantity of land available per person grew. The peasants' bargaining power relative to the nobles thus rose. Through the 1300s and 1400s, peasants enjoyed far more leisure time, richer diets, and much better working conditions on the nobles' lands. As the terms of the customary agreements turned continually in the peasants' favour, the contours of the feudal system began to unravel. They could often support themselves on available land entirely, and when they did work for the nobles, it was more often to earn wages to supplement their subsistence than to earn their basic needs. Across Europe, peasants became largely independent of the ruling regime. The peasants' counterparts in the large towns, the artisans, meanwhile enjoyed a similar reversal of fates.

The nobles and merchants responded by trying to increase their exploitation of

commoners, trying in some instances to re-introduce slavery outright. Seeing the nobles' brazen efforts to regain power, and buoyed by their own new strength, peasants changed the goals of their resistance. Where once they had petitioned for improvements in feudal arrangements, now they began to push for an end to the nobles' rule altogether. In the letters of John Ball, a famous peasant revolutionary, the phrase 'now is the time' appeared over and over, referring to a final end to feudal rule. In Florence, a wheel of fortune appeared on the walls of taverns and workshops, symbolizing a coming change of fortunes. Through the end of the 1300s and into the 1400s, whole regions of Europe revolted at once. From 1522-1525, a single uprising spanned four countries. Heretical Christian sects sprang up, establishing alternative communes and calling attention to the corruption of the Catholic Church (Federici 2004, 44-46).

In response, the varied powerful classes of Europe joined together in a single alliance to put down the rebellions of peasants and artisans. Federici writes, "All the forces of feudal power — the nobility, the Church, and the bourgeoisie — moved against them, united, despite their traditional divisions, by their fear of… [lower-class] rebellion" (50). That such an alliance would form was not automatic. The merchant class had spent the two centuries prior struggling to gain political autonomy from the nobles, seeking the right to engage freely in commerce. But by the late Middle Ages, the merchants and nobles were allied right across Europe, alongside the Church, in pursuit of their shared interests in maintaining class power. As the merchant class gave up its hard-won autonomy in order to put down the peasant rebellions, Federici argues, it took "the first step on the road to the absolute state" (50). As a united front, the three groups did not stop at putting down the rebellions. They launched a campaign of their own to replace feudalism with a new system of rule that could ensure the maintenance of their power. It would be an economy based on the merchants' trading, supported by the traditional coercive force of the nobles and the royalty.

From the 1500s, a raft of evictions and rent and tax increases swept across Europe, forcing peasants from their land. In England, famously, the formerly common lands were enclosed, removing an important basis of peasant sustenance and social life. Social cohesion amongst peasants began to break down. European states launched wars to take even more land by conquest, for which they received investment from wealthy financiers. Suddenly landless, the former peasants were at the mercy of their employers. Mass uprisings ensued, ultimately to no avail. From the 1500s through the 1800s,

European peasantry was sunk into a deep impoverishment. Federici presents this impoverishment as the basis of the beginning of capitalism. It ensured the dependence of peasants upon nobles and merchants for their entire subsistence (68-83).

There was, however, a hitch. Despite its impoverishment, Federici writes, the newly-formed working class failed to turn up in large numbers for labour. Through the 1500s and 1600s, former artisans and peasants often preferred to live as vagabonds or beggars, or even as criminals risking the death penalty, than to consign themselves to a life of work for wages. Hatred for the new regime of wage labour was intense. This peasant refusal to work presented a great crisis for the powerful classes, frustrating their plans to re-establish a firm basis of power, and the state responded with a campaign of terror. Penalties were intensified for petty crimes, especially those against property. Vagabonds could be executed for refusing to work. In England, through the 1600s, 160 different charges could result in execution. During the 38-year reign of Henry VIII alone, 72,000 people were hung (135-136). The statistical measures of tracking and control seen in the previous chapter were deployed by these modern states in order to corral these former peasants into living and working in the ways the state desired.

Even this extent of surveillance and force, though, was not yet enough to compel the peasants and artisans to accept wage labour, and so the nascent European states found ways to go further. Rather than continue to try to force unwilling peasants to work, the state attempted instead to make them *become willing* to accept it instead. The state enacted a set of measures, Federici claims, aimed at changing the peasants' internal dispositions. As the philosopher Michel Foucault has written, in a comment upon Karl Marx's *Capital*, "every [new] technique of production requires modification of individual conduct — not only skills but also attitudes" (Foucault 1988, 18). The new modern state set out to forge a new kind of person — the *worker* — who no longer saw themselves as tied to the rhythms of the seasons, or the stars and spirits, or their bodies, or the land, but to the rhythms of commerce instead. It was only by the latter half of the 1800s, Federici argues, that the model of the 'good worker' appeared as a widespread reality — "temperate, prudent, responsible, proud to possess a watch" (Federici 2004, 135). In the years between then and the fall of feudalism, she explains, that worker had to be *made*. Peasants were conditioned by force to relate to the world differently. The principal form in which these changes in disposition took place, Federici argues, was in peasants' relationships to their own bodies. In essence, during these years, the peasant

body was re-made from a spirit-guided part of a natural landscape to a machine for performing labour. And for this task of inner ideological transformation, the new philosophy that divided mind from matter would work very well.

The Witch Burnings and the Doctrines of Capitalism

For the bourgeois classes, Federici argues, Descartes' new philosophy was a doctrine of freedom. Descartes' division of the person into a machine-like body and a divine mind turned the human being into a creature of independent will, free from the control or possession of spirits or gods. In Descartes' vision, the body would no longer be controlled by outside forces, but by one's own force of will instead. The wealthy accepted Descartes' ideas as an invitation to personal self-mastery. But this interpretation of Descartes, Federici reminds us, was at first the preserve of a small circle of mostly white, adult, upper-class men. The lower classes, she writes, saw this kind of self-discipline as an aspiration peculiar to the rich. But as this was the strategy by which the wealthy classes governed themselves, it was also the strategy that they employed to govern their external affairs. They gradually sought to impose it as a morality upon others, by force if necessary (Federici 2004, 135-152; Foucault 1978, 98-102). Descartes, Bacon, and the other originators of this new philosophy were not, Federici concedes, greatly concerned with the economic troubles of merchants. But the state and the merchant class appeared to find in the new philosophy a suitable strategy for achieving their own aims. Noteworthy is the fact that, while Medieval philosophers and theologians had earned their living through the universities or the Church, the experimentalists and mechanist philosophers were generally in the employ of wealthy members of the bourgeoisie (Gaukroger 2006, 207-211). The very same things that these mechanists and scientists classified as *irrational* — namely, the beliefs and practices that cast the material world as alive and magical — the mercantilist state began to make *illegal*.

Thus, through the 1500s and 1600s, the state punished not only theft and refusal to work, but also large parts of the peasant way of life. The new laws targeted practices and pastimes that were *unproductive* — those that did not contribute to personal self-mastery or the furtherance of the interests of the state. Public games were forbidden, particularly games of chance. Taverns and public baths were closed. Festivals and

dances — any form of 'unproductive' leisure — was banned. Drinking and cursing were outlawed as well. Nakedness was penalized, as well as any form of 'unproductive' sexuality, including homosexuality and the collective forms of sexuality that had often characterized peasant spring festivals. Gradually, all of the social practices through which peasants had actualized their belief in magic, their spirit of celebration, and their communal way of life were made into punishable crimes. In place, the bourgeois classes made available their own model of how life should be lived — personal self-improvement, habits of self-discipline and personal mastery, the domination of the body by the mind. What the lower classes experienced in fact was not the freedom imagined by Descartes, but an amalgam of Descartes' doctrine with Thomas Hobbes' theory of authoritarian governance by the state. The wealthy classes often debated amongst themselves as to which between the two philosophies was preferable for governing society, and the result, for commoners, was a kind of compromise: a disciplined inner self, enforced brutally by an authoritarian state (Federici 2004, 83-88,194).

Still, even this was not enough to break the spirit of the former peasantry. Alongside these criminalizations of peasant life, the state and the Church, with moral support from the merchant classes, launched a campaign of terror against European peasant women. Peasant women became a particular target of persecution, Federici argues, partly because they had occupied positions of leadership in the major revolutionary movements of the late Middle Ages. But more, she writes, women were the primary keepers of the magical beliefs and practices that formed such a mismatch with the new kind of disciplined self. For hundreds of years, women had been chiefly responsible for using charms, divining, finding lost objects, and healing with plants. These practices oriented the peasant body toward the inspirations of spirits and the movements of the seasons and the stars. They did not fit the needs of merchants and landowners for a work ethic based on ordered time, predictable behaviour, and the disciplined control of the natural world. In particular, women's use of herbs for contraception and abortion, to maintain control of their own re-production, contravened the mercantilist state's desire for a growing population. Federici emphasizes that women had kept these practices for hundreds of years, and that only at this time, against the backdrop of state efforts to enforce political changes, did they come to be posed as a problem. As these women's practices came to be targeted, they took on a

new power of subversive inspiration among peasant revolutionary movements. The feared 'witches' Sabbats,' large and raucous midnight gatherings that were rumoured as festivals of magic, were often in fact meetings to plan political revolts.

From the late 1400s through the early 1700s, hundreds of thousands of women, and a much smaller number of men, were tortured, hanged, and burned alive across Europe. The campaign peaked during the space between the end of feudalism and the take-off of capitalism, during which peasants reached the height of their power and then faced their greatest defeat. Federici notes as well that the witch burnings occurred at the same time as the colonization and genocide of the New World, the commencement of the transatlantic slave trade, and the enactment of the European bloody laws against vagabonds and beggars. She traces an exchange of tactics of suppression between the two relatively contemporaneous processes of installing capitalism in Europe and creating colonies overseas. Though the witch burnings have commonly been seen as the final throes of a superstitious Middle Ages, Federici points out that in fact they occurred simultaneously with the European turn toward rationalism and that they were frequently supported by the leading proponents of reason. Indeed, Federici argues, the very concept of witchcraft did not hardly exist in European Christianity before this time. It was an invention of this historical moment, simultaneous to the rise of reason, at the very time when commoners' magical practices began to pose a problem of power for European elites (164-165,189).

As with the laws against peasant sociality, accused witches were usually not alleged to have caused any person harm. Rather, they were accused of forms of behaviour that were previously socially acceptable but had suddenly become undesirable to the powerful. If a woman was accused of talking back, swearing, or arguing, for instance, she could be tried as a witch. Federici writes that these behaviours were common to the female peasant persona developed during centuries of leading struggles against feudal power. The practice of magic, or of healing without formal medical training, could substantiate an accusation. Most especially, women could be accused as witches if they were thought to have used herbal contraception or undertaken abortions. Through these centuries, as the male body was being turned into a machine for labour, elites sought to position the female body similarly as a machine for reproduction. Much more than contraventions of social peace or religious orthodoxy, Federici argues, these women's practices contravened the political imperatives of the

emerging mercantilist state (164-205).

Peasant practices of magic posed a challenge to this emerging political order because, at their basis, Federici writes, lay a conception of the natural world that did not contain any divide between the material and the mental or spiritual. It imagined the whole material world as alive, every part in relationship with every other. For Francis Bacon, one of the founders of the Scientific Revolution, this view was problematic. "Magic kills industry," he wrote {in Federici, 2004 #192@141-143}. For Thomas Hobbes, if the magical worldview were eliminated, "men would be much more fitted than they are for civil obedience" (Federici 2004, 143-144). Nature, for the bourgeois classes, was to be controlled and dominated — including the nature inside the person, the physical body. A magical relationship to nature impeded the transformation of the body into a reliable, controllable mechanism. As the bourgeois classes saw their own bodies, so they saw the great social mass of the working poor — as raw nature itself, needing to be controlled and managed (152-155).

The European witch hunts finally came to a close in the 1700s. When they did, Federici argues, it was not because of a triumph of rationalism, but because the wealthy classes had become much more secure in their power. Working class solidarity had withered, the spirit of revolt was nearly extinguished, and there were deep and disabling divisions, principally along gender lines, within the working class. The image of woman that had been attacked during the witch hunts — as brash and aggressive, matching the leadership role women played in peasant revolts — was replaced by an image of woman as tame and docile. This new demure female subjectivity, Federici argues, was forged through the terrors or torture itself (103). Once the political power of the wealthy classes had been consolidated, neither women nor witchcraft any longer posed a threat. Indeed, in France in the 1700s, it became common for wealthy urban women to dabble in witchcraft, and no great backlash ensued against it. Authorities could dismiss it as silly, superstitious, and ignorant, Federici writes, because witchcraft, now severed from the spirit of revolution, was no longer a challenge to their power (205).

If herbalists wanted me to read this history of the witch burnings, it was because it told the history of their own oppression and of the brutal delegitimization of their knowledge claims. No oppression of Western herbalists has taken place on this scale

since, but in every other kind of marginalization of their practice, many herbalists hear the echoes of their ancestors' cries. They see the same ideological motivations that drove the witch burnings still animating power in contemporary life.

Industrial Medicine

By the 1800s, the contours of the capitalist economy in Europe were solidly established. Landless workers, mostly men, served as labour machines in the service of the bourgeoisie, while married women maintained male workers and produced the next working generation. A strong central state monitored and managed the working class with statistics, and utilitarian philosophers, perplexed at the greed and abject misery that capitalist wealth seemed to require, provided legitimation for this morally troubling new world. It was in historical situation that the medical philosophies of an active and interconnected material world — Galenism, vitalism, terrain — seemed to fall continually out of favour. In the ways that the state and the merchants had wanted the social masses to relate to their bodies, so the currents of medicine tended to move as well.

There was one more narrative of history that a number of herbalists pointed me toward, and it concerned the fate of these medical ideas of an active world when they came to America. Herbalists are very familiar with an otherwise little-known document called the Flexner Report, which made recommendations for standards in American medical education. Contemporary scholars of biomedical education value it as a signal moment in the professionalization of American medicine (Duffy 2011; Benatar and Upshur 2013), but for herbalists, it represents the 20th-century apogee of their marginalization.

Among the American medical sects through which herbalists trace their lineages, most prominent are the eclectics and the physiomedicalists. These two groups of physicians combined the terrain-based thinking of the vitalist tradition in Europe with varied additions — some given, some stolen — from the medical wisdom of Indigenous peoples of the Americas (Griggs 1997, 99-108).[30] In a 1909 count, the eclectics in America numbered 8,000, and the physiomedicalists a few thousand more. The so-called 'regular' doctors, meanwhile, numbered close to 80,000 (Griggs 1997, 247). The 'regulars' drew from the European tradition of intensive chemical therapies, while the eclectics and physiomedicalists retained a closer relationship to plants and preferred

healing philosophies of the vitalist form. Just a few short years after this count, both the eclectics and the physiomedicalists would be all but forced out of practice altogether. Medical developments in America in the early 1900s would turn the tide once more against the idea of a responsive interaction among the body, mind, and environment.

The Flexner Report, published in 1910, was the culmination of a process undertaken by the American Medical Association, the regular doctors' professional association, to investigate the quality of education at American medical schools. When the evaluation project began to run low on funds, the Carnegie Foundation took an interest in it and funded it to completion. The Rockefeller foundation, meanwhile, funded its implementation, handsomely rewarding the medical schools that made Flexner's cut (Griggs 1997, 250-253).

What Flexner recommended was that medicine should no longer be divided into sects. All doctors, he wrote, should receive extensive training in laboratory sciences. They should learn about pharmaceutical medicines, but needn't learn botany any longer. They were to learn to target diseases rather than enhance health, to cure more than prevent, and to consider such matters as nutrition to be supplementary. In other words, he argued that all doctors should be welcome to practice, so long as they accepted the specific characteristics of scientific medicine. The physiomedicalists' school closed almost immediately after the Flexner Report's publication. Of the eclectic schools, four of eight closed by 1915, one was left by 1920, and all were gone by 1938 (Griggs 1997, 253). The Rockefeller Foundation directed its funding only to those schools that Flexner endorsed, and state licensing boards soon arranged their regulatory criteria in line with Flexner's recommendations as well (Brown 1979). Prior to the report's publication, there were 160 medical schools operating in America from among the various medical sects. By 1914, four years later, 29 of these were shuttered. By 1927, there were only 80 remaining, and state licensing boards eventually closed all but the 66 schools approved by the American Medical Association (Griggs 1997, 253).

Why should the Rockefeller and Carnegie Foundations have taken such an interest in what kind of medicine emerged in America? At the turn of the century, economic inequality in America was profound, with resources concentrated in the hands of a small number of industrialists. A new doctrine of philanthropy emerged to guide the ultra-rich in the charitable use of their fortunes. In 1889, Andrew Carnegie outlined the doctrine in an influential essay entitled, "Wealth." In it, he argued that the

concentration of resources in few hands was both natural and good. It was, he wrote, an essential factor in the "progress of the race." It makes for the survival of the fittest in each area of society, he argued. It was the duty of the very wealthy, then, who will receive more money than they could ever spend, to serve as "trustee and agent" for the poor, "doing for them better than they would or could do for themselves" (in Brown 1979, 30-31). The new approach that Carnegie outlined came to be known as 'wholesale philanthropy.' It urged the wealthy to use their riches to influence the direction of society as they saw fit, rather than simply giving to the poor as charity.

Though industrialists like Rockefeller held dominant positions in the economy, America was still a fairly rural country, and traditional in many respects. Industrialists worried that capitalism still had but a tenuous hold over the American psyche, and those like Rockefeller and Carnegie who embraced wholesale philanthropy hoped to use their riches to cajole the populace toward a set of values more like their own (126, 133). The Rockefeller Foundation, for instance, invested heavily in higher education; its director, Frederick T. Gates, insisted that the Foundation fund private rather than state universities, for the private universities, run by people like themselves, would be more likely to "direct popular opinion into right channels." (in Brown 1979, 50). The Rockefeller Foundation would soon come to see medicine — in fact, especially medicine — through a similar lens.

Frederick Gates prevailed upon John D. Rockefeller, Sr., to make major investments in scientific medicine. In the early 1900s, scientific medicine in America was a fledgling practice, rich in numbers but poor in institutional structure, and challenged by the popularity of practices like eclecticism and physiomedicalism. Gates saw in it, though, a close fit with the industrial values that the Foundation hoped to spread, and he recommended that John D. Rockefeller give it the financial support it needed to become a dominant cultural force. In scientific medicine, Gates saw an image of the body as a machine, which suited the general industrialist value of organizing society with machinelike regularity and efficiency. In a memo to Rockefeller, Gates wrote effusively about the congruence:

> Just as the fire engines start from all quarters on the dead run to a fire when the alarm is sounded, healing forces rush from every part of the body to the point of trouble, some to destroy any poisonous germs that may get into the wound, others to unite the wounded parts as before....
>
> Not only is this so, but the great organs of the body like the liver, stomach, pancreas,

> kidneys, gall bladder, are great local manufacturing centres, formed of groups of cells in infinite number, manufacturing the same sorts of products, just as industries of the same kind are often grouped in specific districts (in Brown 1979, 120).

In Gates' view, scientific medicine also matched the industrialists' particular way of seeing the worker's body as a part of a corporation's stock of machinery. Dr. C.W. Hopkins, chief surgeon for the Chicago and Northwestern Railway, boasted thus to a meeting of the American Academy of Medicine about the company's decision to provide its workers with medical insurance:

> It is now a recognized fact among the management of the railroads that it is just as important to care for their sick and injured [workers] as it is to maintain a certain standard of efficiency or perfection of their rolling stock and road bed (in Brown 1979, 118).

Finally, Gates appreciated the way that scientific medicine viewed disease as an invasion of the body by external germs rather than as a problem internal to the body-environment system. When health was understood as a problem of disequilibrium between the body and the environment, as the Galenists and their descendants saw it, workers tended to blame their illnesses on poor working and living conditions. Frederick Gates was not interested in the labour force viewing disease as a social problem compelling a political response. Instead, in scientific medicine, Gates saw a way to position disease as a technical problem, to be managed by engineering solutions (119-120,129-130).

Gates did believe that nature itself was "the great physician," but this was not in the vitalist sense. Rather, it closely mirrored Francis Bacon's understanding of nature as a passive system whose secrets humans could discover. Gates wrote excitedly that "[s]cience has discovered the laboratories where [nature] has stored her reserves and has robbed her of them for use on human beings" (in Brown 1979, 121). If nature was physician, it was to work decidedly in human beings' employ. Not all medical scientists, it must be said, shared Gates' views precisely. Few of them, for example, likely used his particular analogies of the body to industrial society. But it was very common for them nonetheless to regard the body as a machine.

Through the early part of the 20th century, the Rockefeller Foundation became the single largest source of capital for the development of medical science and for the conversion of medical education into a form closely allied with scientific research in the United States. It was also the single largest source of funding for the development of public health programs both in the United States and internationally (104). Even in its

early stages, scientific medicine was dependent on expensive technology and equipment, and industrialists were the only group in society capable of supplying funds at an adequate scale at the time (98-99). Industrialists were in a position to dictate the terms of the medical profession's development, and the medical profession did not find it too onerous to accept the capitalist definition of health as the capacity to work. As the partnership developed, scientific medicine and industrial capitalism proved to be a natural fit (98, 119-121).

Gates was forthright about his views that these investments in scientific medicine could promote a cultural transformation. He wrote that scientific medicine was advancing "new moral laws and new social laws, new definitions of what is right and wrong in our relations with each other." The Rockefeller Institute of Medical Research, he described as a "theological seminary." Gates saw medicine as a "healing ministration… whose values go to the palace of the rich and the hovel of the poor… a work that penetrates everywhere" (122). The religious references are salient coming from Gates: he was an ordained Baptist minister, and he had earned his organizational chops running the American Baptist Education Society. At the same time as he was overseeing strategic investments in American scientific medicine, Gates was also converting the Rockefeller Foundation's foreign missionary outposts into medical projects. The reverend saw in scientific medicine a more effective colonizing tool than priests and churches. Rockefeller Foundation officers could be transparent about the intentions of their overseas medical programs to integrate the masses into capitalist society, as the United States of the early 1900s had openly imperialist ambitions. Inside the United States, their programs had similar ends, only they were far less explicit in saying so (122-124).

The Rockefeller Foundation was not monolithically reductive in its medical view. In its programs in the American South and in Latin America, it stipulated that the treatment of epidemics must include attention to the environment, in the classical Hippocratic mode (115-116). The Foundation came to see the laboratory, too, as a place where scientists could listen to nature, rather than dominating and exploiting it as Gates had first intimated (Pressman 1998, 201-202). But through it all, the driving impulse of the Foundation's work was to bring about a future in which the dominant global values were scientific values, and scientific values of a particular kind (Pressman 1998, 203; Brown 1979, 98-134). Particularly, it was the kind of scientific values that had co-evolved

for three hundred years with a capitalist economy — the kind that embraced a world divided between a mental realm and a material one, where neither thought nor meaning could be found in matter. By this historical moment, as is clear from Gates' words, the bodies of the working class were considered by the industrial class to be a part of thoughtless and meaningless matter. In scientific medicine, Frederick Gates saw a way to encourage members of the working class to see their own bodies in that way as well.

While the philosophy of mechanism faded away in the late 1600s, its core idea of machine-like matter continued to be an effective way of understanding the world for those who shared the interests of capitalists. Just as the logic of statistics made its way from governance into science and medicine, as I showed in the preceding chapter, so too the idea of a machine-like body alienated from its surroundings continued to exist as a broad and basic logic underpinning Western thought. There are herbalists, certainly, who cultivate a personal interest in these histories of capitalism, but far from all of them do. Nevertheless, I observed a quite widespread sense that something is amiss in the resistance they see from the dominant culture to accepting the idea of a vital world, an idea which to them is so plain. These histories I recount of the active suppression of that idea seemed nearly to be *intuited* by a broad cross-section of the herbal community. It is so matter-of-factly apparent to them that minds, bodies, and environments interpenetrate, that the lack of scientific attention presently paid to their interaction seems to herbalists to constitute a quite nearly willful ignorance.

This nagging suspicion about the resistance to the vital idea sits at the root of a sense, broadly pervasive through herbal communities, that things in the social world ought to be organized otherwise. As much as it issues from these suspicions about the politics of knowledge, though, it issues from their sense that *matter itself* thinks things should be arranged otherwise too. If matter itself is intelligent, then it can have a preference. Taking cues from the material world is precisely what the early capitalists, with their need for workers to run on clock time rather than biological or cosmological time, wanted to be rid of. But herbalists still try very much to take their cues from the material world. If there is such a thing as thinking matter, that is, there may well be *something* that it thinks. At the heart of vitalist medicine, for contemporary herbalists, is a willingness to watch and listen for what matter may be telling them, no matter the ongoing and historical suppression of this intent. Following in the vitalist tradition,

herbalists do not see such a thing as listening to matter as being unscientific in the least. It becomes instead the focal point of their scientific interest, and in so doing, as I come now to illustrate, they mobilize science in such a way that science — as a method — becomes capable of seeing it.

Vitalist Herbalism

As the study of life, contemporary biology seems on the surface to treat organisms as though they were quite active and vital. DNA, for example, has been described since its inception as a source of *information*, on the basis of which organisms *communicate* internally. Words like these appear to express an understanding of a kind of intelligence present in matter. But their meaning in biology, argues the biological anthropologist, Terrence Deacon, is only skin-deep. Within the field of biology, Deacon claims, these words are understood as placeholders, covering over a gap. They are used on the presumption that purely physical and chemical processes will one day be discovered to replace them, to fill in the hole left behind by the reduction of mind from consideration with yet more matter. For Deacon, though, matter really is alive and intelligent, and he has written a theory in contemporary scientific terms to demonstrate how. His theory illuminates some of the ways in which I saw herbalists thinking through the thinking of bodies and plants, and so my discussion of the herbalist's way in science begins here.

In contemporary biology, organisms 'communicate information' in the same sense in which the pressing of an elevator button communicates information. A signal is sent to which the elevator responds, but the system is not intelligent. There must always be a person outside of the system to push the button, a person who makes a decision and springs the machine into action. The theory of information used presently in biology, Deacon claims, was developed first to support the decoding of German army communications in World War II. British engineers needed to be able to translate a message from its encrypted form into English, at which point their job would be done. Their theory of information did not need to account for the person outside of the code system who could read the plain English message and make decisions about how the British army should respond. In Deacon's view, this left-out part — the interpretation — is actually the crucial feature of any independent system of life. A biology using an

engineer's information theory, he argues, will always need to cover over a gap in understanding left behind by its implicit decision not to engage with the mental dimensions of life.

Interpretation, Deacon writes, is a process of determining what a message *means*. When an elevator button is pressed, the machinery responds appropriately to the message, but the machine does not know what the press of the button has *meant*. Its meaning remains in the mind of the person who programmed the circuits, directing them to respond in a certain way to a certain input for reasons that the programmer understands. But in a living system — like the muscle that responds disproportionately to stimulation, or the polyp that re-grows after a part of it is severed — the basis of interpretation must be self-generated. Living systems must be capable of self-determining how to respond to a given event. If they aren't, then we are reliant for our understanding of life upon a God-like 'person outside the system' who has designed its circuitry. This, of course, was exactly the theory of Descartes and Bacon, who assigned all meaning and mind to the divine realm and none of it to the material one. Contemporary biology no longer counts on God to play this role, but nothing else, Deacon argues, has arisen to take God's place. An absence remains to be filled. Deacon's theory arrives precisely to fill in that absence, with a matter-of-fact demonstration — that is to say, a scientific one — that living matter is intelligent. He argues that all living beings respond to their environments in ways that are purposeful and that cannot be explained in mechanical terms alone. In order to do so, he claims, living beings employ capacities that are normally attributed to minds, like interpretation.

This ability to interpret that Deacon accords to all living beings involves three components: a capacity for recognizing patterns in incoming information; a capacity to compare those patterns to a baseline state; and a preference for how things ought to be organized. In standard biology, Deacon argues, the third feature is not present: living beings are presumed not to have goals or preferences. Deacon presents his argument through the case of a very basic biological system used commonly in experimentation, a group of molecules called an *autogen* that is many times simpler than the simplest bacterium. Like living beings, though, it self-assembles and self-organizes, holds a constant structure against impacts from its environment, and retains the inputs from the environment that it needs to continue self-assembling in the future. When an impact from the environment interrupts the autogen's form or function, it re-builds itself to

correspond to its own original state. For Deacon, self-reorganization in its simplest form demonstrates that material organisms do indeed have a preference: against the impact of disruptions, they *prefer* to recover their prior state of organization. When a human body performs this same operation, we call it *healing*.

In order to make this recovery, Deacon argues, the autogen must retain a kind of memory of the relationships between the components and processes that make up its unity and which permit it to carry out its work. This memory serves as an internal baseline reference point against which to measure future changes. Upon disruption, the autogen can compare its new state to this prior reference and determine whether or not its disrupted state allows it to carry out its work as efficiently. Comparing in this way permits the autogen to make an appropriate response. If the disruption represents a loss of function, the autogen will attempt to re-instate its baseline situation. If the disruption allows the autogen to carry out its functions more efficiently, then some parts of the disrupted state will remain, becoming a new baseline reference point. As these disruptions come from the autogen's environment, the disrupted state that the autogen takes is a kind of imprint or mirror image of a pattern from that environment. In effect, as the autogen develops in response to these disruptions, it comes to resemble in its form and function certain features of its environment that enhance its function. Its preference for a certain state of internal organization effectively becomes a preference for certain kinds of environments as well.

At a given level of complexity, Deacon writes, it becomes efficient for an organism to maintain this information in a molecular template like DNA. At any level of complexity, though, the processes of self-maintenance can be understood to be grounded in these basic principles of interpretation and meaning: recognizing patterns in the environment, referring to a baseline state of self-organization, and having a preference between the two. It is in this sense that Deacon argues every organism can determine what a given stimulus *means*: it determines, in reference to its baseline image of optimal self-organization, whether or not a new state increases or decreases its capacity to persist in its unity and carry out its work (Deacon 2015).

We can understand this same process in vitalist medical terms. A sickness event is a disruption of a body's prior state, and healing is a kind of re-constitution. To focus medical attention upon the disruption from the environment is to attend principally to the *germ*. To focus instead on the body's response is to attend to the *terrain*. It is to

attempt to enhance the body's innate capacity for intelligent self-organization. Working in the vitalist mode, herbalists attend closely to terrain. In doing so, they express a trust that the body itself, given a sufficiently supportive environment, will find its own optimal state of self-organization. Their practice issues from the belief that the most refined understanding of an organism's optimal state of self-organization is internal to that organism itself — not in the cognitive images of a healer, and not in any sort of statistical average. Each body, in this view, establishes its own preferential states, based on the dynamic and ongoing conversation it undertakes with its particular surrounds. To attend to *terrain* in the clinic is to attempt to support and strengthen the body's own capacity to respond to its environment. In other words, the body knows best how to heal itself.

Healing the Thinking Body

In practical terms, herbalists attend to terrain in a variety of ways. Sometimes, they do so by changing the state of body tissues directly. Consider the way in which Brian, a herbal teacher, demonstrates the action of wild geranium root upon tissue states to a group of students on a forest walk:

> Say you have an ulceration in your mouth, like a little canker or cold sore. You can take a tincture of this [Brian pulls out his hunting knife, cuts a piece of wild geranium root, and places it on the inside of his lip], and you can apply it topically: *eeeek!* It tightens up, it dries up. Now, cold sores are viral, right? Shouldn't you be using herbs that are anti-viral? Well, yes, but you also want to change the overall conditions. Because you can change the conditions back to something that's not hospitable to that viral infection.[31]

This, too, is an attention to terrain. But very often, the way that herbalists tend to tissues presumes that the tissue itself that can best interpret how to effect its own healing. How does this unfold? Herbalists will flood the tissue with the nutrients they believe it needs to repair itself. They will remove the barriers to optimal self-organization, by helping their clients remove the patterns in their lives that impose persistent bodily stresses. And they will consider, finally, that after long periods of physiological stress, body tissues may need a 'reminder' of its own capacity to respond intelligently to its environment. A beleaguered body can 'forget.' It may adopt a pattern of self-organization that is optimal for responding to a particular stressor, but not optimal overall. If this compromised pattern persists long enough, it can become the new baseline point of reference, such that it will continue even when the stressor is

removed or lessened. In such cases — and virtually any chronic condition is this sort of case — herbalists will attempt to remind the tissue in question of another possibility for self-organization that would enable it to carry out its work more efficiently. Cassandra gave me a simple example of how she treats some cases of digestive distress with the long-term use of bitter herbs, with the goal of re-invigorating the secretion of digestive fluids:

> The idea is that the body gets into habits, and those habits can take a long time to change. By stimulating the liver's production of bile with bitters for long enough, the liver gets the idea, and stimulation will no longer be necessary every day.

Deacon's theory describes an organism reconstituting its original level of self-organization primarily in response to a negative disturbance. In this most deeply vitalist mode, herbalists attempt to introduce *positive* disturbances, repeatedly, at low doses, over long periods of time. Their objective in doing so is to allow the body to interpret and re-organize toward a higher level of function — one at which the body becomes more capable of responding to its environment in myriad ways. Medicine, in this form, is a presentation of complex patterns of information to body tissues. Colloquially, herbalists call these complex information patterns 'herbs.'

I sat down to talk about this vitalist kind of medicine in greater detail with Jasper, another teacher at Marigold and a co-owner of the nearby Elixir Herbal Clinic and Apothecary. I sought out Jasper especially on this subject because he teaches some of the most advanced science courses at Marigold, and because he was one of several herbalists I met who was drawn to herbal medicine originally for the way it allowed him to combine a personal love for science with a poetic view of the world. I hoped Jasper could help me think about intelligence in the body, as Deacon does, scientifically — that is, through a language of *how it works*, a linear logic of cause-and-effect:

> I think where this is most visible in herbal medicine is in the immune system discussion. Our immunity is really a very sophisticated information-processing system that helps us relate deeply to the world around us. This is not the perspective of modern medicine, and it's evidenced by how it addresses immune-modulating herbs like astragalus [which increases immune response].[32]
>
> 'If you have autoimmune disease,' the typical response goes, 'then why would you take an immune booster?! People who suggest this must be uneducated or negligent or both.' Not so. Botanical polysaccharides are complex cocktails that provide information, rather than commands, to our immune cells as they meet them through the patches of lymph in the GI tract. This creates a conversation. In deficient immunity, it wakes the system up. In autoimmunity, it helps shift the focus away from self-harm. This isn't only theory, or petri-

dish pharmacy: we have clinical data for astragalus in lupus, in rheumatism. It helps.[33]

Jasper contrasts medicine that *provides information* with medicine that *provides commands*. To provide information is to presume that the body will best determine its own optimal arrangement, such that facilitating the body's own processes is the wisest medical course. Providing commands presumes that, like an elevator mechanism, the body will operate according to a set routine until it malfunctions, at which point it needs to be told what to do differently. Commands try to direct the body's responses directly; information seeks to stimulate the body's capacity to determine a response on its own.

Jasper: The analogy I often use is that the immune system is like a hyperactive child prodigy. Modern medicine either tries to isolate it in a sterile room, do its work for it using antibiotics, or shut it up with steroids or NSAIDs [like aspirin or ibuprofen]. This, because the immune system is so brilliant, capable, and sophisticated in its interpretive skills, leads inevitably to dysfunction. Wouldn't it be the same for a child?

For herbalists, the compatibility between human and plant physiology issues from, in Jasper's phrase, "our physiology's co-evolutionary history with plants."[34] Central to herbalists' understanding of the human body is that, over the long course of human history, humans have always ingested strong plants. If the body is capable of conversing biochemically with plants now, it is because its physiology has evolved in conversation with plant physiology. The very form and function of the human body, in this understanding, is in significant part an artifact of millions of years' worth of responses to plants. At the most plainly physical level, herbalists insisted to me, we have become who we are through plant relationships, and so it should come as no surprise that we retain the capacity to respond to plants. In Jasper's words, again: "our biochemistry expects phytochemistry. It misses it when it's not there." I was reminded as Jasper spoke of the philosopher Gilles Deleuze and psychoanalyst Félix Guattari's image of the co-evolution of the hammer orchid and the thynnid wasp. The inside of this orchid's flower resembles the rear of a female wasp, attracting the male wasp toward it to spread its pollen (Deleuze and Guattari 1988, 10). The flower became a mirror reflection of a salient part of its environment. Another herbalist put it this way to me: "We are nature, and the whole of nature kind of exists within us."

Herbalists often make use of this evolutionary perspective to express their sense that plants carry not only biochemical information, but a kind of wisdom that human

beings need to hear. They speak of plants as elders, or as teachers, pointing to the fact of evolutionary history that plants have been present on the earth for a great deal longer than humans. Plants, herbalists would tell me, have been figuring out how to adapt in their environments for longer than humans have, and by doing so, plants have evolved complexes of biochemical compounds capable of reminding human biochemistry how to live well on earth when it forgets. In this way, the matter-of-fact language of science serves a poetic understanding. Meredith, a co-owner of Elixir alongside Jasper, set out this idea of plant wisdom succinctly, and Jasper followed up with another nod to plants as living beings with the capacity to cause positive human disruptions:

> Meredith: I don't know, I feel like there's something about engaging with plants that actually makes you a wiser human being. But I know I'm biased [*laughs*].
>
> Jason: Maybe that's where the bias comes from!
>
> Jasper: They're messing with us!

Principles of Vitalist Herbalism

Herbalists make use of a handy pair of terms to help them sum up and sort out the kind of medicine that engages this complex conversation from a kind that does not. They speak of a *herb-like* versus a *drug-like* practice. As the suffix *-like* suggests, it's not a simple difference between the use of plants or pharmaceuticals as medical material. It points instead to a distinction in medical philosophy. The herb-like approach presumes intelligence on the part of human and non-human bodies. The drug-like approach, by contrast, considers matter unintelligent and engages it medically as if it were a machine. 'Drug-like medicine' served as a kind of archetype for how herbalists wanted not to practice. They cultivated themselves as herbalists by holding up the command-oriented drug-like mentality as their opposite. I found the distinction between the two terms serving as a central organizing premise for a set of principles that drove their vitalist practice.

The first principle of a herb-like medicine is the use of *whole plants.* Simply put, engaging in a complex conversation with the body requires the use of a complex medicinal material. Herbalists may use just the root or berries of a particular plant, but they will harvest that plant part in its whole, raw form, and make their extractions from these directly. The resulting preparations, like the plants themselves, have hundreds or

thousands of different plant chemicals. They present a whole environmental pattern for the body to interpret, rather than a single instruction. A drug-like medicinal material, by contrast, could equally be a pharmaceutical drug as it could the highly-concentrated, single-ingredient herbal preparations that are prepared in manufacturing plants and found lining health food store shelves. Like most pharmaceuticals, these single-ingredient plant extractions speak with one clear, strong voice — they can give *commands*. But they don't provide the rich and nuanced complexity of a whole-plant preparation, which constitutes *information*. The principle of whole-plant prescription, then, is sometimes stated also as a preference for diversity and complexity. The effects herbalists most treasure in whole plants issue from this complex diversity of chemical constituents — their gentleness and their paucity of side effects; their capacity to achieve multiple complementary and synergistic effects, as Vanessa experienced with rose; and their ability to encourage body tissues to make long-term improvements in function. Margie, a student at Marigold, explained it thus:

> Nothing is one-to-one, like isolated compound to isolated thing in human. No — it's, riot of plant thing, riot of person… you know… dance! Go! It's complexity. And it's precisely the complexity that is important. It's a relationship, and the relationship is important.

After whole-plant prescription, the second principle of a vitalist herbalism is to seek the root causes of a health problem. To use plants only to manage a client's symptoms is to practice in a drug-like manner. The drug-like mentality, presuming an unintelligent body, treats disease as a breakdown caused by external agents or as an internal malfunction. The herb-like mentality, by contrast, presumes that the body has intelligent reasons for responding to a given disruption as it does. Herbalists try to trace a total collection of symptoms back to one or more physiological stressors that a body might be compensating for or defending against. The herb-like herbalist tries to remove the stressor(s), nourish damaged tissues back to health, and provide the body with whole-plant biochemical patterns that it can recognize as prompts toward more efficient self-organization. They tend, that is, to the terrain. The drug-like practitioner, by contrast, tries to block the effects of a germ. The same philosophy is employed, in a drug-like practice, whether the 'germ' in question is truly a bacterium or some other stressor, like an unhealthy diet.

Instructively, there are moments when herbalists choose to engage drug-like

thinking. When an individual's health problem has advanced significantly, and especially when it poses an immediate danger to the person, herbalists will target the danger directly rather than its broad cause. They will make use of more powerful herbs, which they don't advise for daily use. And when a drug-like approach is most clearly indicated, they will gratefully refer to the practitioners whom they consider specialists in drug-like thinking — biomedical doctors. Over and over, herbalists expressed appreciation for biomedical insights in the case of acute and life-threatening conditions. Alongside that appreciation, they insist upon their sense that these cases should constitute the bounds of the biomedical scope of practice. Margie, again: "They're really good at the acute stuff, and not so good at the chronic stuff, because there's this 'destroy' mentality, you know? And you can't… you can't destroy — then you destroy the body!" Unless the body is in immediate danger, then, herbalists try to find and eliminate the stressor that is provoking the body into a compensatory, sub-optimal form of self-organization — in other words, to find the root cause. Simultaneously or subsequently, they try to gently re-educate the body toward its own capacity to respond.

The third principle of vitalist herbalism I observed looks beyond even the root causes of diseases, toward a practice in which curing disease is not the only medical goal. Seeing this, I immediately recalled the Galenists' predilection for teaching harmonious living over waiting until disease emerged. Thinking in this manner, Jasper summarized the entire drug-like mentality as a single strategy: "fight against disease." He elaborated:

> I don't think we [as herbalists] will ever *lose* the ability to use herbs [in a drug-like] way. I mean, they were the original drug, right? So that's never going to change. But I think what we need to focus on doing is helping people figure out the *other* thing, which is that we might consume something that isn't food, on a daily basis, to make ourselves feel *more* that just not-unhealthy.

As Jasper explained to me, the herb-like approach of cultivating a strong terrain is relevant beyond the event of sickness. It is so, he told me, because the basic mode of medical operation in vitalism is to cultivate the body's innate capacity to be well. Whether a client is sick or healthy, the vitalist approach always faces toward wellness more than it faces down disease. Jasper insisted: "herbalism is a life-affirming practice. It's not a disease-fighting practice."

What it means, clinically speaking, for herbalists to affirm life, is that they seek to cultivate and bolster the body's capacity to do what it is always already doing — that is, in myriad and complex ways, seeking its own optimal state of self-organization — rather than trying to make the body do something different. To affirm life, for herbalists, is to claim that healing is something the body is innately predisposed to do. It is to define life itself as the intelligence of living things, their intrinsic preference for flourishing, and their intrinsic capacity to pursue it. It is to recognize, too, that the pursuit of this flourishing is never undertaken by a being living in isolation. Life always takes place within and in relationship with a living environment. If animal bodies have evolved reciprocally with plant bodies, then a living being's preference for self-organization is a template built by and for responding to its surrounds. To be alive, in this understanding, is to be engaged in this conversation. To affirm life in the clinic is to cultivate the capacity to respond.

Whole-plant remedies, root-cause assessment, and life-affirming protocols constitute this herb-like, vitalist pursuit. They are guidelines for medical practice in partnership with a body that is intelligent and alive. If the idea of intelligent matter is removed from view, the capacity to respond occupies a less central place in medical understanding. Medicine then comes to focus on keeping dangers from the environment out, and the fundamental link herbalists perceive between organisms and their environment is missing. For herbalists, to be is to be in that conversation. To understand human nature is to understand that *we are nature.* In absence of that core comprehension, for herbalists, no meaningful healing could possibly proceed. Coming around this circle, I could finally understand what Cassandra meant when she said to me that some of the people who came to see herbalists had been to a host of other sorts of medical practitioner first and that these others hadn't fixed their problem *because those practitioners hadn't tried connecting the person to nature*. The connection to nature is the basic ground of life, and so it must be at the heart of any process of re-constituting life — at the heart, that is, of healing.

What Matter Thinks

When Jasper speaks of affirming life in the clinic, he carries the vitalist

understanding that matter itself has a preference — a preference for life — that the healer need only encourage to come forth. Implicit in the vitalist clinical practice of herbalists, then, is the seed of a kind of ethics. To recognize that there are ways that bodies and plants prefer things in their environment is to understand an ethical imperative in nature itself. If matter can think, then there may be something in particular that it is thinking.

In conventional science, it is considered off-limits to presume any sense of right and wrong on the part of the natural world itself. Science traffics in facts which it understands to be wholly different from cultural values.[35] But this very separation between fact and value, once more, is particular to a vision of the world that divides matter from meaning. Herbalists, as we have seen, reject such a vision. As we recall, the conception of a divided world in the 1600s was less a scientific idea than it was a religious one. Its principal goal was to undermine the Aristotelian idea of an active material world, out of fear that such an idea of the world would lead toward pagan beliefs. When Francis Bacon set out to create the pragmatic knowledge practice known as science, his reliance upon a mindless matter to be dominated by human minds tells us much less about what might be needed for a pragmatic approach to nature than it does about his underlying idea of what that world was like and how to make meaning in it. Herbalists, by and large, don't share Francis Bacon's sense of meaning. They draw meaning, generally speaking, not from a transcendent God above and outside of nature, but from the spirit(s) of the material world around them.[36] Bereft of the fear of pagan worship, they have no need to dismiss the mind-like attributes of matter from consideration. As mind and matter co-habitate in the same realm for herbalists, so facts and values do too. Herbalists have no qualms about noting that some environmental conditions are more conducive to life than others.

Taking the affirmation of life as a clinical goal, herbalists look at their clients' lives with a view toward what furthers the conditions for life, both in their clients' personal lifestyles and in the broader social contexts within which their clients lives take place. I found a quite pervasive sense among herbalists that the society they and their clients lived within was poorly disposed to care for living beings, that it was in basic contradiction of nature's own material wish. It is not so much that herbalists locate a thoroughgoing human political ideology in the plant kingdom. More simply, they perceive a culture that does not pay attention to the preferences of life itself — one, that

is, that does not affirm life.[37]

Thus, as Cassandra summed up her clinical practice philosophy to me, she situated it in between vitalist claims about the material world on one side and ethical imperatives on the other:

> So that's what I do — helping people get those fundamental concepts that are so important. Like that we are nature, and that we have to treat ourselves that way or we're not going to work right. I mean, that's what I'd like to scream at humanity right now, is that we can't continue to treat nature as though it's some kind of commodity. Especially certain people, you know who I mean. We have to recognize that we are totally interdependent, interlaced, interconnected. We can't… we can't *not* make these connections. Our children are dying because we're not making these connections. Our children are sick because we're not making these connections. Our earth is — our soil is sick because we're not making these connections.

For Jasper, similarly, his practice philosophy linked a principle of vitalist herbalism, implying claims about how the body works, with a turn toward ethics:

> Really what we do well is provide people with solutions that they can incorporate into their life daily, to help keep them well, and make them feel more psyched about being alive. And… if we accept herbalism for that, rather than some alternative to drugs that still uses a drug-like mentality, I think that's the only way forward to really do the cultural remodelling and change that we need to do as a culture, you know?

As a life-affirming practice rather than a disease-fighting one, vitalist herbalism aims to provide an embodied ground for each person to recognize which conditions in their own lives and societies create the conditions for life and which endanger and foreclose them. Fundamentally, it suggests the need to re-conceive of the ways in which decisions about how society is organized ought to be made. Living bodies, that is, should have a say. In a culture that has for hundreds of years suppressed ideas like these, to practice a medicine like this is a political act, operating in subtle but powerful ways. As they give the body and the plants a voice, herbalists offer their students and clients access to a kind of matter-of-fact experience that the dominant culture does not effectively account for. In this way, perhaps strangely, the herbalist's way in science prepares the way for a plant-based politics. Herbalists see themselves as having the capacity to reveal a gap in thinking in the dominant culture where it seemed an affirmation of the conditions of life ought to be.

Herbal Science

This practice of science that I observed among herbalists was always a work in progress. Given the embeddedness of conventional science in the idea of a split world, herbalists were usually doing some kind of reverse-engineering when they infused medical research with their own goals and values. Much as they still produced functional models, it seemed to me sometimes there was only so far they could stretch the conventional science they read before it would snap. The herbalist's way in science provides a perspective shift from the conventional frame. It begins in a different idea of what the world is made up of (matter is intelligent and alive), proceeds through a different focus of investigation (mind-body-environment connections are worthy topics of study), and ends in a different ethics (all beings deserve space and support to determine themselves through their own knowledge of their local contexts). What would it look like, I wondered, if herbalists had the chance to construct a scientific method, from the ground up, based on their own worldview? I put the question to Jasper: what would a thoroughly herbal science look like?

> I think a lot of the reductionist science right now is coming from an isolated place. The starting point or the driving force of the experiments, it's so siloed, it's so super-specialized. The research track we see in academic institutions today exists a little bit in a vacuum. I think it's largely human-driven, and driven by the human consciousness. Which at this point is a bit of an echo chamber. I guess what I'm saying is that scientists, originally — you see this in the naturalists of the 16th, 17th, and 18th centuries — they were very numinous, and it was all the work of God, you know? Newton talks about that all the time! And… I'd love to get back to that.
>
> […]
>
> And so, this is what herbal medicine teaches us — that maybe we should be thinking about *other* things than just pure science in the lab. Like — what's the context for the experiments we're doing? What are the consequences of them if they're adopted broadly? And these are things that science has been struggling with, right? It's like, okay, we can do nuclear research! But what are the consequences? Everything can be weaponized. *Should* we be pursuing this? What's the context? I think if you actually dig into matter, the true creative wellspring of nature, whether that be things that humans produce, or things that are out here in the forest, you have a harder time acting in a bubble, or in a vacuum, and not considering context. It's the same thing with giving clients in clinic a remedy made from dandelions that grew right outside — it *really* is the same thing, you know? You have to start taking account of the places that you're embedded in. Because that's the thing that has been nourishing you, and making you feel inspired and creative.
>
> I'll get into writer's block situations sometimes. I'll be in situations where I feel… depressed, for lack of a better way of talking about it! And to me, inspiration, and that feeling of, 'Wow, this idea is awesome, I want to stay up 'til 2 in the morning researching and writing about it….' I feel like… that's *it* in life. That's the most important thing. And love can do it; all sorts of things can do it for us. But that feels like raw vitality to me. And I think that unfortunately, the lab, because of its siloing, because you're focusing on the root hairs of a rhobadopsis and this one particular gene that affects the expression of the

> root hairs, you're *so* siloed, and so isolated from context, that you lose the ability to make decisions that are informed by being embedded in life.
>
> And so, what if you, every day, had a practice that involved going outside, and renewing your inspiration and creativity? I think that it would really alter the directions that you would choose in the lab. And that doesn't mean throwing out the reductionist piece. It's really important to have that. But I feel like it's… it's like, the sculpture comes first. And then reductionism helps you refine it, and make it really beautiful, and let that transcendent experience that brought you to actually make the sculpture… allow you to communicate it outward, in a way that is effective, and that other people can use, and that can, you know, impact their lives in important ways.
>
> I think we're trying to come to a place where we reconcile those two things, because we're seeing the reductionist approach leaves gaps. It leaves cracks. And we've pushed those cracks aside for a long time, because it gives us *so much*, in terms of powerful technology, and the experimental model. Incredible stuff. But it leaves all these cracks. And I think that herbalists are stepping into these cracks right now, in places where the culture doesn't serve people well… like support for activists, or care in the political margins… *or*, in chronic disease, where it's so complex, and in fact it maybe a disease of this super-organism in which we are embedded, which is Western culture.

To walk into the laboratory without a sense of the numinous, without a sensibility broader than the microscope lens, is for Jasper to radically and tragically reduce the scope of that reality that can be made visible. Like Thomas Sydenham, like Risueno d'Amador, like Louis Pasteur and like the hygienists, herbalists idealize a synthesis of methods for coming to know the world. The poetry I learned about from Sarah settled elegantly side-by-side with the scientific method when it was pursued in this vitalist, herbalist way. It made sense to use the edifying shorthand of poetic metaphor to fluidly move through the disparate terrains of what the body is like, but it was useful, also, as Cassandra helped me see, to trace cause-and-effect lines across them, to understand how those connections worked. It was valuable, too, to be able to show clients those connections plainly — to demonstrate, in the vernacular language of the Western myth of science, that connections among mind, body, and environment are really and truly there. That is, to demonstrate that *we are nature*.

When conventional science finds those connections difficult to make, herbalists tend overwhelmingly not to see it as evidence that the connections don't exist. What they see instead is gaps, or cracks, in the scientific method. They find themselves beckoning, sometimes gently, sometimes stridently, for others to peer into those gaps with them so that they too can see what herbalists see. Or, most certainly, to join them for a walk in the woods, in that magical 'other reality' I took part in at the summer carnival, so that they might understand viscerally what more there is to be seen.

Science, like poetry, is a tool. It is not a living being with innate preferences for self-organization. It is much more like an elevator — it may be very well-built and highly useful, but it requires someone outside of it to build it, to program its circuitry, and to decide which button to press. The difference between the conventional and vitalist designs for the tool of science, ultimately, is a difference between two visions of just what sort of human is going to pick it up and use it, and toward what ends. It is a difference in two understandings of what it means to be human. For Francis Bacon, the purpose of science was thus: "'Only let the human race recover that right over nature which belongs to it by divine bequest'" (in Gascoigne 2010, 223-224). Bacon's science was a tool built for humans to rule the natural world. Lucy, another herbalist-owner at Elixir, had a different understanding of human nature: "To be as human as possible at this time, it is inherent that we are part of the earth and the earth is part of us. That is just what it means to be human." It is the difference between seeing oneself, as a god, above nature, and seeing oneself as fundamentally of it. It is the difference between a science set up to control nature, and one striving instead toward relationship.

3 | Directness: The Politics of Plant Relations

"The reconquest of a degree of creative autonomy in one particular domain encourages conquests in other domains — the catalyst for a gradual reforging and renewal of humanity's confidence in itself starting at the most minuscule level."
— Félix Guattari, *The Three Ecologies* (Guattari 2014)

"We will never know reality in a cognitive sense. But it is possible to experience it, in its rawest sense."
— Ezra, herbalist at Elixir

Riding my bicycle once more to meet an herbalist out of town, I passed through a village that reminded me of the suburb I grew up in. Most of the roadside scenery I had pedalled past in New England was forested, and most signs of habitation had a distinctly bucolic air. On this particular morning, though, the neighbourhood I rode through looked more like a subdivision, replete with two-car garages and green-grass lawns. Lawns like these had long been a comfort to me: for many years after I had grown up and grown tired of the sterility of suburban living, I still had sweet nostalgia for a lush and cleanly-cut patch of grass. This morning, though, I felt differently. These lawns looked barren to me. Deep inside, I grew gnawingly thirsty. Something very *wrong*, I felt, had taken place here. I stopped, dismounted, and looked around. A little voice inside of me whispered: *where are all of my friends?* There was not another soul in sight. As I questioned that voice further, though, I recognized with a start that I hadn't been thinking of people at all. I had meant the plants.

For two months, I had grown used to looking upon patches of open greenery positively bustling with diverse forms of plant life. Little by little, I came to recognize more of the weeds that lived there. I learned their names. I remembered little facts about their biochemistry or the ways they had been used a hundred or seven hundred years ago. Some of them I had taken to steeping for tea each morning, and then I would feel into the sensations they sent coursing through my veins. Walking through a wildflower field, I would notice this one over here, the favourite of this herbalist, and that one just beyond, which had helped that herbalist cope with losing her best friend. When I was

young, a field of wildflowers like this would have looked scraggly and unkempt to me. After spending time with herbalists, I realized now, I had started to look upon wildflower fields as things of subtle but incomparable beauty. And when I looked upon a lawn, now, by contrast, all I could see was absence. I saw a vast sweep of living beings not present, cut down in pursuit of an aesthetic of emptiness. Like the herbalists I was spending time with, I had started to experience a genuine kind of *relationship* with plants. Looking upon these lawns as I stepped off of my bicycle, I felt sadness for the loss of these commonplace relations I would otherwise be surrounded by. And I felt a sadness, too, for the mentality of lawnmowing that didn't even register what it was taking away.

The herbalists I spent time with spoke often of plants in this intimate way — as friends, or as allies. It might seem like a fanciful anthropomorphism, until one experiences it directly. Taking medicinal plants into my body, especially when I did so regularly over long stretches of time, I felt the presence of another entity inside of me. Herbalists I met had been helped by plant medicine to feel long-buried emotions, heal illness symptoms, and make personal transformations, all in ways that hadn't seemed as possible alone. Plants had gently supported and fortified them through trying times in their lives. What more does one ask for, really, from an ally or a friend?

Let us consider that if the notion of forming a relationship with a plant may seem strange to some, then this suggests most of all that it lies outside a certain normative understanding of what is possible in the human experience. It shouldn't surprise us, then, to find such an experience capable of re-orienting and re-organizing other areas of one's subjectivity, just as my own encounters with plants re-shaped my aesthetic sense. The herbalists I spent time with engage with plants in this way regularly. Doing so seemed to produce a distinct sensibility in them, a deeply-felt orientation to the world. It is this through this sensibility, chiefly, that I found herbalists defining themselves as herbalists, and indeed recognizing one another as such as well. Benignly sweet though it might seem, I found the sensibility revolving around this engagement with plants to be fundamentally *political*. It is in the direct plant connection, perhaps surprisingly, that the politics of herbal medicine that have been thus far largely implicit come most directly to the fore. Why it should be so is what I will explore now.

Up until this point, we have not focused directly upon this sort of sensibility. I have wanted to establish first that it is not the whole of herbalism — that, much as herbal medicine radiates a magical sheen, there is a grounded logic beneath it. But neither is sensibility unimportant. The anthropologist Clifford Geertz has suggested that cultural patterns are rooted in two things simultaneously: a set of ideas about what the world is like, or a *worldview*, and a moral and aesthetic character of life, or a *sensibility*. The two together make up a pattern of culture, capable of answering the seemingly universal human questions what is real and what we ought to do about it.

The two, Geertz tells us, are mutually reinforcing. A satisfying way of life confirms the validity and value of the worldview that it rests upon, just as much as a worldview inspires a way of life (Geertz 1968, 89-90). To set Geertz's idea in a medical example, we might say that the aesthetic sensibility of stark cleanliness and order seen in biomedicine can be emotionally satisfying because it effectively reflects a worldview that disease is a chaotic entity that attacks the body from outside. The sensibility signals biomedical aspirations to clearly delineate and control what belongs inside the body and what belongs outside of it. Meanwhile, the herbal aesthetic sensibility of earth tones and resplendent flower pictures emotionally validates a worldview that positions nature as a life-giving home. This sensibility reflects the herbal aspiration to re-integrate the person into nature's wholeness. In a style or a sensibility, then, ideas become lived realities, and as we live them out, our way of life validates our ideas. Taken together, the total pattern gives us a working *model of* how things really are, and a *model for* how we should live because of it (Geertz 1968, 93-94).

These reciprocal pairings of sense and sensibility, as we live them out, become deeply ingrained and difficult to shift. Much as claims about what the world is like can be tested empirically one at a time for their truth-value, they are also constituents of a total cultural pattern. To say that *we are nature*, or that statistical categories are the only valid way to know, is really to point toward very many other ideas and modes of life as well that are linked together with them. If ideas like these have roots in very different cultural patterns, then moving back and forth between them may not be a simple matter of considering them in rational terms. To ask someone to accept the validity of a new idea, in this case, would be to ask as well that they re-consider vast other parts of their

understanding of what is real and what is right.

In such instances, a *direct experience* of the world as constituted *otherwise* than one's frames suggest it must be, may be necessary in order for someone to comprehend a new point of view. Experiences gather together ideas, emotions, and sensations at once, and so they can enter us in a deeper way. They may allow us to see momentarily through a changed cultural outlook, giving us access to encounters of the world that hadn't seemed possible prior. As I hope to show in this chapter, the direct plant connection offers just this sort of experience for herbalists and herbal students. Deep personal change like this is not at all necessary, in the view of herbalists, in order to benefit from medicinal herbs. As I claimed in the previous chapter, the material relations with which herbalists work can be translated into different modes of expression and made available in various ways. But it is through a distinct cultural pattern that herbalists keep their sights so keenly trained upon those particular relations that define their medical work. We have already seen much of the herbal worldview through which those relations come to make sense. Alongside this worldview sits a herbal sensibility, a moral and aesthetic mode of life, which helps them to retain and reinforce that worldview, especially as so many of its planks, like *we are nature*, are not well-supported by the dominant cultural pattern around them. What I hope to show in this chapter is the way in which I saw the deep experience of plant connection operating as a centre point of that sensibility. Herbalists return to it intentionally, over and over again, in order to enable them to work upon and re-work the world in the ways they attempt to do (Geertz 1968, 112-114).

As we transition now from considering herbalism as a product of histories and a mode of thinking, toward engaging it as a cultural outlook, our language will change somewhat too. When a narrative about the past becomes a central part of our model of and for reality, that narrative gains a hold over subconscious processes — it becomes part of a *myth*. Ideas like nature, capitalism, or clinical trials, when they function within a myth, become *symbols*, important less for what they are or aren't in themselves and more for what they represent within an overall cultural pattern. A personal experience deep enough that it opens one to seeing through a new myth structure, we will look upon as a *conversion.* Finally, practices undertaken to reinforce the validity of a worldview and the coherence of a sensibility, we will call *rituals*. One can speak of herbalism in these terms equally well as one can about biomedicine. I introduce them

because they help us to consider how it is that herbalists come to see the world as they do, and how they maintain those perspectives in the face of countervailing influences — that is, I introduce these terms because it will help us bring something different into view.

I came to recognize the centrality of the direct plant relationship in herbalism only gradually. Herbalists of all stripes spoke about it constantly, but it seemed to play a relatively small role in education and clinical practice at Marigold. (In some other schools and communities, it is much more central.) But in time, I began to see that whether or not the direct plant relationship was a primary form of medical practice in a given herbalist's repertoire, it almost always served as the heart and the soul of their work. It supplies the set of rituals that Jasper suggested an imagined herbal scientist might undertake to frame and situate their laboratory work. It encompasses the ultimate result of Sarah's constitutional consultation with Vanessa, her relationship with rose. Direct relationships with plants help to keep the herbalist's eye trained upon the idea of an active living world and the idea that *we are nature,* keeping them viscerally grounded in the systems of thinking they propound. Among the many sorts of herbalist I encountered, this plant connection was present in one way or another for each of them. It was the substance of the common thread.

In order to grasp the depth at which plant relationship anchors the herbal sensibility, I will approach indirectly, traversing first through some of the disparate fields of thinking and practice that I had to cross myself in order to apprehend it – law, politics, and economics. As we travel out again from the direct plant relationship, I pass back through these all-too-human areas once more, seeing how plant relationship re-orients the sensibility of the herbalist toward them. Put otherwise, questioning just what it means to be connected to a plant, we will come to see even more clearly what herbalism might mean, beyond the practice of medicine, for this contemporary world. And as we walk through some of what herbalism may mean for the contemporary world, we will better understand just what it means to be personally connected with a plant.

Regulation and Resistance

I settled a bottle of wine and a bar of chocolate down on the island in Margie's

kitchen next to a couple of pints of strawberries. It was the very end of strawberry season there. The island, ceramic-tiled in earthen tones, stretched languidly across the kitchen's length. Opposite, a set of picture windows opened onto a backyard garden. Margie directed my attention to two dinner plates on the window ledge behind me, laden with drying chamomile flowers and rose petals she had harvested a few days before. Melt the chocolate, coat the strawberries in it, roll them through the flowers: dessert. Margie said all of this in a glance. Before she became an herbal student at Marigold, Margie was the kind of nutritionist and cook for whom cooking shapes a total outlook. In the New York Sicilian household where she'd grown up, food was as casually omnipresent as it was passionate. I'd asked Margie a couple of weeks prior if she would sit down with me to talk about herbal sensibilities; naturally, she'd invited me over for dinner.

> Margie: It's, like, chefs… you know… chefs is the wrong word. Cooks? People who cook. As well. Who have a different way of looking at things.
>
> Jason: What's the cook's way?
>
> Margie: I don't know if there is 'a way,' but… let's go back to your question about the… because we were at a specific place, and I felt like it gave me an idea, and now I've gotten lost a little bit in my tomato sauce.

As I started asking questions about herbal sensibilities, Margie demurred at first: "just like with medicines of all kinds, and cultures of all kinds," she said, "it has fractions and subcultures upon subcultures upon subcultures." But there were a handful of principles still that she had found in common among all the herbal subcultures she knew. Over wine and cabbage rolls, she traced them out for me.

The first and foremost of these had quite little to do with plants in any direct sense. It was a widespread resistance to state regulation of herbalism as a profession. That resistance seemed to stretch so far across the herbal community, though, in both Margie's experience and mine, that it gave me my first entry point into thinking deeply about what might make up a herbal sensibility. Herbalists could apply, as many of their peers in other alternative medical modalities have done, to become a regulated profession with the United States government. Regulation would enable registered herbalists to accept medical insurance. It could both meaningfully improve their own financial security and lower the financial cost, for any client with private insurance, of

seeking their help. But it would also require herbalists to expose themselves more directly to a determination by the state of their acceptable scope of practice. Their professional association, the American Herbalists' Guild, had attempted to move toward this kind of regulation in the first years of the new millenium, but it found no clear base of support among the membership. The overwhelming majority of the herbalists I met were clear on their position: they wanted no part of it. Margie gave me her overview:

> [T]here is one thing that I have almost found across the board in all the communities that I've been in which have been herbal, which is not a ton, but it is some representative sample: ***nobody*** *wants any kind of certification or recognition from the government*. Recognition from the government equals *bad*. Recognition from the government equals, they're going to squash our tradition, and put it into a little box, and they're going to tell us what to do. And then we're gonna be fucked, and it's gonna be just like [bio]medicine, and it's going to turn into a bunch of pharmaceutical-like products that are isolated compounds that can only be said to be effective *if* they are studied in a certain way.

Sometimes I heard about herbalists in other countries or other alternative healing modalities in the United States going through a regulation process and losing specifically that sort of independence.

> Jasper: It's easy enough to foresee, but people don't think about it. There's a domino effect. You've got a standardized curriculum, then you have a standardized practitioner that comes out of it, and they all practice the same way […].
>
> It's a whole knock-on effect, which has happened [in the United States] to osteopathy, fully. To a certain extent, midwifery. And now to naturopathy.

Resistance to regulation was virtually always paired in this way with an appeal to the perils of standardization.

Some herbalists, like Karen, could imagine possible benefits of standardizing the practice, but even they herbalists were certain that something of great clinical importance would be lost:

> Karen: Should we, could we, have a bit more standardized terrain? Could we, should we, have somewhat more similar educational standards, or some kind of ethical framework, beyond perhaps what the American Herbalists' Guild offers or something like that? Those are great questions to ask. The field, at least in North America, has tended to shy away from those in recent years, because we see what the result has been for standardized medicine, and it hasn't been an unequivocally good one. And we herbalists tend to see many of the clients who are being failed by that system. We are very clear, standardization in itself did not give us better medicine. Standards do not heal more people!

> Are there problems with not knowing how much of the so-called active constituents, how much potency, is going to be in that echinacea, or in that specific herbalist? Sure, there are problems. But I'll grapple with those problems, in exchange for knowing that we get the potential benefit of the diversity, of the variability, of the adaptability, in that specific herbalist, responsive to a specific client.

Herbalists feared losing the very features of their practice that had been pushed out of mainstream conceptions of medicine throughout modern Western history. Standardization threatened the herbalist's view of disease and healing as processes taking place between individual bodies and their local environments, and by extension, their idea of a material world that is active, responsive, and alive. For several hundred years, as we have seen, broad social forces have acted to marginalize their conception of the world. In their resistance to regulation, I understood an intuitive sense among herbalists of the tension between their own ideas about nature and the worldview that predominates in the culture around them.[38] They sensed that if they did not actively protect their ideas, those ideas and the forms of practice they inspire would be swallowed by the dominant view. In Jasper's phrase, "the way things have generally been going is that free-market capitalism is a strong assimilative force, it seems to me. And reductionist thinking is also a strong assimilative force."

Turning away from regulation had meaningful consequences for herbalists. Remaining unregulated placed them in financial straits, and many felt pulled constantly between the twin imperatives of making their practice accessible to poor and working people and sustaining themselves financially. Regulation offered one clear way out of the tension: if they could take insurance, like their peers in other alternative medical modalities, they could charge higher rates to clients who held insurance and have more resources available to sustain themselves and to care for those who couldn't pay. Herbalists talked about this problem very often, and notwithstanding interesting business model innovations here and there, no one seemed to think that anyone had a good answer. And still these benefits of regulation did not outweigh the costs that herbalists feared.

Rather than moving more directly into the mainstream system in order to resolve the tension, herbalists tended to see that system entire as the cause of the problem. For them, the real source of their financial woes was an economic system in which few people could afford to pay the real costs of health care. Implicating themselves more deeply in that system was not, for almost any herbalist I met, a logical answer. As I

grasped the herbal resistance to regulation at this depth, I could see how it ran tentacular connections into a range of other critical positions. It formed part of a broad sensibility, a comprehensive pull to imagine society otherwise.

I believe it is because herbalists grasp the depth and import of the philosophical differences between their approach and the dominant cultural logics that they are as certain as they are in their resistance to the regulation of their profession. They sensed a clash of incompatible cultural outlooks between themselves and state regulators representing the dominant view. Whatever benefits to their practice might come from regulation did not seem worth having because the essence of the practice would be lost. A conversation among a group of Marigold students one evening after classes laid this out for me clearly:

> Rene: Constitutionally-based systems of medicine are so non-conducive to peer-reviewed research, which is the entire basis for the modern medical system. It is so difficult for herbal medicine to transfer at the moment into a mainstream system of medicine. It seems like it should fit so well… and it just doesn't! Because you've lost the most fundamental piece of it, which is that we are treating individual people, who can't be averaged.
>
> Willow: Right, and at that point, I think you just kill the soul of the whole thing.
>
> Rene: You lose the soul as well as the effectiveness!
>
> Willow: Absolutely.

Sensibilities on Trial

I saw a hopeful attempt at integrating biomedical and alternative approaches taking place at the local university hospital, and it seemed a good place for parsing, as a local scholar of community-based medicine had quipped to me, "who was being integrated into whom." Anastasia, the program manager, told me proudly about the strides they had taken toward integration. The physicians, she said, seemed *ready* for it. The opioid crisis and the ravages of cancer and chemotherapy had sent them searching for new tools. Amidst all of this openness to integration, though, there was one hard limit.

> Anastasia: [E]verything here has to be evidence-based. It's just how it is, and it's not going to change anytime soon. So we're not going to try to change that…. They're very data-driven, you know, so that is how it goes."

Evidence, though, is not a neutral entity. The kind of evidence to which Anastasia referred was the large-scale statistical trial. And as we saw in the first chapter, this particular tool is set up to look for *average man*. It relies upon a standardized patient receiving a standardized treatment. It is not designed to see the uniqueness of the individual, which is exactly what herbalists insist upon doing. Among the modalities featured in the hospital program, herbalism has been slow to arrive. Anastasia had invited Jasper and Meredith to give talks at the hospital, in an attempt to build bridges, and Jasper and Meredith had been eagerly willing to talk science with medical staff. But there remained a gap between them. Herbalists refused to compromise on their other ways of knowing.

Bucking the trend of so many of their alternative medicine peers, herbalists hold out for an engagement with biomedicine on even terms. At another New England medical school, an attempt at a conversation like this was on display. Amber, an herbalist I met at the Herbal Summit, jointly owns a multidisciplinary clinic with an integrative medicine physician. This physician is on staff at the local university hospital, and through their relationship, she has been able to gain academic standing there. She takes medical students for approved internship rotations, and she gives regular lectures to medical staff at the hospital's grand rounds. When she gives these talks, she begins by addressing the question of evidence, and she addresses it head-on:

> That's one of the things I talk about: don't try and put herbalism in that box, because it's never going to fit. It's like using the rules for soccer to play baseball. They're all sports; you know, it's all health care. But it's a totally different set of rules. It's about thinking about herbalism as a different model.
>
> The beginning of my talk is always about why herbalism doesn't fit into evidence-based medicine, because there's always someone who's like, 'This isn't evidence-based, how can you say that, blah blah blah….' I don't try to convince people anymore. I'm like, 'whatever, take it or leave it. You need to start thinking about this differently. If you're going to keep — I'm not going to have the conversation with you if you're going to keep putting it in the same category.' It's a *totally* different modality. It's ridiculous to even think that it *would* fit that way.'

Amber was in no sense resistant to scientific research. She lamented, in fact, that the medical school she worked with was "behind" others she had visited in terms of turning its research attention toward integrative medical concerns. But she fiercely resisted the contention that scientific knowledge should have authority over all other ways of knowing.

Somehow, herbalists manage to resist the siren song of statistical thinking. Since the 1800s, statistics have been a central symbol in the Western scientific myth, grounding the presumption that more and better data will eventually deliver the truth.[39] Though herbalists live entirely within Western culture and have grown up inside its dominant myths, they persist in seeing to some degree outside of them. I came to think that they could do this because they had gone through experiences that had caused them to question the value and the validity of that myth structure. Myths most often fade into the cultural background, coming to seem for the people of a given culture like the only way things could be. Herbalists seemed to have some way of sensing that things really could be ordered otherwise, and it loosened the hold of Western myth structures upon them.

Sensibilities of an Otherwise

It was Margie who first showed me something like this. Long before she became oriented toward the herbal sensibility, she had gained something similar through her deep personal relationship with food.

> Margie: What we say is true, what we say is effective, in medicine, very much depends on what tools we're using. So the scientific studies — blind, placebo, yadda yadda — are one way to say something is true. And for me, they're one way. For the vast majority of the scientific community, they're *the* way.
>
> You know, I was at a medical conference on nutrition. The guy who runs it is a real visionary, has been for a while, like 20 years. Says there's not enough food in medicine. Says we need to bring the food back, basic cooking, back into medicine. And his way of thinking about it, his way of looking at it, is better than any doctor I've heard. For sure. And still, the conference was, like, old white dudes, you know, who have done research on diets, in their scientific way, for 40 years. And then… what they've said, is that the Mediterranean diet works.
>
> And what is it about the Mediterranean diet? Well, you know, they break it down. It's the fruits and vegetables, it's the whole grains, and it's fish two times a week, or two-point-five, or whatever the fuck... Two-point-five-six-ounce serving, you know, that kind of thing. And by the way, olive oil is good and you can even have a little wine with dinner! *It's found to be beneficial*.
>
> I'm fucking sitting there in the midst of… the audience is a bunch of fancy-ass doctors, you know what I mean? *Fancy-ass doctors.* And they're all nodding, 'mm-hmm, mm-hmm,' taking notes. I'm like, *my fucking grandmother knows this.* Why am I sitting here? You know what I mean? You know?! Like, I'm *so* mad — I can't believe that you have spent 40 years of your life studying something that is as plain as the fucking nose on my face!

For Margie, scientific study of the Italian diet she grew up with might be interesting, but she had a *direct line* into understanding that it was likely nutritious. She had received that understanding through family tradition and reinforced it through embodied experience. It seemed absurd and extravagant to her to substitute entirely, as she told me, the scientific formula of "this is good for this, in this way, because of that," for her grandmother's direct assurance: *this is good for you*. This: this food, this table, this family, this life. Food sat at the centre of a complex web of relationships that had oriented Margie toward the world when she was young. She saw that orientation as effective. She thought that it kept her well. These deep food experiences had grounded Margie in a distinct sensibility, such that when she attended this medical conference, what seemed so plain and familiar to the doctors in attendance was for her quite deeply strange.

Anchored in this other sensibility, Margie had the self-assurance and direction in her young adult years to drop out of a university degree in nutrition science after the first semester and enrol in a holistic culinary school instead. She thought the scientific approach to nutrition was missing the point. She started a nutrition non-profit when she graduated, which she still runs today. Some years ago, her non-profit was contracted by a major university's medical nutrition program to teach the culinary component of its courses. When students would sometimes ask her how many calories were in the dish she was preparing with them, she would reply: "I didn't calculate it, and that's not the point. And let me explain what *is* really the point…."

Through her career, Margie developed and maintained a culinary pedagogy that held its own beside and against the scientific nutritional norm. She reminded me exactly of Amber's approach in the hospital. Knowing a little bit more about Margie's relationship to food, I thought I could see how. Her early food experiences had oriented her so deeply in a particular direction that she could chart her way by an inner compass when powerful winds blew her way. Even when she couldn't entirely see the end point, by virtue of this inner guidance, Margie could feel — or, in this case, taste — her way toward it through the darkness. She knew, directly, that there was another way.

Conversion

Margie poured more wine, and we walked back toward the stove to start melting

chocolate for dessert. She started telling me about the next principle of the herbalist's sensibility. It was one that we understand by now well already.

> Margie: We are nature and nature is us; there's no difference. Look at the patterns in nature, you will understand the patterns in the body. *Done*. Stop looking at nature, stop looking at the patterns in the body, *bad news*.
>
> Jason: Are you in favour of that one? Does that make sense to you?
>
> Margie: It makes perfect sense to me. *Done*.

We both started laughing. Margie paused and stared off into the distance, and then carried the melted chocolate back to the table. As we sat down, she reconsidered her answer.

> Well that's it, you know? That's kind of obvious, but… at the same time… it had to be explained to me! I'm a human being on this planet like everybody else, and yet… I was really… that just wasn't my frame of reference, exactly. It wasn't *not* my frame of reference. It's not like I consciously held a counter-view. It's just that it wasn't in my… it wasn't the most natural thing for me at first.

Some parts of Margie's food sensibility overlapped with the herbal one she acquired later, but they weren't entirely congruent. In all of the time she had spent growing and eating plants, she had never quite come to think about herself as a part of nature, nor had she quite looked upon plants as living beings that she was in communication with. In her classes at Marigold, she gradually came to integrate ideas like these into her worldview. But something had happened to her before she enrolled that had sensitized her toward them: she had made a direct personal connection with plants.

When it happened, it shocked her into the possibility of seeing the world otherwise than she always had. Over time, it came to serve the same function in her cultural outlook as her early relationships with food had done — it anchored her herbal worldview, and grounding her in an herbal sensibility. She started to tell me about it as we started eating dessert. The strawberries were good, but the herbs we rolled them in were mind-blowing, and transporting. We were both taken a little aback. But then, we both knew already that those gentle little flowers could surprise sometimes with the potency of their felt effects.

Several years prior, Margie had taken some time off of work to try to move through a difficult time in her personal life. On a friend's suggestion and on a whim,

she signed up for an internship in herbal medicine. On the day the interns arrived to begin, the co-ordinator led them on a walk into the woods. He gave each of them a single dose of tincture of a single plant without telling them which it was. He asked them each to drink the tincture and then walk off on their own into the forest and see what they felt. It was just several drops of extract, but Margie had a powerful reaction. She burst into tears. She felt overwhelming bodily sensations. She saw an image of roses in her mind, and then images of her grandmother. When the group re-convened, the co-ordinator told the interns which plant it was. It was from the rose family, and about a third of the students in each group he gave it to, he said, spoke afterwards about their mothers and grandmothers.

The next day, they tried another plant. Margie walked off into the woods for twenty minutes, and felt an incredible expansiveness in her chest. When they gathered together again, the teacher told the group that the plant was a circulatory stimulant with a special affinity for the heart.

> Margie: Afterwards, I was kind of just, like… *huh?* I was *a little bit confused* by the experience, but mostly I just felt, like, 'that was awesome, and magical.' I was in a very open place in my life. Grief had opened all the skepticism, like 'These [doubts] don't matter; they are irrelevant to you right now! And you can push them aside so easily.' Which is not [usually] the way I roll through life. I asked the teacher, 'Are you telling me I have intuition?' I had just never thought of myself as someone who could *commune with plants* or something.

For all the time that Margie had spent with vegetables, she had never before experienced her body or her mind as being so exquisitely *responsive* to plants before. It was suddenly as though consuming a plant might be not just a part of a social experience around a table or a way of working the land, but an embodied, deeply personal, perhaps even spiritual conversation with nature. Within a couple of years of that event, Margie was enrolled at Marigold.

Stories like this one were not unusual among the herbalists I met. Each person's story had a different tone and tenor, but they all came down to a similar point: something had happened in their interaction with plant medicines that had opened them to new possibilities of experience in the world and to new ideas for explaining it. Another student, Jeremiah, shared his:

> I'm convinced that I can't explain to you what the experience is of connecting with a plant.

> You can pick up books where you can see, you know, 'yarrow does this, yarrow flower essences will work towards these constitutions and address these problems.' But I think that — those are just guidelines, and they don't work for everybody, and I don't think that my experience with herbs would be the same as yours and yet I think that they would both be equally profound.
>
> How I believe I became interested in plant spirit is that I started taking herbs, five years ago, and over time, I took and sampled and became exposed to hundreds of different herbs. I think over time, it has changed me energetically. I think it has changed something inside of me, and made me feel more spiritual, and more connected to nature, and it's really difficult to describe. And I couldn't say, 'it was *dandelion*,' you know what I mean? I can't say 'what it was.' I think it's a cumulative effect over time, because my constitution is strong, so I don't take a small dose of herbs and very often notice a change. Some people will!
>
> But I've had profound experiences. The first year [of school], we went out to [a nearby herbalist]'s farm. And we were all sitting around in a circle, and she gave us a very small cup of rose-tulsi tea. It had a very profound emotional impact on a number of us, to the point that I was having a very difficult time expressing myself without tearing up. Yeah, and that was the first time that I ever thought, 'Wow, there's something much deeper going on, because I did not take a lot of this herb.' And I saw it happen to a number of my classmates, too.
>
> And it's strange! I never would've thought… if somebody had said to me, you are going to want to teach a plant energy spirit class… if somebody had said that to me five years ago, I would've thought they were losing it! You know? It just never — I would've said no. Because I very much come from a scientific, logical, empirical background. I want to experience it for myself. I want to know the science behind things. I don't just take things on faith. But, for me, this has been experiential. I *feel* the difference. My wife has said to me that there is such a huge difference in me now. I'm a much more calm, serene, grounded person.

As I heard more and more stories like these, I tried to practice connecting with plants as well. I paid more attention to the plants I was learning about as I encountered them by the side of the road, and I started to feel deepening emotional responses toward them. But nothing quite like John or Margie's spectacular stories arrived for me. To be fair, I wasn't putting in very much time. When I asked herbalists how to go about making plant connections, they usually told me to sit down beside a plant, and meditate, and listen. Somehow, it had kept falling off of my to-do lists. I was spending all day learning about herbalism, but I was so much more oriented toward listening to herbalists than I was toward listening to plants. It wasn't a way of living I was yet accustomed to. I asked Karen if there were teachers of plant spirit medicine she could connect me to, thinking that maybe a human connection could help me bridge the gap. Karen sent me to Gabrielle, an elder in the community living a few hours' bicycle ride out of town.

I arrived one evening for an herb walk she was giving around the little piece of land that she lived on. Myself and one other student followed behind her as she told us

about the botany and the medicinal uses of the weeds and flowers growing along the edges of the paths. It seemed like pretty standard herb walk stuff to me, and I tried to see if she might be willing to take us in a different direction.

> Jason: I would love to hear a little of the plant spirit teachings, if it's possible.
>
> Gabrielle: The plant spirit teachings?
>
> Jason: Well, I mean, I don't know what to call it… but you said when we began the walk that you had a strong intuitive connection with the plants….
>
> Gabrielle: Well, yeah… it's hard to… I'm always in it, you see. It's nothing separate from what I'm telling you. There was a period of time when I was experiencing extraordinary plant-spirit communications. I used to get *poetry* from the plants, *poetry* from the mother maple, and brother oak, and Grace and Beauty, the twin white birch trees. I think that I was given this gift to open me fully to my plant-friends. And while our communion remains solid and consistent, I'm not getting that kind of extraordinary communication anymore. And I actually tell people that, to kind of encourage them. Because for years, people have said to me, 'Gabrielle, I think I'm talking to the plants, and hearing them, but I don't do it the way you do.' And I say, 'Good. You do it *your* way. Everybody has their own way.' You know, there's no one way. And for me now, as I walk around the land, I say, 'Hi guys! Looking good today! Gee, ooh, look who's here! Would you like to be harvested?' And they wave their leaves at me. That's more the dialogue these days.
>
> And actually, I was told that that's easier, especially on the trees. When they were speaking to me in my language, that was a bit of a stress on them. I was told that all we needed was an exchange of love and gratitude. So… I feel like I'm just in that space, all the time. Yeah. Several people have said to me recently, after doing herb walks with me, that they felt I was just introducing my best friends to them. And that's what it is. These are my best friends, you know? And… can I introduce you to a few more?

We kept walking, and she did. I tried to follow along with Gabrielle's affection for the plants in the ways I understood already rather than wondering what else there was that I was missing. We went up to the mountain, where the leeks and blue cohosh plants lived. Gabrielle drew the walk to a close. She invited me and the other student to stand in a circle in silence with her, just to listen to the trees. And then she asked us if we would share with her an idea or a feeling that had come to us during the walk. I told her that she had reassured me that the little bits of plant connection I thought I might be having really might be the same species of experience that everyone else was talking about. Maybe it wasn't so mysterious and complicated; maybe I knew what to do already if I wanted to deepen those connections. For Gabrielle, my reaction had caught her premise exactly:

> That's critical. Thank you for sharing. Thank you both. Thank you both so much for being here. I think we should have a party! But truly — one of the first things I say to my students

> is that… it is your birthright to commune and communicate with these plant people. You have it *now*. You don't have to do extraordinary things. If you like, you *can* do years of yoga, you *can* stand on your head, you *can* study for 25 years. That's all good. But you have it *right now*. It is your birthright as a human being to commune and communicate with all of these guys, in any way that that works for you. And you got it.

Gabrielle smiled warmly, and she pressed her hands to her chest. I camped out on the land for the night, and she invited me to walk with her again in the morning, on the summer solstice. Morning came, and we hiked deep into the woods for a couple of hours. She was grateful to have someone to walk with, and I was grateful to feel the majesty and the mundaneness of being with the plants beside her. Walking with Gabrielle, I started to look upon the spirit of the woods as something I could just fall back into, something to which I belonged— as though plants and people were part of an interconnected whole, always already in conversation.

Spreading the Gospel

For a handful of mid-career herbalists I met, plant connection was a functional tool for worldly work in addition to a personal spiritual practice. No longer initiates and not yet elders, these herbalists were working actively on developing herbalism as a field. Respectively, they were training a new generation of students, or expanding the reach of herbalism to new constituencies, or developing its conceptual tools in novel directions. In the eyes of these herbalists, the herbal worldview was of direct pragmatic use both in and out of the clinic, and plant connection was a crucial method for conveying it.

Meredith was one of these. She had had a career in environmental science before becoming a herbalist, and plant connection offered her a meaningfully complementary method, alongside science, for building applied knowledge about the environment. She talked about her approach on a popular local podcast:

> It reminds me of when I learned about harvesting rose petals. If you've never done it, it's one of the most magical gifts to go out on a summer morning and harvest them. As I was doing it, I noticed that sometimes the petals didn't come as easily. And so I was almost asking the rose, you know, 'How come sometimes you're ready to give it, and sometimes you're not?' As I was asking that question, I started to notice that I was also there with the pollinators, that there were bees pollinating the flowers. And I started to notice the petals of the flowers that had been pollinated already coming much more easily than the ones that, I think, hadn't been pollinated yet.

> So now I have this practice of not just communing with the roses, but also being connected to the activity of the pollinators, and waiting until they've had their turn on the flower. And that makes sense from a biological perspective as well, you know. The roses are partnering with the pollinators, and they need those showy petals in order to attract a pollinator. Once they've attracted the pollinator, then it's there for us to take. So, it gets back to that feeling of connection, and sense of place. It's humans, it's the plants, it's the pollinators, it's this ecosystem. And I think it matters particularly in these times, when there are so many forms of disconnection — people feel disconnection within themselves, disconnection in their human communities, and disconnection in their natural communities. Those little moments of feeling part of an ecosystem, I think, are really crucial right now.

Karen told me about how plant connection was a central part of Margiold's curriculum. Even though she wasn't teaching it as a primary clinical tool, it was fundamental, for her, to the development of an herbalist. She taught direct connection as a critical thinking skill: it formed the basic thinking structure upon which other paradigms were later layered.

> It's harder to actually teach… it's more of a 'leading a horse to water' kind of practice. In the earlier parts of our program, we're really just putting people in the garden and in the woods, and giving them lots of assignments that cause them to just be with the plants, to have as much personal relationship with the plants as possible, so that they feel that the plants are giving *them* a specific experience. We want them to feel that they have a personal line to the plant knowledge, that there's not a mediator, that we're not necessarily always telling them everything they need to know, that they can have their own experience that may actually be in opposition to something we tell them, and that they feel, hopefully, empowered to accept that as real.
>
> And yet, we also teach them to hold that heuristic knowledge with a tentativeness, that it is absolutely true for them in that moment, *and* that it is possibly only *interesting* in application to anyone else. And so that breeds the beginning of critical thinking, before we're even talking about research, or about cultural knowledge about health. We're just starting to ask, 'How do you interrogate your own truth, in a way that helps you to validate yourself, and at the same time acknowledges that other people are different, in a million different ways, and that the first way they're different may be the way they respond and relate to plants?'
>
> Jason: So, first learn to cultivate your own truth, and then learn to interrogate it.
>
> Karen: Yes, yes. And so we start with that in the first year, as a way for people to open up to the idea, in such a way that, I think, it feels very obvious. We get them talking about it with other students in conversations that go something like: 'Well, I took garlic, and so did I, and two different things happened,' and they can look at each other and say [invoking constitutional descriptors], 'Well, yeah, you're obviously this dry person,' and, 'Well, you're obviously this hot person! And so of course we're going to be different!'

Karen uses the direct plant connection to teach the fundamental premises of herbal healing — that bodies are in conversation with a living world around them, and that the nature of that conversation will be local to each individual and each place. These basic

underlying ideas about the world are communicated through every other medical perspective that Marigold teaches as well, but in the direct plant connection, students *experience* them. In this way, the premises of the herbal worldview become not just abstract lessons, but parts of an integrated sensibility orienting herbal selves toward the world. As the program progresses, the lessons learned through direct plant connection repeat themselves in fractal form at higher scales.

In his clinical work, Jasper saw revelatory moments like these happen all the time. Something changed in the minds of his clients when they recognized that their healing had been effected through the help of plants that grew freely all around them. Jasper told me that he could see these experiences, of their own accord, beginning to re-pattern his clients' orientation toward their world:

> The biggest impact I've seen is when individual people feel better and they recognize that what they normally considered a weed has done that for them. It's a cool, subtle shift, but it ends up being pretty powerful. And so it's important to me to say, no, this was a dirty dandelion root that I chopped up and put in a bottle of vodka. This is not something you went to the health food store and got in a special pill that was extracted, and modified, and *made* to work. It works all by itself, on its own, in its weedy form. It's important for me to convey that message in clinic.
>
> These are moments of realization, or 'aha,' that happen in clinic. It's almost like a relief happens. It's like coming home, or being back in a place that is more comfortable. It changes people's minds. 'I need this abstruse thing that is highly specialized, and locked in a specialized knowledge enclave, in order to make myself better,' changes to, 'I can make my own decisions about what makes me feel better, and also I can use things that are growing everywhere to do that, and that might actually be safer and more sustainable in the long run.'
>
> And once you open that door, then all the dominoes fall into place. Because all of a sudden, you start to think, 'Well, dandelion, or whatever other plant I've connected with, is useful for me and my family. And I appreciate how it made me feel. So I'm not going to think of it as something I need to eradicate with a weed-killer.' And I… if you can do that, maybe, suburban lawn by suburban lawn, you know, one person at a time…. You can do it one-on-one in clinic. When it changes people's minds, it's a beautiful thing to see, and they don't usually come back.
>
> Everyone is waiting to come home to herbs, I think.
>
> Jason: They don't come back to clinic, or they don't come back from *there*?
>
> Jasper: No, they don't come back *from* there. It's like, you know, 'This is something that is my birthright, and I never knew it was my birthright, and I'm not going to let it go now!' It's like, almost everybody who makes that connection, it's… it's *amazing* in kids. You just have to gently nudge them. But in adults, sometimes it takes a little more work, and having a clinical success story usually is the linchpin to that. That really helps to show them. And then they *don't* come back. It's not like, 'Aw, yeah, but I'll still spray the crap out of the dandelions in my yard and just buy dandelion in capsules from the store instead.' That just doesn't happen.

In conversionary experiences like these, the most ordinary objects take on wholly new significance, and a new understanding of the world starts to unfold.

For many herbalists, in this way, the direct plant connection not only offers them a way of seeing somewhat outside of dominant myths, but it serves as well as a founding principle for the emergence of a new one. In a second lecture at the Herbal Summit, Karen showed the utility of direct plant connection for shaping new orientations to the world. Karen presented connection to nature as a fundamental human need, such that a historical loss of connection in Western culture, she argued, was functioning presently as a basic cause of ill health. For Karen, as for so many other herbalists, the direct plant connection could provide the basis for a new sense of meaning in this way, making herbalism into a healing tool that was physical, psycho-emotional, and mythical all at once:

> Just as we understand there is developmental trauma that has to do with solid attachment between parent or caregiver and a child, we also understand, or we're coming to understand, that the lack of solid attachment, or secure relationship and sense of belonging and care between a human and our ecological place is, I would argue, at the root of much of our dis-ease today. And so I argue also that herbs are a way that we come back into relationship with our larger earth body, that larger parent or caregiver that the earth really is for each of us, as animals — as a species that belongs here.
>
> I'd argue that herbs really are a pathway that we can travel towards a felt sense of belonging. Our relationships with plants — whether we're taking them as tea, or we're sitting down with them outside, or we're smelling a beautiful blooming linden tree — offer us a way that we can connect, that we can re-attach securely to the planet. Or even just to this tiny piece of the planet. And that then becomes a doorway for us to come back into a sense of belonging and safety — which is really what attachment is about — in our own bodies. Stress and trauma research has moved into exploring what makes people less vulnerable, meaning what makes them more resilient. And that is emotionally as well as physiologically more resilient.
>
> The physiological activities of plants are not news to us. That's why we're all here: we understand the many incredible physiologic actions, the cool chemistry, all of the cool ways that plants are going to work, right down to the level of genetic expression, and then back up to the cellular level, the tissue level, the organ level, out to all the systems and the ways that they interact. We know that. But I think, too, that the plants can offer resilience on many levels. Just by being who they are, by being the relatives that they are to us in the larger biological family of life, just by being *beings* that we can relate to and form secure attachment with, plants can help us feel safe and seen and held. In our relationship with the plants, we can come to understand ourselves as *worthy* of being safe and seen and held. And I think, and what I see in my practice is, that this sense of safety and connection is a part — it's not the whole story, but it's a part — of what so many people are suffering the absence of.

Karen's talk drew from emerging scientific research in the psychology of resilience and attachment in order to make these claims. Some of that research touches on the human

relationship with the natural world specifically. But because Karen knew that relationship so deeply on a personal level, and had witnessed so many clients, students, and friends acquiring it for themselves, she was able to subsume that scientific research into a new understanding of what it meant to be a self. Connection to nature, in Karen's telling, is not just something one needs to add to one's list of self-care chores, like brushing one's teeth and exercising. It is, for her, a fundamental ground of humanness, a basic principle around which our ideas and structures of life ought to revolve. She knows this through her own direct plant connection experience. Because of it, just as Margie was able to develop an alternative culinary pedagogy from her direct food connection, Karen could trace out the logical implications of the psychological science far beyond the studies' own conclusions, toward a new, ecologically-grounded Western social myth.

As herbalists grow into their education and their careers, and they grow accustomed to the understanding that they can connect with plants in this way, they tend to take up some kind of ongoing and intentional practice of doing so. They make efforts to reinforce the hold that the herbal sensibility has on them, so that they can access and mobilize it more effectively toward their healing work. The more they can think and feel with the plants, the more capable they will be in thinking through their medical tools that rely upon wildflower principles. For the experienced herbalist, then, direct plant connection acquires the function and force of ritual. Jasper explained it to me in nearly those terms exactly:

> Jason: How do you ensure that you can maintain your way of doing things as you engage closely with other powerful thought systems? How do you resist co-optation?
>
> Jasper: The daily practice. That's what's cool about herbalism, is that it builds in this practice. If you want to be an herbalist, it's not enough to just learn about plants and have a library of tinctures that you pull out when people are sick. You take things also when you feel good, when you're not sick, just to keep up your connection to the organism that you're a part of. You take tonics. It's kind of unique. Taking tonics means making astragalus broth [to use in cooking]. It means drinking your cup of lemon balm or linden tea or an aromatic tea three or four days a week. Drinking coffee, maybe, even. I mean, it's not a tonic, but it's still a plant-based ritual. *And* — it means going out in the woods. And when you go out in the woods, having a bit of a sense of what lives there, on par with you. Not as if it were your *domain*.
>
> Jason: And then if there continues to be, as you were saying, a practice of craft herbalism — if herbalists continue to gather and grow and prepare their own medicines — then that daily practice of going out to the woods also means harvesting, right?
>
> Jasper: We need to have a viable approach for craft herbalism in the 21st century. We need

> to be able to live in the idea that it's okay to use whole things, dirty, out of the forest, in a decentralized way. There's real, important power there.

The living and lived reality of plant connection was different in kind for every herbalist I spoke with, but its presence formed a clearer common thread among them than anything else I came across. Each herbalist I spoke with at any meaningful length tried to convey to me that direct connection with plants was possible, that it was possible because minds, bodies, and plants were all parts of the same whole, and that this philosophical idea was both vitally important and actionable in this contemporary time. For nearly every herbalist I met, the plant connection grounded a cultural outlook — a guide for how we should make sense of the world and how we ought to live in it.

An Adequate Idea for Anticapitalism

As they go through processes of conversion and ritual like these, herbalists root themselves deeply in a sensibility that is opposed in important ways to the dominant cultural model surrounding them. It manifests in their relationship to regulation and to medical evidence, but it also goes beyond these. It shapes their broader politics. This question, of how a medical theory could inform a political theory, is what I explore directly now.

It is a matter neither of accident nor ideology, but of history. As we have seen in the preceding chapters, the historical lineage that herbalists claim has been opposed in many instances to the medical ideas of the lineage claimed by biomedicine. As the mechanists constructed the body as a machine, as the Paracelsians sought to separate the body from its particular contexts, as the quantitative physicians massed patients into standardized populations, and as Rockefeller-funded scientific medicine defined health as the capacity to work, the ancestors claimed by herbalists declined to co-operate. Instead, they maintained the approaches of the past and evolved them toward new and hybrid ones. This lineage of alter-approaches composes the greater part of herbal medical practice today.

Each of the historical medical ideas that these herbal ancestors resisted, as we have seen as well, was a medical expression of a particular social philosophy. They embodied a way of thinking that was carried simultaneously through governance, economy, science, religion, morality, and law. Encoded in the ideas and practices of

herbal medicine, then, by virtue of their lineage, is a kind of counter-philosophy standing opposed to major planks of the dominant cultural outlook. As contemporary herbalists practice this medicine daily, they remind themselves in mind and body, consciously or subconsciously, of the possibility of the world being ordered otherwise than it presently is. What I mean to say is that, insofar as each herbal medical idea and practice operates on a particular logic, these logics have been historically formed to stand against the logics that underwrite modern Western power. In this sense, herbalists can come to be oriented to a certain extent against dominant power structures *whether or not* they have a developed political outlook, only to a greater or lesser extent accordingly. Some kind of opposition to dominant power structures is part of a lived herbal sensibility. It is folded into the way that herbalists orient themselves through daily practice in the world.

Herbalists peer through this cultural outlook in the clinic, parsing their clients' stories to understand which conditions of life are life-affirming for them and which are debilitating. They see through this outlook, too, as they consider how to arrange their own business models and professional relations. Directly put, herbalists see a conflict between living with the earth, as their medical theory advises, and living with a capitalist economy and a modern state. They live and work in the midst of this conflict, but their outlook and their allegiances are clear. Briony and Ezra, herbalists and co-owners at Elixir, defined what it is to be an herbalist in these terms:

> Briony: I was thinking, what does it take to shift to a new paradigm in medicine? And… I don't know if that's possible within the capitalist system.
>
> Ezra: Yeah! It's true. It's the same as the political paradigm — you can't do it if capitalism still is in control.
>
> Jason: I've had a few people say to me, 'I'm not quite sure how you can be an herbalist and not be anti-capitalist.'
>
> Briony: Right. Yeah. Totally.
>
> Jason: Do you agree with that?
>
> Briony: Yeah!
>
> Ezra: Pretty much. I mean, I guess you *could*, but you'd be doing something wrong.
>
> Briony: You'd be taking advantage of the plants, you know? I think at this point most herbalists see — and maybe this has always been the case — see plants as living beings, that can't just be stolen from nature, or grown and bought and sold. There's a more complex relationship there. So it would be… hmm.

Ezra: I mean, herbalism is not lucrative, so people get into this because they are interested in justice of some kind or another, in righting some kind of wrong. And capitalism is just the opposite of that. It's *inherently* exploitative, and inherently unjust, so that the two are completely incompatible.

Jason: But you do see some people, say, in naturopathy, who do work with plants, but who move toward standardized treatment protocols and mass-production of medicines. You can imagine how work with plants can scale up in that way, and….

Briony: My mom sees a naturopath who has these herbal formulas she's made. She outsources them to a production facility in Utah. They grind the plants into powder and pack them into pills and bottle them, and then she has them labelled with her name. And so she has these jars of pills that she sells to her clients, that are her brand. But at that point, are you — is that even still herbal medicine?

Ezra: *Right!*

Briony: Are you even an herbalist at that point?

Conversations like these abounded, in which opposition to certain features of state-based governance or capitalist economy was linked fluidly to principles of herbal medicine. Some herbalists displayed a broader political orientation as they did so, using terms like 'anti-capitalism' and 'exploitation' readily. But even those who remained more steadily on the terrain of herbal medical theory could tip easily into talking of its opposition to this or that tendency of the dominant cultural model.[40] The more I talked with herbalists, the more clearly I could trace conceptual pathways between herbal medical theory and a radical politics. There were well-trodden pathways in thinking that led that way.

Fundamentals of a Plant-Based Anticapitalism

I found the direct relationship with plants to be the grounding principle in the herbal critique of capitalism. The conflict between two worldviews, herbal and capitalist, is most plainly evident there. In one, plants are trusted partners; in the other, they are raw materials for exploitation. The emotional depth of plant relationship for herbalists, meanwhile, gives the contrast strong affective force. As the herbal critique develops in complexity, it repeats the basic pattern of this clash in plant perspectives in fractal form, in just the same way as plant relationship forms the pattern for more complex medical perspectives in the curriculum at Marigold.

In direct plant relationship, herbalists acquired a personal conviction that matter

was alive and intelligent. Through a vitalist medical education, they came to understand the vitality and intelligence of matter as the basic principle of medicine, and thus of health, and thus of life. They came to see any approach that denied the independent vitality and intelligence of living things as antithetical to life. The massing of individuals into populations, the centralization of resources, and the exploitation of labour, all features of state-based capitalism, came to be seen within a herbal medical worldview as contrary to health. The direct plant relationship was the entry point to all of these.

Marigold students Tegan, Willow, and Rene set out the basic contrast in plant perspectives and its centrality in herbalists' decisions about how to organize themselves professionally within the broader culture:

> Jason: There's a tension that comes up when we talk about whether and how to collaborate with biomedicine. On one hand, there's a desire for more people to get access to herbs, but on the other hand there's a reticence about biomedical doctors just starting to prescribe herbs on their own.

Everyone nodded in agreement.

> Jason: There's a sense that maybe the ethics of care for the plants might not transfer right away.
>
> Rene: They won't. They absolutely won't.
>
> Jason: So you might think at first, 'Wouldn't you want everyone to have it?' But I've often found a real, kind of, guardedness among herbalists: like, 'Yes, let's grow, but only in these certain ways.'
>
> Tegan: You *have* to think about the plants. It's a relationship. And just on a basic level, these are beings; they need space in the world. They need the world to accommodate their needs. But the current modern Western tendencies of engaging with the so-called 'resources' of the natural world are incredibly exploitative. They're tendencies of empire.
>
> You can't disengage plant medicine from the plants. You can't not think about what the plants actually need if you're going to think about herbal medicine. You can't apply only a human perspective to it.
>
> Willow: I think, going along with that, it's not guardedness. It's more like respect and reverence for how we approach plants, and how we approach healing people with plants, and what that conversation actually looks like.

Seen in this way as a fundamental contradiction, the difference between herbal and capitalist ideas about plants leads herbalists beyond questions of reform. It inclines them to question the logic of the system entire. It was much less common to hear herbalists speak about reformist ideas, like conservation policies, than it was to hear

them speak of something like 'tendencies of empire.'

As plant relationship was ever-present, it served to unite herbalists of otherwise divergent political positions. Jeremiah, who recently left a career in corporate law to enrol at the College, was reticent to disparage capitalism outright. But his relationship with plants directed him still toward a deep critique of the dominant economic mode. His deepening care for plants led him quickly to recognize that the economy as presently constituted posed a fundamental threat to plants:

> I don't think [herbalism] is anticapitalist per se, because nobody can be an herbalist if they're not making a living. But the thing about herbalism is, it recognizes that the dominant culture is destroying the natural environment. All you have to do is look around, you can see — the natural environment's getting destroyed, and herbalists are very… we're very connected to the natural environment. It pains us to see this happening! So I wouldn't say it's anticapitalist so much as I would say — and this is my own opinion — that it's anti-dominant-culture, which is this industrial techno-society, and there's a capitalist component, an imperialist component, because of the way globalism works. It's just eating up all the resources, and it's eating up non-renewable resources at a breakneck pace. So there is disillusionment with the dominant culture, I think.

Riley, another student at the College, identified as a libertarian. He bristled at critiques of capitalism, and he often found himself at odds politically with other students in his class. But he, too, was drawn to herbalism because of its politics rooted in plants, and he could find common ground with his classmates whenever conversation hewed close to that sensibility:

> What draws me to [herbalism] is, like I said, the dandelions in your yard there — there's a sort of self-reliance. Just the ability to take care of yourself. I don't like the fact that so many people are reliant on these huge structures. And we talked before about capitalism. And, you know — it all depends on how you want to define that term. But I don't like people having to be dependent on these large structures. Which they are, you know. They're slaves to them, in many senses of the word.

Riley came to his critique of the dominant model from an angle opposite entirely to that of most of the herbalists I met. But he still saw in herbal medicine a basis for his critique. Herbalism gave him a model for meeting human needs without dependence on the large structures of modern economies. Between Riley and his classmates, the plants furnished a kind of common political ground.

For Riley, as for so many others, herbal medicine pointed toward possibilities for social organization beyond the state-based capitalist mode. Fundamental to the herbal

way of seeing the world is the understanding that the plants grow freely, without need of any human input. Herbalists look upon every parking lot edge and suburban lawn as a kind of commons, where the basic materials for health care grow wild. Once herbalists have experienced meaningful healing with the help of ordinary weeds, they more likely recognize a kind of senselessness in the capitalist proposition that there is efficiency or justice in the private ownership of nature. Elaina, a Marigold graduate, talked about this economic recognition as its own kind of conversionary experience:

> Dandelions are growing everywhere, and you can't patent a dandelion, you know what I mean? And so, just the mere fact of going through your own backyard… and not having to pay for what you find… it's like creating a new system! It's telling people that they can take care of themselves, and each other, without having to go through the systems we have… just by using the plants that are growing free, wild, in their backyard. That's so simple, but it's really radical in these times, you know?

Freely-growing medicine introduces herbalists to the radical notion that the large infrastructures that characterize capitalist economy might not be necessary for human welfare. The experience of self-reliance in medicine, for herbalists like Elaina and Riley, was a potent entryway into recognizing the possibility of individual and communal self-reliance in every area of economic life.[41]

Plant-Based Anticapitalism in Fractal Pattern

The basic patterns of herbal anticapitalism that begin in the relationship to plants repeats itself as herbalists take their work to higher scales. The same predilection toward self-reliance and against exploitation that herbalists experience with plants find expression in herbal approaches to people and communities. Connections obtain similarly between medical and political principles at this higher scale. Consider how this takes place in the case of herbalists expectations and objectives in the clinic. As we saw earlier, herbalists tend to avoid setting 'normal' physiological function, defined in statistical terms, as a clinical goal for their clients. They tend this way, as we saw before, because they believe they can deliver better care by assessing their clients individually instead of in relation to statistical averages. When they talked about this individualized approach with me, they quickly connected it to a refusal to equate their clients' abilities to fulfill normative social roles like 'worker' or 'consumer' with medical success. Of

course, pragmatically, they wished to help their clients gain the capacity to work and meet their basic needs. But herbalists reflexively saw state or corporate definitions of personhood as inimical to health, for the reason that those definitions were designed with someone else's interests in mind.

Rather than defining their clients according to large-scale categories, then, they saw the purpose of their medical work as the recovery of a whole self instead. For herbalists, the clinical goal of relieving their clients' symptoms was always tied to the deeper goal of helping them regain their creativity.

> Elaina: Just that piece that people can be empowered to take care of themselves and to know their own body, rather than being told 'what they are,' being defined by this mass industry, like 'you're a… white female, this age, and this demographic, so we're gonna market to you in this, this, and this way; you're supposed to be doing this, this, and this,' you know? And so you can remove all those messages, if people are more tuned into their own bodies, and also to the world of plants in general.

Quantified medicine, as I showed earlier, shifted the locus of meaning from the individual connection with the environment toward normalcy within a mass society. Herbalists strived to shift it back. Through deepening connection with the plants and with their bodies, herbalists hoped to help their clients cease to depend for their sense of self upon society-based identities, and instead become more fully self-defined. Helping their clients take control of their lives and their stories was in this way a medical method and a political objective at once.

As herbalists moved in their thinking from the individual to the collective scale, the pattern of anticapitalist politics repeated. I saw it best expressed in the thought of Cindy Samantha, a student of herbalism and a Marxist revolutionary organizer, thinker, and writer living in New York City. For Cindy, herbalism is an expression of revolutionary frameworks through the work of care. In her political work, Cindy tries to help groups of people take control of their workplaces and neighbourhoods, leading them to consider the possibility that they could self-organize without the oversight of bosses or managers.[42] As she did this work, Cindy told me, she was always feeling for the pulse of independent creativity within a group. She explained that her approach to organizing relied upon a fundamental faith in the intelligence and creative force of human beings and human communities, just as the herbalist in the clinic depended on the innate and independent intelligence of bodies and plants:

> There is something about this political method that requires a deep faith in human capacity. There is something about a particular political method that centres the struggles and activity of everyday people, that its foundation is that people inherently have the capacity to control their own lives in a way that's beneficial for one another and society and nature. And in that particular political method, that's the *only* possible route towards living in a society that is in balance and that is beneficial to all beings. The only way to get there is through the release of people's self-activity, and particularly exploited people's self-activity.

Cindy told me that she sees that political method reflected in the herbalist's faith in the intelligence of the body and the intelligence of the rest of nature. By contrast, she said, Cindy saw biomedicine as a medical legitimation of a politics of top-down control:

> Biomedicine is like bourgeois democracy. Bourgeois democracy is based on the idea that there needs to be a leader and there needs to be a structure outside of free association between people, because humans will, like, fuck each other up. I think that, in the same way that I think bourgeois democracy is based on that idea that people will fuck each other up — that we need the police, we need control, we need someone from the outside to make laws and decisions — I think that biomedicine is based on something like the same idea. That our bodies are… we're constantly going to be in battle with our bodies, and we need someone, or something, externally to help us control it.

For Cindy, a medicine of control reinforced a politics of control, while a medicine of self-reliance reinforced a politics of self-reliance.

As they deepen into a herbal worldview, then, herbalists come to see a social world around them that is organized at odds with their ideas of how nature operates and what it means to be well. When they come to interpret and explain sickness in the clinic, they are prepared with an orientation toward the social conditions of the modern West and the capacity or incapacity of those social conditions to affirm life. Herbalists do not understand this orientation as an ideological bias any more than they see their belief in an active material realm as a scientific bias. To perceive the disease-causing conditions of modern Western life is for them to perceive relevant medical facts, such that a medical assessment is deficient if it persistently fails to consider the effect of social conditions. As a result, as Marigold student Tegan explains, no matter the ideological predisposition with which one arrives to the study of herbs, one tends to adopt a critical posture toward state capitalism in the ordinary course of herbal medical work:

> You don't have to deconstruct the entire culture, which is kind of the thing with herbal

> medicine. As soon as you start down the rabbit hole of even one person, one health story, you start going down the road of what's happening for this person, what happened when, where are the causative factors, and what's influential in what way, and pretty quickly you're at, 'Oh, this person lives in modern industrial culture.' And their particular version of how that's influencing them to crease disease, or ill-health, or just lack of well-being, is particular and unique. But you can pretty much always get there, real fast.

Herbalists see this kind of insight as just one more way in which they 'fill in the gaps' left by a dominant culture and healing system that do not share their outlook. Many of the people who end up in their consultation rooms have fallen through those gaps. "In so many ways," Cindy told me, "healers have the most intimate knowledge of how fucked up capitalism is. Which is why I'm always surprised that more healers aren't anti-capitalist, explicitly. I'm, like, shocked and confused."

So much for herbal attitudes toward capitalism and states, but what of the politics of gender, sexuality, settler-colonialism, and race? When I encountered herbalists for whom opposition to these systems of oppression constituted a major focus of their activist work, they tended to find their opinions less well-supported in herbal community than was the case with opposition to capitalism or states. Seeing this only reinforced my sense that anticapitalism and anarchism had deep and real connections to herbal medical theory. While herbal medical theory has formed itself historically in opposition to capitalist and state logics, I found scant evidence of specifically herbal medical responses to ideas of white supremacy, heteropatriarchy, or settler-colonialism within the ideological ancestries of contemporary herbalists. One would then expect to find in herbal communities more fertile ground for anticapitalist and anarchist ideas than elsewhere in Western culture, but not much more that the broader culture for antiracist, queer, and decolonial ideas. This, indeed, is what I found. Antiracist, queer, and decolonial politics were quite present at Marigold and in other pockets of herbal community I encountered, but these communities seemed to see themselves as minorities within general herbal culture in this regard. Many had come to these political sensibilities through other activist work. By contrast, anticapitalist and anarchist sensibilities seemed to arrive for students of herbalism through learning herbal medical theory itself.

The major exception to this disconnect between herbalism and the politics of gender, sexuality, race, and settler-colonialism is the close connection between the growth of Traditional Western Herbalism in the United States in the 1970s and the

women's liberation movement (see Ehrenreich and English 1973). Accordingly, feminist principles were ever-present in herbalists' thinking.[43] Women's health received important attention, and women occupied prominent positions of formal and informal leadership. Men remain strongly over-represented in visible positions relative to their numbers in the community at large, but overall, men occupy less space relative to women in herbal communities than in the general culture.

The same is not true when it comes to race; genderqueer, non-binary, and trans identities; or Indigeneity. Neither representation nor conceptualizations in herbal medicine demonstrate particular compatibility with critical positions in these areas. Thus, herbalists seeking to advance radical positions do not find particularly fertile ground. When Nina and Karen presented their workshop on clinical competency for trans health, for instance, they drew on the very general idea of herbalism as a "medicine of resistance." There seemed to be no more specifically compatible ideas in the herbal outlook for them to draw upon, and they were trying to establish a link. After the workshop, though, in their conversation with Brenda, Karen found a more compatible herbal idea for her argument — that individualized medicine was compatible with caring well for trans individuals in ways that statistical medicine was not. Once more, I saw that anticapitalism and anarchism bore organic relations to herbal medical theory. For herbalists seeking to advance other kinds of radical politics within herbal communities, they found they had fewer tools to work with, and they tried to draw laterally from these more deeply-established political orientations in order to advance their justice work.

Second Thoughts

Not all herbalists, though, saw such an easy equation between herbalism and anticapitalism or anarchism. To my initial surprise, it was the herbalists with the most radical left-wing politics who pushed back:

> Jason: Some people have been very clear in saying to me that if you're not anticapitalist, you're kind of doing herbalism wrong.
>
> Jordan: That's cute.
>
> Jason: What do you mean when you say it's cute — like, that's sweet, or that's kind of precious?

> Jordan: Both. It puts a lot of… I'm like, who said that?! I mean, that'd be great, but people who have anticapitalist politics are going to have to work a lot harder if that's ever going to happen. They're going to have to work harder to, you know, change people's politics! It's not like having anticapitalist praxis is freely offered, or like something that most people know about or find accessible! The world that we live in is a capitalist system. So most people unfortunately subscribe to and have faith in that system, you know, even though it fucks them over.

For Abigail, another Marigold student, herbal medicine seemed to offer something a little politically anodyne for her taste:

> I think it's still a minority of people [in herbalism who are politically radical]. You know, the last program I did was 97% middle-class, white, mostly yoga teachers, mostly moms, who, you know, were mostly just wanting to help their families or wanting to supplement their yoga practices. Which is great, but I want herb schools to be places where people get challenged to do more than just learn about plants.

For Cindy, meanwhile, as much as she saw *affinities* between herbalism and her radical politics, she was resistant to the ideas of some herbalists that practicing herbal medicine was a kind of revolutionary *action*:

> Even if it's not explicit, that is based on the implicit idea that you can start small, and then you're going come and take over and squash capitalism. I just don't think change can happen that way.
>
> I'll give you a different example. Take seed saving. Many of those programs aren't attempting to address the reasons why seeds are threatened — colonialism, capitalism, the destruction of knowledge, the fucking honey bees…. It's nice, but your homestead isn't going to tear down the prison walls or address the police. Maybe it will, if homesteading becomes illegal, and white herbalists are heavily persecuted en masse, and struggles develop to get those people out of prison. But that's not what people are thinking about. Unless there is a collective, active resistance against the social relations that exist, I think things might change for a select group of people, because of the way the society's already structured — mostly white people from middle-class backgrounds — but I don't think that there's any chance for an overall societal change.

Though the most radical herbalists I met had generally been drawn to herbalism because of their politics, within herbal communities they sometimes found themselves an isolated minority. In their eyes, herbalism might be a meaningfully alternative practice, but it couldn't properly be called radical politics.

The Adequate Idea

Was herbalism a ground for anticapitalist praxis, then, or was it a logical thing for a countercultural thinker to do, perhaps, but not really any kind of political action? I pondered between the two opinions I had encountered on the question. As I did, I found myself stuck in the kind of either-or thinking that herbalists so often arrayed themselves against. So I tried to do what herbalists did when they had a complex problem, and I turned to the plants. Or, rather, I did what a scholar of herbalism might do, and I found a philosopher who had thought about it in something of a plant-like manner. In the 1600s, Baruch Spinoza wrote a naturalistic philosophy — a philosophy that said that *we are nature* — against Descartes' vision of a world split in two. As the contemporary Spinoza scholar Hasana Sharp has written, in her *Spinoza and the Politics of Re-Naturalization*, Spinoza's philosophy of a unified world had important ethical dimensions, and some of them helped me to see a way through these contrasting claims about the politics of herbalism (Sharp 2011, 2-6).

Among many other things, Descartes and Spinoza differed in their understandings of what an idea was. Their differing conceptions of the idea, in turn, made for different theories of how to convince others of an idea. For Descartes, the free individual mind was the primary factor in human existence. His prime example of the convincing idea was his famous statement, 'I think, therefore I am.' Any person who considered such an idea, he reasoned, would be convinced by its truth. Descartes called ideas like these *clear and distinct ideas* (Gaukroger 2006, 149-150, 290-294). If the individual mind was rational and free, as Descartes claimed it to be, then the independent truth of an idea was the most important feature in its capacity to persuade. A clear and distinct idea was complete; it was convincing all on its own (Sharp 2011, 2,5-6).

For Cindy, Abigail, and Jordan, the ideas of herbal medicine manifestly didn't qualify as complete or convincing persuasions toward a radical politics. They saw too many herbalists around them who didn't hold thoroughly radical views. Yet for Briony and Ezra, and for many other herbalists I met, one couldn't account for the herbal sensibility properly without noting tendencies away from capitalist logics. Maybe herbal medicine wasn't *clearly and distinctly* opposed to capitalism, then, in Descartes' sense, but something in its orientation grew tendril-like toward another way.

Against Descartes' idea of a world divided between mind and matter, Baruch Spinoza proposed a unified one in which thoughts and objects were all part of nature

and behaved in similar ways. Ideas, for Spinoza, weren't pure and austere truths — rather, they grow and interact with one another in an ecosystem of thought. For Spinoza, human minds are not free and independent entirely, but rather are empowered and constrained by the ideas that grow through them. Individuals neither create nor control ideas. Ideas have their own life. Seeing ideas as living, earthly things, Spinoza was less interested in the *truth* of an idea than he was in its *vitality*. Spinoza was interested in the force that an idea exerted upon a person. That force was evident not in the fact of its truth or falsehood, but in the extent to which it moved someone — that is, the force of the felt sensation it produced in them. Crucially — and this is the salient point for our present purposes — as ideas existed in an ecosystem, for Spinoza, the force of any idea was not an effect of that idea alone. It depended upon the extent to which that idea found other supportive ideas in a person's mind, alongside which it could build a presence. Spinoza's philosophy of ideas focuses not only upon the idea itself, then, but also upon its *terrain* (1-2,72-76). Hasana Sharp states it elegantly:

> Ideas, no matter how clear and distinct, cannot take root in the mind without a fertile environment. True ideas, in order to avoid being overwhelmed by contrary ideas, need other compatible ideas to sustain them (72)

Against Descartes' notion of the clear and distinct idea, Spinoza forwards the *adequate idea*, which is that idea that, in community with other ideas in the same person's mind, is adequate to produce in that person a given orientation or action. What matters about an idea is the web of relationships it inhabits. Persuasion, in Spinoza's mode, is a matter of seeding and cultivating these webs. Much of the power of an idea consists in which other ideas it can be made compatible with (33,56-57,72-76).

Consider, in this light, how Jasper described to me his efforts to convince an audience of public health professionals of a particular position. In a lecture to this audience, he was trying to present reductive thinking as a common root of the problems of a too-narrow nutritional science, industrial food production, and chronic disease. Jasper explained his conundrum thus:

> It was really difficult to create any kind of effect or understanding, because of all the assumptions that are just fully pervading the [dominant] cultural context. We're in a place now [in Western culture] where it's difficult to say, 'Our particular way of thinking, like saying that nutrition is just made up of protein, fats, and carbs, has directly led to ecological damage, pollinator decline, and diabetes,' and that these are the tail, the trunk, and the leg

> of the elephant. It's all the same thing, you know? But I think it's difficult for people to get that sense, because it's so embedded. It's like, 'Why *not* have high-fructose corn syrup in everything we eat? Aren't we trying to feed the world?'
>
> I don't know. I don't know how to do that. I know how to do it on a one-on-one basis; I know how to do it with small audiences, who are already halfway sold, because they're into plants. I can totally convince them that we are embedded in this large organism that thinks through us and that we share consciousness with. But I don't think that's quite as easy of a sell in public health policy circles. Because it's a lot to… it's a lot to buy into! And then once you buy into it, holy cow, it's a lot of responsibility to act on it!

Some of Jasper's listeners might have come away with their heads spinning: he has spun a complex web. But for an audience already 'into plants,' he says, connections like the ones he makes here are readily apparent. The very same ideas differed radically in their persuasiveness to two different audiences. On a philosophy like Descartes', this makes no sense. Either Jasper's ideas are true, clearly and distinctly, or they aren't. They should be more or less equally convincing to any two groups of people. But on Spinoza's philosophy, Jasper's experience is perfectly comprehensible. Plant connection serves as an adequate idea for recognizing that one-dimensional nutritional science, chronic disease, and ecological collapse could be branches of the same tree, unified through a root understanding that *we are nature*.

It may well be, then, that herbalism is not *clearly and distinctly* anticapitalist. Its medical theory alone may not convince someone entirely to adopt anticapitalist points of view. On Spinoza's understanding, though, we can make much more sense of the contrasting positions of two groups of herbalists on this question. The ideas of herbal medicine may not on their own be *adequate* to produce a radical politics, but in so many ways, I saw herbalists building through their medical practice an array of ideas *compatible* with radical views. If herbalism wasn't turning all of its adherents into ardent anticapitalists, it seemed at least to be functioning as a place for tilling radical soil. And perhaps the power of such a thing ought not be underestimated.

Perhaps, then, as we consider the politics of herbal medicine, we ought to ask a slightly different question. Perhaps it is not most helpful to ask whether herbalism is or is not anticapitalist praxis. Herbal medicine, after all, does not set itself up primarily as a space of worldly action. It is first and foremost a health practice, and its primary function is care. As we investigate the prospects of an herbal politics, then, perhaps the question we ought to be asking is what it means to consider the cultivation of attitudes toward care as a kind of political power. And perhaps this is not an insignificant

question.

Imaginary Counter-Power

I come to the question now of whether and how a practice that is at least somewhat oriented toward certain kinds of political radicalism, but that is structured more toward care than toward political action, occupies a political role. I enlist the help of anthropologist David Graeber in this task, drawing from his discussion of revolutionary theory in his *Fragments of an Anarchist Anthropology*. Most revolutionary theory, he writes, defines opposition to power in terms of social institutions, like self-governing communities, radical labour unions, or rebel militias. Graeber refers to institutions like these as *counter-powers*. For him, though, counter-power exists paradigmatically in a more elementary form. He draws from the anthropology of Marcel Mauss and Pierre Clastres, both of whom wrote about small-scale, egalitarian cultures that existed outside of the structure of a large state. In their writing, Mauss and Clastres highlighted the social mechanisms these societies possessed for checking the growth of political or economic power from within (Graeber 2004, 21-25). "What it is 'counter' to, then," Graeber writes, "is a potential, a latent aspect… within the society itself" (Graeber 2004, 25).

On its face, herbal medicine might be considered by some as a counter-power in the traditional sense: it is a social institution arrayed against the dominant institution of biomedicine. Confined just to this one area of society, though, more politically radical herbalists might point out that it is unlikely to pose too serious a challenge to state capitalism as a whole. As Jordan quipped to me, "Do I think that if everyone was an herbalist, the state would collapse? No." But Graeber points out that revolutions within states often take place in what seems like a sudden fashion, and when they do, he argues, it is because a lot of ideological work has taken place, often in socially marginal spaces, to prepare the way. Sometimes, this preparatory work comes through small revolutionary actions, or through the construction of alternative institutions. But Graeber argues that it can take place also through a work of the imagination, and it is here that I think we may find herbal medicine's most potent political role.

Graeber notes a peculiar tendency for cultures that are relatively egalitarian to be

riven by terrible conflicts in the realm of the imagination. Graeber's explanation is that virtually every culture surveyed by anthropologists sees the human condition as being fraught or troubled in some way, and that, for those cultures that expend a great deal of effort creating consensus and peace through their social institutions, the confusion and conflict so common to human existence are displaced into the realm of the imagination. Graeber gives the example of one fairly egalitarian culture, the Tiv in central Nigeria, in which it was firmly understood that anyone who attempted to amass power was by definition a witch. They would be baited by a secret society of witches into consuming their own families. That secret society of witches was understood as a kind of invisible government. Power was institutionalized as a kind of evil, and anyone who tried to amass it would be cut down through social approbation, effectively preventing the emergence of any kind of formalized authority. Among the Tiv, equality in the social realm is preserved by a vicious threat from the imaginative one.[44] The potential for accumulation in social life, in other words, was checked by a counter-power in the imagination.

In highly unequal cultures, the situation is inverted. Where the social realm is very oppressive, ideas and ideologies of justice, peace, and equality may develop in the realm of the imagination. Through the force of their ideas, they try to oppose the emergence of dominance relations from within. Where the Tiv use a brutal imaginary realm to preserve social peace, resistors in unequal societies mobilize imaginations of justice and peace as a means of combatting social oppression. These spaces, Graeber argues, are the most elementary form of counter-power in highly unequal societies, and it is here, he claims, that much of the ideological legwork for revolution is done (Graeber 2004, 25-37). He writes that it is "precisely from these invisible spaces — invisible, most of all, to power — whence the potential for insurrection, and the extraordinary social creativity that seems to emerge out of nowhere in revolutionary moments, actually comes" (34). When the social realm is oppressive, the contrary human tendency toward co-existence is displaced into the imagination, and it is here, in structures of belief and thought, that the scaffolding for revolutionary creativity is shaped.

Thus, whether or not one thinks of herbal medicine as a revolutionary social institution, in the mode of radical labour unions or rebel militias, it certainly seems capable of a set of ideological preconditions — compatible ideas — for imagining a

world arranged otherwise than it presently is. An imagination like this is powerful. I saw herbalists asking themselves and one another constantly how they could develop a relationship with plants, an experience in their bodies, and a clinical encounter that was more and more free from the dominant forms of social oppression around them, and indeed how they could form practices and dispositions that would render themselves more resilient against imbibing and reproducing those oppressions. They arrayed their medicine against myriad ideologies of modern power — disenchantment, fixed categorization, disconnection from land, divisions between matter and mind, quantified understandings of self, the identity of 'worker,' the monopolization of knowledge by experts, patriarchy, classism, and any number of other features of modern life that, in their eyes, demean or imprison humans and nonhumans.[45] Against these, they craft a medical practice of hope, creativity, vitality, and even magic. When herbal healing happens, it deeply inscribes a desire for a way of life that is organized to support and affirm life in these and similar ways.

Precisely those features of herbal medicine that some see as the most politically anodyne — its sweetness, its pretty flowers — may in fact be the core of its political potency. In a world that feels bleak to many, to live in awe and wonder at the beauty of a roadside weed is a radical act. To feel well, or even to entertain the possibility of feeing well, is radical and radicalizing. The principal political role of herbal medicine may be to serve as a kind of practice space for the making of selves that stand in opposition to the kinds of self made by present forms of power. Through the deep work of personal healing, care for others, and plant relationship, I saw herbalists trying to make and re-make selves in this way.

Given the centrality of the control of the body in the logics of modernity — whether the control of the worker's body for production, or the female body for reproduction, or others — a counter-power in medicine like this may in fact be an especially generative form. For Graeber, revolutionary coalitions are built as a "tacit alliance between the least alienated and the most oppressed" (76). The kind of wholeness that herbalism cultivates can itself be a kind of counter-power, of the imaginary form.

Cultivating with Intent

Of course, wholeness and beauty alone do not a counter-power make. They must be linked in an ecosystem of ideas through which they are actively positioned as images of a different kind of social world. In this way, they became compatible with more direct forms of resistance, of the sort that Abigail, Jordan, and Cindy had in mind. This linking is the difference between the magical practices of peasant women leading revolutionary movements in the Middle Ages and those of bourgeois French women in the 1700s. In the former case, magic was arrayed explicitly against the rule of the nobles, and so it could function in support of revolutionary action as an ideological counter-power. In the latter, magic simply stood beside power, and so it was politically impotent (Federici 2004, 205). In very many different ways, the herbalists I met were actively and intentionally engaged in growing their herbal practice further in the direction of a set of politically-inflected ideals. A certain romanticism for a simpler past may be part of the dreamy idyll of herbalism, but the culture is not standing still on account of it. Herbalism is very much in motion.

This impetus to motion was visible most concretely to me in the educational philosophy at Marigold. Karen considered it part of her work as a faculty member to cultivate the political potential of herbalism. Herbal medical principles rooted her deeply in her own theory of liberation, and she sought to apply those principles in turn in growing her herbalism toward ever wider fields of struggle and dreaming. She spoke in terms that I imagine would be alien to the vitalists or the Galenists, but which were, for her, the natural result of applying their ideas about medicine to wider contexts. I preserve her words here at length, because they capture the tension and the hope of this work elegantly:

> Just as a very simple example: the heart, in the body, can't be — and isn't — more important than the stomach. Similarly, you can't have some people, or some cultures, or some nations, some ways of identifying or categorizing oneself or being categorized, held above another. If we look at all of humanity as a whole, and we look at all of life on earth as a whole, we can't say, 'that's a more important part than another' either. The marsh can't be more important than the desert. They just *are*, and they are necessary parts of a functioning ecological whole. And so, if the whole is what we have, and we can recognize that it all has value, and that all aspects of it need to be functioning properly, and we understand what the needs of all the systems are, and all of the different players within them, then we start to get ourselves in appropriate scale relative to our environment and to each other. And then we necessarily start to resist manufactured unequal benefits, or privileges, based on unjust cultural systems like capitalism, and patriarchy, and racism.
>
> I feel like we as white Western herbalists still absolutely can — and do — perpetuate these oppressive systems. We take all of the herbs out of the forest, and we rip down trees and plant fields of echinacea, and we perpetuate transphobic and racist attitudes, and we steal other people's systems, and herbs, and ideas, all the time. So it's not to say that herbal

medicine — Western herbalism in particular, being colonial in many ways — is some sort of utopian thinking that's going to heal the world. But I think that it has the possibility to do that. It has the seeds for it, it has the material to do it, but it has to be — on *purpose*.

And I think that's what I feel excited about. And why I think it's not about going *back*. Especially for Western herbalists, *because* our history is so colonial, and our history is so violent, it *has* to be a forward motion, where we get really intentional about how we take our practice and our relationships forward. Also, because we're in such tight relationship with and rooted in the same stories and culture as technomedicine and industrial culture, and because we live and work in the biggest capitalistic economy on the planet, it's pretty hard to imagine how we, as herbalists, would just magically manifest something that's not a product of those systems just because… we like plants!! But — we *can*, if we really pay attention to what we're doing.

Right now, the general mainstream herbal culture in North America is a product of pop culture: all the social media memes, and what's on the GNC and Wal-Mart shelves, and who-knows-what information that's on every other site on the internet. All of that is in its own self-referential and market-driven world, in a way. And the knowledge producers in that realm, I don't even know where they're getting their information. It's kind of scary. At the same time, the smaller, professional herbalism community that I'm a part of seems less trend- and market-driven, but still reflects our cultural ills in so many ways.

While herbalism and herbalists in North America are in reality quite diverse, what's visible is a consistently middle-class whiteness that really excludes, or at least makes invisible, practitioners of colour, students of colour, clients of colour, gender-non-conforming and trans folks, definitely poor folks, disabled folks, queer folks, neurodivergent folks…. Lots and lots of the writing, and the classes, and literally, the *pictures* of what happens that gets called 'herbal medicine' is represented by white, middle-class, mostly cis female humans. It's vizualized as beautiful, and kind of rural, but also a little hip and urban. It's very akin to the yoga and wellness industry's 'branding,' which has its own parallel problems.

So what's most visible is a well-intentioned, but unreflective, apolitical herbalism that looks and feels beautiful and helpful from a limited, homogenous and generally privileged perspective. Nonetheless, there *is* a treasure trove of beautiful and valuable knowledge and tradition in there! And I have great respect for the generations of herbalists that came before me, that helped to carry a lot of the seeds of what is currently considered Western herbalism. *And*, I see this strong need for forward motion and evolution from here that recognizes the necessity and power of social change to achieve real healing.

Another way we can be really intentional with our seeds is that, while herbal medicine, as an industry — and particularly the product side of the industry — is really a multi-billion dollar darling of the wellness boom, we have to swim upstream to not just give 'the market' what it's asking for. To not just give the magazines what they want, to not give Wal-Mart what it wants. We're being asked, as a culture as well as individually as professional herbalists, to sell our relationship to plants. We're being convinced we have to do that for our personal financial security. We're being coaxed into considering the idea that the more that herbs are part of a consumer world, the more people will know about them, and that maybe that's a good thing. For those reasons and more… we're making that deal, to be, in some ways, part of that commodification of relationship.

To be clear, I'm not saying *whatsoever* that people who make beautiful products and sell them are doing a bad thing. What I'm saying is that it's so difficult for any of us to see a different way, or even to enact, perhaps, a different way — that the door's just wide open to make your information, your knowledge as a teacher, your product, and your relationship to plants available through this capitalist model, which requires money, which looks this very specific way, and which re-enacts privilege in all these different shapes. And there's not a simple, definitive solution for us right now… and I include myself in that, absolutely.

> But as a co-director of an herb school, and as an individual herbalist, I feel really bound to… I really *want* to educate the next generation of herbalists to clearly see and question our field, our choices, our history, the inevitability of inequity or of 'the market.' I want them to have the tools to figure out new ways to get herbs in front of people, into the imagination of people, that isn't capitalist and isn't solely oriented toward individual health, but that is somehow connected to ecological health, and that's somehow part of a social well-being story. Herbal medicine needs to be seen as a meaningful and necessary part of human health, and not *just* human health. To me, it's as if we humans had an appendage that somewhere was severed. We're not whole, as an organism or as a species, without that connection to plants.
>
> And so I want people to wake up to that reality. I want to train other herbalists who see that, and get creative about ways to help people realize that need for connection and live their life as if it's true.

Herbal Public Health

There were many ways in which I saw the imaginative, self-making work of herbalists extend itself into partnerships in the social realm, making manifest the kinds of intentional political visioning that Karen described. That is, in addition to linking their medical ideology with political ideology, herbalists were interested and engaged in finding ways to offer their ideological work to activists working for structural change. A distinctly herbal ideology, honed and developed through herbal medical theory and practice, was transferred to social activists through acts of care. A small minority of herbalists were actively engaged in this work, but a kind of moral support for it and identification with it seemed to ripple throughout the community at large. It struck me as a small actualization of a broadly-felt and latent potential. It had an electric air in the community; it seemed to touch a nerve.

The intent toward this kind of crossover was visible most of all in an herbal medical axiom I heard repeated perhaps more than any other, one which generalized the principle of herb-like versus drug-like thinking, which I discussed in the previous chapter, into a broadly political view. This axiom — *support over control* — expresses the herbalist's belief that all living beings should be supported toward their independent self-realization rather than managed by something or someone else. It functions for herbalists as a medical philosophy, an interpersonal ethics, an ecological strategy, and a political ideology all at once.[46]

I grasped these layers only gradually during my time at Marigold. Its full import arrived to me during a long conversation I had with Jasper about an act of social movement support engaged by herbalists in the wake of a shooting at the Pulse

nightclub in Orlando in 2016. The Pulse nightclub had been a social centre of the Orlando queer community, and that community in particular was reeling in the aftermath. A group of herbalists showed up to a candlelight memorial on the day after the attack, and they brought plants with them. They set up a table with teas and tinctures of grief-support herbs — rose, tulsi, kava kava — to give away. Someone found a piece of cardboard for a sign and scrawled 'Orlando Grief Care Project' across it in marker. Over the next several days, herbalists gathered together at their local herb school to continue to grieve together. And they kept making herbal grief-support care packages to give away. They added in little self-love affirmations. They started showing up at community support centres across the city with these packages in hand. The project scaled up rapidly in response to demand. Herbalists across the country heard of their work and sent shipments of herbs in donation. As the project grew, it found a niche in caring for support workers — the first responders, the counsellors working twelve-hour days to help people process their grief, and the activists and organizers trying to keep the community whole.

I learned about this project first at the Herbal Summit. One of the herbalists at the project's centre had given a presentation about it there, entitled 'Caring for the Soul of the Community.' As she ended her talk, and the lights went up, there were few dry eyes in the room. Moved and heartened though I was, I didn't grasp the depth of the work until Jasper talked me through it afterward. He saw in the Orlando Grief Care Project not just a group of people engaging with political trauma using herbs, but a specifically herbal way of conceiving of what it means to engage.

> Jasper: Really, what herbal medicine offers is this model: the way we help maintain sustained power and effort is not through stimulation, and not through cutting away obstacles, but just simply through support and nurturing.

So far, I had understood the Orlando Grief Care Project, certainly, as a kind of care. But power?

> Jasper: It's a different way. It's not a conventionally Western way of tackling the problem, which is usually more heroic, like, 'cut away the enemy,' or 'just shoot yourself up with stimulants.'
>
> Jason: I think I see what you're saying….
>
> Jasper: But it takes a person observing it from the outside to be, like, 'Oh, this is what

> they're doing!' And it *is* slightly different. We're not just giving coffee and lifesavers to the activists — which is what they give medical students, you know? Donuts, coffee, sugar. That's 'support.' And it's not really support. It's stimulants. To keep you performing. Which is very much like what the capital-driven, industrial mentality would tell you to do. But I think in the Orlando Grief Care Project, they're just doing it a little bit differently.

Jasper started drawing out for me an herbal theory of community power that began from principles of vitalist science:

> And so maybe you can see, kind of, the same — I don't know if I've mentioned this before, but they're the three things that I've come back to over the last few years that articulate the way biological systems work, and so they are what I try to let drive my work. They are:
>
> You first of all acknowledge that there's a living system that you're working with, and you have to respect it like you would another living being. Then, in the context of that living system, generally, more diversity is better, in terms of resilience and sustainability. And finally, recognizing that the system is alive, and that we try to maximize its biodiversity of inputs and outputs, then *support over control*.
>
> I think we can still be [scientific] experimentalists and do support over control. But it's harder. The problem there is, we're in this individualistic culture that super-values free will. It echoes right back to Descartes, like, 'I think, therefore I am.' No, sorry! You are because the super-organism [of nature] thinks *through* you. And that's… hard! Because you have to renounce some of your free will! I think you see that in support over control. It's like, 'Shit, I don't know how to make you feel better. I don't know if you *should* feel better. I think you should be upset and sad. But let's make it so it doesn't force you into, like, suicide. And so that we can talk about it, and just keep supporting each other and bringing more people together and not isolating.' Right?
>
> It's to acknowledge that the whole experience in Orlando is the same experience that a wounded animal would have. And in a sense, it *was* the community in Orlando getting wounded, and the community is a living being! And it's processing its wound. And the herbalists working with that are more about, again, making sure the diversity is there, that all the people that are part of that community come together, and supporting it rather than controlling.
>
> So… I mean, I use those [principles] because that's how I've seen biological systems work. And no matter how much we try, we're never *not* going to be a biological system. So if there are some principles, let's go back to those as touchstones when we're trying to make decisions about what to do.

Just as he would do for an individual in his clinic, Jasper was looking at the community in Orlando as a living organism — a super-organism, of which all the individuals formed a part. He placed trust in the innate intelligence of that organism. He didn't presume that he could achieve the optimal response through an act of control. If the intelligent community itself will find the best response, then the best thing to do is to support the process it is already going through, by helping it move in a grounded way through its grief. The highest form of community response will emerge, Jasper was trying to tell me, through supporting, rather than controlling, the process already

underway.

I don't think Jasper meant to suggest that herbalists were the first to conceive a political approach that tried to do away with a controlling kind of power. I think he was pointing out the ways in which herbalism proposed a *medical philosophy* that led toward, and followed from, this sort of political idea, such that care for the sick and grieving becomes a political act of building intentionally toward a more whole and just world. Many kinds of healer have stood behind movements for revolutionary change; here, Jasper helped me see how herbalism could stand behind such movements not only through the power of its presence and its medical work, but also through the very deep and subtle power of its embodied imagination.

For herbalists, medical philosophy begins from the assumption that the world is populated by active and responsive beings, and it ends in the ethical imperative that each tissue, each being, and each community should be free to determine what is right for it. *Support over control,* that is, emerged to me as a politics of self-determination, successively at the biological, interpersonal, and communal scales. When the Orlando Grief Care Project stood behind community organizers and caregivers in this way, they were conveying an ideology activism through acts of care. The ideological work that herbalists had done to craft a way of being that opposed dominant forms of power became available in this way to community activists in Orlando. Through care, those activists had the possibility of receiving a way of seeing themselves that could fortify and shape their work in the social realm.

Mutual Aid

The Pulse nightclub shooting took place in the midst of another major American political event — the water protection encampment and blockade against the North Dakota Access Pipeline, led by the Standing Rock Sioux Tribe. Some of the founders of the Orlando Grief Care Project headed to North Dakota in the months following the Orlando shooting, bringing supplies and skills from their work in Orlando to stand in support. They offered themselves for service in the healing tents led by indigenous healers, joining herbalists who had arrived from other parts of the country to do the same. Still more herbalists who could not make the trip themselves sent herbs and herbal products, as they had done after the shooting in Orlando. As the deep North

Dakota winter was beginning to set in, Marigold Herbal College and its faculty and students made and sent a large shipment of elderberry syrup, a sweet-tasting anti-viral remedy for staving off colds and flus.

Among many of the herbalists I spoke with, the strong herbal showing at Standing Rock was a significant point of pride. I rarely heard about it from those who went to Standing Rock themselves, nor did I often hear names of which specific individuals went. I heard about the herbal presence at Standing Rock most often from herbalists who did not go but who recognized themselves as herbalists through that action of their colleagues. Less than a matter of self-congratulation, the herbal presence at Standing Rock seemed a matter of self-recognition. Herbalists were understanding themselves through the idea that theirs was a profession for which an event like Standing Rock presented a call of duty.

Herbalists spoke often of support for activists as an emerging political role for herbalism in this way. They spoke, too, about herbalists providing care to people in the political margins, such as undocumented migrants or communities targeted by police violence. I was told that it mattered for herbalists to provide this kind of care in part because, for many in both migrant and activist communities (which of course also overlap considerably), conventional medical care is difficult or impossible to access. But I heard that herbal care in these communities mattered, too, because of the contrasts herbalists drew for me between the everyday kinds of sweetness, succour, and vitality that herbs can offer, and a social system that systematically denies these things. Herbalists saw themselves as being capable of offering a kind a medicine that affirms life in the bodies of individuals, in aid of those individuals' efforts to build a society that affirms life for the whole.

Through the allegiance of herbalists with social movements, a kind of herbal public health unfolds. But it is public health of a very different kind than the large infrastructures that have grown up under biomedical public health systems. When herbalists thought about this larger scale of health care, their thinking moved through decentralized social movements aiming at system change, much more than it did through state-based social programs or policy reform. Dustin, a herbal student and a critical care nurse at a nearby hospital, contrasted the two approaches:

Dustin: At Marigold, they made a ton of elderberry syrup and sent it to Standing Rock.

> And to me, that's the type of population health management that exists in the herbal community, as opposed to [the system of population health management seen at the hospital, which is] a very systematic corralling of people that share symptom sets into the same treatment path, and then measuring success based on the efficacy of that treatment path.
>
> Jason: I can imagine a liberal critique of sending elderberry to Standing Rock would be that you can never get it to everyone… that the virtue of organized, controlled public health is that they're looking at, supposedly, everybody.
>
> Dustin: Right, right. Well… and then I would say that the system we have isn't caring for our whole population either. In theory, yes, but when we look at public health, and monitoring of everyone, and the quote-unquote 'measure of the health of the community,' it doesn't actually look into the corners.

There are, of course, other dimensions to biomedical public health than corralling and co-ordinating treatment. Anastasia, the manager of the nearby university hospital's integrative medicine program, emphasized to me that attention to the social dimensions of health was a major interest of hospital staff and administrators there, and of the state public health department as well. She talked excitedly about a new social housing project that the hospital was funding.[47] But the kinds of large-scale, often state-based programs forwarded in the biomedical approach, even when directed more explicitly toward the general social environment in this way, don't figure very prominently in the herbal sensibility.

Willow laid out the critical herbal vision for me eloquently:

> Jason: How would herbalism build toward a grander vision?
>
> Willow: I feel like part of the issue is trying to find large-scale solutions. That way of thinking in itself is the problem. So you can't answer that question, because that question is the problem. We have to stop asking that question.
>
> Jason: And start doing what?
>
> Willow: And start acting. On immediate needs. And things happening in our communities. What's happening? What can I do? What's in front of me? And then things will…
>
> Jason: … spread from there?
>
> Willow. Yeah. Like an emergent phenomenon. Throughout history, we're always trying to find large-scale, blanket solutions, that all of humanity can fit their answers under. The answer that will solve all the world's problems, like 'I can save the world if I have this answer! If we do this thing, we'll fix all of the problems!' But trying to put everyone under that average — to put everyone down as having the same problems, as though one solution can meet all of those problems, *is* the problem. Because everyone has unique needs, which need to be met in different ways.
>
> There are many other modalities of how to perceive human existence, or what it is to be a person. So trying to blanket anything, you're just nullifying what it is to be alive. Basically,

> what I am saying is, if we stop trying to have an all-inclusive answer to a problem, then we can really embrace vital humanity, by seeing all the flavours and spices of what it is to be alive. We can find solutions at smaller scales, you know, like person-to-person, community-to-community.

To the extent that something like a herbal public health could be said to exist, it runs along the lines of what anarchist theorists calls *mutual aid* — a horizontal process of communities helping one another in times of need. Proponents of this approach argue that top-down disaster relief functions as a form of social control, stifling the organic creativity of communities that better understand their own needs (see e.g. Sub.Media 2017). No herbalists mentioned these particular visions to me as derivatives of anarchist theory explicitly. When ideas like these came up in conversation, they were arrived at by traveling along a chain of compatible ideas in herbal medical theory. The medical theory itself, that is, contained a set of preconditions for thinking about scale in a typically anarchist way.

Dustin showed me this process of thinking explicitly. He didn't seem to have the same kind of experience in political analysis that Willow did, and he was quite new to the herbal community, too. So as he reasoned from the biomedical public health he was familiar with toward a herbal public health he was trying to envision, he was drawing from a set of ideas in herbalism that he had found quite close at hand. Trying to make sense of new connections, he went back to the plants:

> Dustin: Plants can heal the earth, too [in addition to healing humans]. They do. They are. For plants to flourish, they need… there has to be health around them. And the plants that are needed show up where they're needed. We've talked about this a bunch in class: when there are certain things in the soil that are over-abundant, generally a type of plant will show up and flourish there that needs that thing and take it out of the soil. They show up where they're needed, and by showing up, they create balance. They all grow together, and it's the balance of each one taking what they need but giving back something else that helps another plant beside them.
>
> Jason: So does that speak to the hunch you were just telling me about, of herbal activist disaster response as the beginning of a different idea of public health?
>
> Dustin: I think it's certainly an activist model. If you look in Boston, last weekend where a hundred white supremacists showed up, and then 40,000 protestors showed up — that's that happening.

This political approach — toward decentralization, away from the state; toward earth-linked and community-owned economies, away from centralized capitalism — shared manifold ideological links with herbal medicine, such that one can derive these politics

from herbal medical principles almost without explicit attention to any political theory outside of herbalism. It is so because those very medical principles grew up historically in opposition to the central logics of state capitalism from the very infancy of those logics. Herbalism continues to evolve in this same ideological direction in part because people who espouse politics like these are drawn to herbalism, seeing their worldview reflected in it, but it continues to develop in this politically critical way, too, I grew to believe, because people who study herbalism for long enough come to espouse some form of these politics.

From the understanding that *we are nature* — and the direct plant experiences that open people to that awareness — comes the subsequent understanding that health consists in being in good relationship with nature; from that understanding, in turn, comes the position that we can only be truly well when we live in social and environmental conditions that permit and encourage vitality. The historical lineage of herbal medicine is made of a series of medical movements that supported and preserved these principles against attempts to discredit or eliminate them. When I first told Karen of my curiosity about herbal medicine and herbal perspectives toward the social relations of health, she said this to me immediately: "there has been an engineered disconnect between health and what we're willing to tolerate politically. Herbalism is one way of re-establishing that connection."

Songs of Hope and Sorrow

On the final evening of the Herbal Summit, attendees filed into the Gothic chapel on the campus for an evening plenary. The air was balmy, and the chapel soon filled with the glowing warmth of many bodies releasing a day's worth of summer sun from their skin. The proceedings began with a piano performance. When it finished, during a rousing applause, a woman walked to the front of the hall and approached a towering plant in a broad clay pot perched on the edge of the stage. She begin affixing a series of electrodes to the leaves, and she plugged the other end of the wires into a kind of amplifier.

Silence fell over the room; the lights dimmed to amber. Plants, like most other complex living beings, have electromagnetic biological systems, and they give off a small amount of radiation. That radiation can be read with laboratory equipment. Its

variations can be modelled on a graph, or… they can be converted into intervals and pitches. The plants, we were told, were to sing to us tonight. The woman switched on the current. Delicate, warbling noises emerged from the sound system, growing thicker and stronger slowly.

The plant music dipped and crescendoed, exploring a melodic range. It sounded not quite like any other music I had heard, but not, in any sense, disharmonious either. Eyes moistened and softened all around me. Some herbalists wept, openly, their faces flush and flecked with tears. Here were people who had spent years of their lives singing to the plants, mostly silently, in their hearts, in gratitude. They had felt plants well up inside them and bring them aliveness and sweet release. Here, through some alchemy of plant chemistry and audio technology, a voice these herbalists never thought they would hear with their ears was speaking — singing — and they were basking in a symphonic glow. It would have felt otherworldly, were it not so manifestly a song from the earth itself. *We are not so different, you and I*, the very air in the room seemed to speak. *It had only ever been a matter of different equipment*.[48]

The sound faded to a whisper, and ended, as the woman on stage turned down, and then off, her amplifier. Nothing happened for what seemed like many minutes. The air hung thickly, then thinned, and grew wispy. The trance began to dissipate, in sighs and hugs, and then cathartic applause. The electrodes were unhooked, tears wiped away. The great plant on stage was once again silent, and this strange channel between the human and plant worlds closed.

In this aftermath, the keynote speaker rose to the podium. It was Linda Black Elk, the celebrated indigenous ethnobotanist from Catawba Nation, who had overseen the healing tent at the Standing Rock protest encampment. The mood in the room transitioned. She gave a rousing, fiery lecture, sharing stories from the camps and laying bare the state's allegiance to a pipeline company and its profits over the protection of drinking water and the safety and sustainable livelihood of the original occupants and current owners of the land. Toward, the end, she turned her fire toward the assembled crowd directly:

> You need to stand on the front lines beside us! Because you have been benefitting from our knowledge of the plants.

This was a rebuke. It was not a likely applause line. But a thoroughgoing roar broke out from the crowd. Very few among them, likely, had been at Standing Rock. Fewer still, perhaps, could even really account for what parts of their herbal knowledge had been drawn from indigenous wisdom and under what terms. But the assemblage welcomed Linda's provocation almost eagerly. It was not clear to me how many understood what the hard road of reconciliation might entail for them or others, but for this moment, this audience seemed to want to be implicated. Wanted to be implicated, I thought: in the life of the plants and in the responsibilities of caring for them; in the fate of the land itself; and in the possibility of someday and somehow being in good relations with the peoples from whom it was stolen and who were putting their bodies at risk still to protect it. Whether or not, that is, they yet knew how. The next morning, as the conference was wrapping up, a small group of white women danced around on the grass and chanted, playing drums. A small circle of young, radical herbalists sat on the grass near them, cringing, and debating amongst themselves whether to just let it go or to get up and ask them to stop. There was no clear answer among them — not for how to engage with the scene at hand, and not yet for how to engage with a history of herbal medicine on colonized land.

All of this together was herbalism. The impossible immanence of plant relationship. The anachronistic blending of science and ancient arts. Great disconnect from land, and great connection to land. Broken relationships, only some of which are acknowledged as broken, and relationships with an expanded realm of kin. Deep self-awareness and needing to come ever more to awareness; unity and discord; and striving, striving, for growth, personal and collective both. It was plant connection that grounded this herbal sensibility. It seemed something so far out of this modern world, and yet so resolutely of it, that it just might, I thought, have a shot at changing it.

Closing | Up from Within: The Minor Mode

There is yet one wrinkle still to attend to. In casting herbal medicine as a kind of counter-power, as I have been trying to do, something peculiar emerges. The herbalists I spent time with use constitutional medicine and vitalism to foment a counter-hegemonic sensibility, but at the historical moments in those systems of medical thinking were most thoroughly developed and most widely valourized, they were not counter-hegemonic at all. They were themselves, in their own times, the medical hegemony. Their practitioners were elites, almost always men, who had spent long and costly years reading Greek and Latin texts in the universities. The services of those physicians, by and large, were utterly unaffordable for common people.

Peculiarly, contemporary herbalists trace their lineage through these medical systems, but not through the actual physicians who practiced them. The herbalists I met reckon their kin instead through the simple village practitioners, mostly commoners, mostly women, who were frequently persecuted by the professional associations of the academic physicians (Griggs 1997, 54-65). To get an idea of the strangeness of this, one would have to imagine a group of herbalists existing three hundred years in the future, who swore by the use of the large-scale clinical trial, and who used it as a mode of resistance against a dominant medical culture that laughed off clinical trials as having always been hopelessly naive and incorrect. So how is it that herbalism cast itself both as opposed to current oppressive power systems and as a legacy of older ones?

Through looking at this contradictory history, a very salient feature of contemporary herbal medicine becomes clear. Herbalism has not only a distinct history, theory, and philosophy, as we have seen, but also a distinct way of moving within and confronting the cultural worlds it is embedded within. I will call this way of moving a 'mode of operation.' The mode of operation I see present in herbalism, I will call a 'minor' mode. I say 'minor' not in the sense of insignificant, but rather to mean a way of existing in the midst of major systems and yet still in opposition to them. Contemporary herbalism in North America is not the medicine of the majority. It occupies a minority position in the medical landscape. But it is not content to rest as an 'alternative' practice serving that minority. Instead, it mobilizes its minority status toward a challenge to the majority culture, making its minority position not merely a description of circumstance,

but an operating mode. Hence, not simply minoritarian, but *minor.*

I borrow here from the concept of a 'minor literature' introduced by the philosopher and psychoanalyst pair Gilles Deleuze and Félix Guattari (Deleuze and Guattari 1986, 16-27). If you will permit me a small detour into literary theory, I think it will help us to work through this curious final problem. There is, they tell us, the literature of the majority, and the literature of the minority, but a literature that is 'minor' occupies a third and separate sphere. It is written by a minority people, but it does not look upon its diminutive status as a handicap. Rather, a minor literature recognizes in its position a proudly distinctive mode of being that opens distinct and fascinating avenues for action. Deleuze and Guattari develop their concept of the minor literature from the writings of Franz Kafka, a Czech-born Jew. During Kafka's lifetime, the Czech people were under the influence of the Germanic sphere. Kafka, then, was a minority within a minority. He chose to write in the dominant literary language of German, but his use of German was atypical. He did not write in the high German typical of the literary elites. Instead, he wrote in the vernacular German of the city of Prague, which was mixed in with Czech and Yiddish, the languages of Kafka's patrimonies. Deleuze and Guattari describe this Prague German as a kind of mutt dialect, a neither-here-nor-there language bearing no clear grammar or cohesive vocabulary. Kafka could have chosen to write in the high German he learned in school, or the folksy Yiddish that might re-locate him within his Jewish heritage, or the Czech of the pastoral countryside that might re-situate him in the land he lived upon. He does none of these. Instead, he writes in the common Prague German, but he deliberately uses the Czech and Yiddish influences that it contains to reclaim and re-work the German language. He plays with and distorts its structure, re-inventing the dominant language from within.

To my eyes, contemporary Western herbalism in North America operates in a strikingly similar mode. Herbalism doesn't entirely seek recognition in the official language of science, nor does it entirely retreat from modernity into the folk tales and traditions of pre-capitalist Europe, nor still does it entirely try to claim a New-Age alternative return to the land. It does all of these, in part, and none in full. It blends folk traditions, neo-paganism, high ancient philosophy, and modern technoscience, leaving none of them stable and using each to transform the others. Herbalists inflect the whole mixture with inspirations from diverse other fields that none of their ancestors would

have envisioned — feminism and anarchism, systems thinking and queer theory, deep ecology and psychotherapy. They stand right in the centre of Western culture produce discordant versions of it, pulling from its own shadow forms to undermine its dominant premises. Precisely by working in this minor mode, herbalism takes hold of the Western tradition and re-shapes it into something strange and uncontrolled.

All the while, herbalism is a functional medical system that works pragmatically in the clinic, which only adds to its complexity. Herbalism emerges as an impossibly strange and quasi-magical admixture that is yet patient, cohesive, and practical. Between its groundedness and its lines of flight, herbalism can give the feeling of, in Deleuze and Guattari's phrase, "a drunkenness caused by water" (26). Or perhaps by tea. So much like Kafka's minor literature, herbalism is an organized act of subversion carried out using any and all of the tools one finds lying around. It idealizes itself as a practice for common people, and it also challenges foundational concepts of modernity in a highly sophisticated way.

What the minor position amounts to, Deleuze and Guattari argue, is a way of giving voice to a collective that cannot speak through any of the official or idealized narratives. The real situation of the Prague Jews in Kafka's time does not neatly fit any of the accepted categories of identity — neither that of the Czech peasant, nor the Germanic aristocrat, nor the country Jew of Yiddish folk tales. Official literary narratives of the times cast these as separate and settled identities, each with its own proper language and style of expression. By writing in the German language and using Czech and Yiddish voice, Kafka destabilizes the official story of who exists. He makes a critique of the prevailing hegemonic narratives, and he simultaneously creates new space for a living identity to speak.

In herbalism, the same takes place. Perhaps herbalists' most prominent insistence of all is that its distinctive mashup of medical perspectives is reasonable and real, and that to deny this in favour of any hegemonic model backed up by structural power is an act of empire. By refusing to be pinned down into any of the officially-accepted categories (science, folk practice, alternative culture), and insisting on speaking through its own complex existence, it challenges several settled orthodoxies: among them, that the long past of the Western medical tradition is superstition best left forgotten; that context, individual variation, the whole, and the vital are unscientific notions; that relationship with plants and plant spirits is impossible in modernity; and that nature is

something from which humans are separate and to which they are superior. As herbalism finds fault with these orthodoxies, it simultaneously gives voice to something concrete, something that is, in any one of the common discourses of contemporary Western medicine, only ever imperfectly expressed: the presence of an active material realm, in which minds talk with bodies, and the two together talk with their environmental surrounds. Kafka, writing a minor literature, gave voice to a people's identity; herbalism, a minor science, gives voice to a kind of materiality. Herbalists say sometimes that they are the defenders of the plants, who cannot defend themselves (at least not from chainsaws and pesticides). They are also defending an idea, one which has been the shadow of Western culture for centuries, suppressed first by the Church, and then the state, and then capital — the active material realm.

Deleuze and Guattari write that, in a minor literature, every character "becomes all the more necessary, indispensable, magnified, because a whole other story is vibrating within it" (17). So, too, in herbalism. Each plant and each client matters for their own sake, but there is a deeper valence in every act of herbal healing work: *this whole other story*, of modern Western power and its repressed other, is vibrating within it. When herbalists told me that they sensed a great potency in herbal medicine, a power of challenge and contribution to Western culture that could stretch far beyond the clinic walls, it is this vibration, I think, that they were feeling.

A Living Root

What is it, then, that makes herbal medicine move in this way, up through the dominant culture from within it, in this minor mode? How and why has herbalism used village healing against Galenism, and then Galenism against scientific medicine, and then biomedical science against biomedical orthodoxy? To my mind, herbal medicine moves through this mode because of the presence of the direct plant relationship at its root. This relationship, this conversation, I contend, has a tendency to destabilize and resist any grand ideology, for the reason that it is always unpredictably evolving in the present. No totalizing theory of the body or of nature will ever be able to represent direct plant relationship entirely. Something new will always emerge; something will always escape capture. Such is the nature of the vital: it grows. Such is the nature of conversation: it cannot be scripted ahead of time. So long as plant relationship, or some

analogous form of living embodiment, remains at the heart of herbal medicine, herbal medicine may always remain a minor science, no matter how large it grows.

The plant relationship requires that herbalism retains a focus at the local level, where health is always made and life always lived in particular and changing circumstances. Being anchored in a living relation mitigates against becoming lost in large and settled abstractions. The reason that herbalism can inhabit old hegemonies and turn them against new ones is because herbalists re-work every system they use, whether Galenism or science, in order to make it give voice to a living relation. Living and thinking with wildflowers, then, herbalism is not simply in disagreement with the particular forms of power, like the state and capitalism, that are currently dominant. It is opposed to fixed and totalizing systems and ideas of any kind. So long as living relationships with plants are at its root, herbalism will be, by its very essence, a counter-power. Whether a practice of the minority or the majority, it will operate in a minor mode.

Seeds of a Vision

Existing in a minor mode, though, does not mean limiting oneself to disruption and criticism. Just as herbalists' critiques of medical orthodoxies ramify into critiques of much larger political ideologies, so too does their distinct idea of what the world is like unfold into a broad political vision. Both Christianity and 'society' have had their ideas of what the world is like and what it means to be human, and their own related conceptions of how humans ought to live collectively. It should come as no surprise, then, that herbal medicine, bearing a different and well-developed sense of meaning, should hold within itself a new conception for how humans should organize themselves in collective life.

Might not a broad political vision, though, simply come to replace and replicate the hegemonic ideas that a minor science like herbalism would always seek to disrupt? Rather than a candidate for a new, large-scale orthodoxy, I contend that herbalists' political visions, too, are minor. That is, whether they remains the penchant of a minority, or whether they grow to influence a majority, herbal visions of political futures tend to retain the minor as a mode of operation. Allow me to briefly illustrate what such

a vision might be, and how it issues from what we have understood about herbalism already, before returning to show how it could both become widespread and still resist the formation of large-scale structures of power – that is, how one can both be visionary and remain in the minor mode.

What the world is like, for herbalists, is alive, and what it means to be human is to be in conversation with all of life. What exactly this suggests for social organization, from my observation, is a co-evolutionary style of existence, in which what happens and what ought to happen in social life is worked out between and among humans and other living beings, including between and among different groups of humans, rather than, as has been the case through most of Western modernity, being imposed by some groups of humans upon other humans and other forms of life. What takes place in social life, in an herbal vision, ought to be determined everywhere locally, with each cell, tissue, organ, body, being, community and network of communities self-organizing, in conversation with partners who share the same ecosystem, at each successive scale. The tools for sensing and conversing with their own bodies and the bodies of human and nonhuman others into which herbalists train themselves make it possible to conceive of such a way of organizing social affairs and then to act upon it. Once herbalists come to recognize, through their training, that such a thing is possible, they seem to consider it essential, rather quickly, to place ecosystemic conversations like these at the centre of conceptions about how human beings should live together and how they should participate in nonhuman beings' lives.[49]

Consider how Karen explains the ultimate implications she sees for the kind of herbal training offered at Marigold:

> One of the things that's exciting to me is that I see how people change as they become herbalists. They're not just useful changes that I'm trying to initiate or catalyze in people in order to help them become clinical herbalists. These changes spread out into the rest of students' lives. What we invite people to become – or what the plants invite people to become – as stewards of the plants and as partners in the healing of people, is an invitation to a new way of being in the world.
>
> What I see developing is a way of being that, at first, has the potential to offer tools through which humans and non-humans might survive better as the climate changes, and as the population continues to grow. We don't really know how stable our lives are going to be here. But beyond survival, if human beings do somehow make it through, and there actually is an 'other side' to the cataclysmic moment that we seem to be in, and there is a chance to build something of a new world… if that is a future that comes to pass, then my hope is that that new world is built on the same kinds of tools and skills that an herbalist's work is built upon.

> I'm imagining a world where people feel they are a part of their environment and feel responsible to the natural world, and one in which the built environment is responsive to our needs. Where our food system, and our health care system, and our justice system, too, are all really ecologically oriented and socially just. A world where we have a genuine quality of community, based on an acknowledgment of shared humanity, but based also on an acknowledgment of deep, historical injustice and violence, which necessitates restoration and reparation work, just as we would restore a natural environment to the best of our ability. I believe that herbal training can and should offer the skills to think about matters like these. I try to help my students learn to think in terms of nested and embedded systems, where they understand that humans are but one tiny part of a giant whole, and that this reality confers both responsibilities and gifts according to our particular place within those systems. Because of the ways that herbalists think, we have a perspective that puts humans at their appropriate scale relative to the rest of life, and at an appropriate scale to each other, too.

As I have been trying to show throughout, there are ramifying connections between the way one experiences the world as a self and the modes of collective life that one finds sensible and legitimate. As herbalists deepen into an herbal sense of self, they tend to deepen, too, into a skepticism that large-scale commercial society and its attendant institutions and meaning systems are sensible and legitimate structures for collective life. Alongside this skepticism, they tend to develop an alternative vision, one which issues from, as Karen explains, this same ecologically-inflected sense of self.

If it seems that I am trying to move toward a new grandiose idea for political life, perhaps a little greener than the old grandiose ideas but no less liable to ossify and grow totalizing and oppressive, I must emphasize that an ecological vision like this one, emerging as it does from the minor science of herbalism, can exist continually in a minor mode. That is, it can still serve to resist fixed concentrations of ideology and power even if it grows to be popular and widespread. This is so, I contend, because this particular kind of vision depends for its content much less upon a fixed idea of how things ought to be, and much more upon the outcomes of ongoing conversations. The goal, as Karen stipulates, is to come to "feel responsible" in human and non-human worlds, to construct human systems that are "responsive," and to understand ourselves according to our interdependence with other beings. It consists in a set of commitments to relationship, more than a set ideology or plan.[50]

In a vision like this herbal one, no person or group can claim to know the real or ideal outcomes of social life ahead of time, because those outcomes will always depend upon what an assemblage of beings, each with its own agency, will decide. Future possibilities remain perennially open, so long as they respect the organic substrate upon which the possibility of these conversations depends – that is, the conditions that affirm

life. And even those conditions that affirm life, over long stretches of geological time, or shorter social ones, are open to change. In a relational cosmology like that of herbalists, there is no fixed background, no 'nature' separable from the human. Everything co-evolves, in conversation.[51]

For the way in which literature can give voice to identities not represented in official narratives, Deleuze and Guattari argue that literature is the people's concern. So often, I heard it said of herbalism that it was *the people's medicine*. It is a medicine that directs agency and ownership for the cultivation of life toward the individual and communal scales, and which sets the cultivation of life at the centre of human affairs.

Notes

[1] When I write about 'what the world is like,' or 'underlying ideas,' or 'what the world is made up of,' I am referring to ontology. I have avoided philosophical terminology for purposes of accessibility. Throughout, this work is a discussion of ontology, epistemology, and ethics.

[2] I use the term 'modern' here in Bruno Latour's sense (1993) of the era of Western culture in which nature and culture are declared to be separate and divided realms.

[3] I am referring here primarily to the witch burnings in late Medieval and early modern Europe, which I address in detail in Chapter 2. Similar tactics, targeting healers and other keepers of cosmic knowledge, were pursued subsequently by colonizers in other parts of the world (Federici 2004).

[4] Latour draws from Isabelle Stengers' helpful notion of *cosmopolitics*. In Latour's gloss of Stengers' concept, he presents a binary between *cosmopolitanism,* in which many cultures may amiably debate matters, but the underlying facts of nature are not in question, and a *cosmopolitics*, in which they are. The term 'cosmopolitics' indicates both that the nature of the cosmos is a political matter — that is, up for grabs — and that the politics at hand concern the interests of more than human beings (Latour 2004, 454).

[5] A subset of herbalists is actively engaged in thinking about their position as settler-colonizers and holders of stolen and/or unattributed sacred knowledge.

[6] I am using 'sickness' here in the generic sense, rather than in the specific sense denoted by Allan Young (Young 1982). I do so for ease of comparison between biomedicine, which focuses upon 'disease' in Young's terms, and herbalism, which considers 'disease,' 'illness,' and 'sickness' in Young's sense. In order to derive the difference between these two systems from their respective ontologies, I am eschewing pre-defined terms.

[7] Chronic disease epidemiology centres upon 'lifestyle factors' as key causes of illness, and these would seem to be all-too-human choices. I contend that a conquest-of-nature model is still at work.

The modern Western division between culture and nature supports a concomitant a division between mind and body. In this Cartesian model, as I show in Chapter 2, the temptations of the body are presented as impediments to the proper function of a free mind (i.e. self). Mind and body are antagonistic to one another, and the mind's force of reason must overcome the body's urges. Good lifestyle choices, in this model, require self-discipline.

The herbal approach draws more from the Greek and Roman conceptions. There, too, a certain operation of self-discipline was at work. But there existed a more ambivalent relationship to the body's urges. Desire was conceived as a kind of direct communication from the body of its needs, grounded in its ongoing relationship to the environment. Self-discipline was a matter of keeping those desires in an effective balance with the mind. This was especially so in Roman medicine, where the humoral conceptions that have influenced contemporary herbalism were systematized (Foucault 1986, 107-108; 1990).

[8] Indeed, there is a wide body of contemporary epidemiological literature, which

operates broadly within the biomedical paradigm, that points to features of contemporary social organization as principal determinants of sickness and health (World Health Organization 2008; Andermann and Collaboration 2016; Mikkonen and Raphael 2010; Evans, Barer, and Marmor 1994). It is possible, too, for herbalists to lay blame for sickness upon nature rather than modern life.

[9] 'White-coded' is a term referring to a person who is not, strictly speaking, white, but who has the appearance and the habits of whiteness. By 'white,' I mean kinship descent from Europe. My own kinship lineage is Ashkenazi Jewish. Thus, I have European origins, but my ancestors have long been an oppressed minority in Europe and North America. Presently, Ashkenazi Jews are not a structurally-oppressed minority in North America, and as such, I benefit through my social presentation from the privileges of whiteness. However, based on my family history, my internal relationship to dominant power structures is tenuous. The term 'white-coded' captures this split reality.

[10] That is, I will undertake a history that is both internalist and externalist.

[11] Certainly, I do not mean to suggest that I will introduce a novel history unknown to historians. I rely almost entirely on the excellent work of historians of medicine and science in my account. Rather, I mean that I emphasize the work of those historians who take seriously the history of the medical ideas used by herbalists. From my reading, and in the historiographical suggestion of Harold Cook (1990), I see this as a minority approach.

[12] I use the term 'contemporary' here in two senses. The first is the colloquial sense, meaning 'at the same time as now,' as opposed to 'modern,' which I can then reserve for use in reference to a particular historical period in which nature and culture are declared to be separate (cf.Latour 1993). I do not consider herbalists to be modern, in Latour's terms. Many might consider them to be anti-modern, pointing to their preference for kinds of low-technology folk medicine over technomedicine. I consider them decidedly nonmodern, in Latour's terms. I see this in their ready engagements with emerging science and social theory, their sense of envisioning and moving into a future, and their free mixing of ideas and objects from multiple historical periods (1993, 46-47,69,123).

In Rabinow's sense, 'the contemporary' is a particular orientation toward temporality in the present. I use Rabinow's terminology of the contemporary rather than Latour's of nonmodernity because I believe Rabinow's conception better captures the extent to which herbalists are trying not only to mix things of multiple times but also to create something new in historical terms. Rabinow's contemporary, for me, better captures this sense of motion while simultaneously making a distinction from 'modern.'

For Rabinow, the orientation of 'the contemporary' "seeks out and takes up practices, terms, concepts, forms, and the like from traditional sources but seeks to do different things with them from the things they were forged to do originally or how they have been understood more recently" (2011, 110). As I explain in this section, I believe herbalists are operating in this 'contemporary' mode in Rabinow's sense.

[13] I do not make, though, a movement of denaturalization. Here, I depart from a Foucauldian approach. I will argue that there is indeed a natural ground for being. That ground is, for herbalists, nature. What I will argue throughout is that, for herbalists, change is what nature is like. I am helped in this line of thinking by Hasana Sharp's *Spinoza and the Politics of Renaturalization* (2011).

[14] I am indebted to medical anthropologist Sarah Van Hoy for introducing me to the

notion of medical poetics. I rely upon this phrasing this work to describe phenomena for which I did not have a fitting descriptor until her suggestion.

[15] Paracelsus' own ideas were not always consistent with those of the medical movement that claimed him. His writings were frequently obtuse, and could be invoked toward various ends.

As a fierce critic of medical orthodoxy, he became the figurehead for the movement toward scientific medicine I detail here. However, contemporary herbalists sometimes claim Paracelsus as well. He opposed the Galenic physicians for their use of complex and exotic formulas rather than local simples, for poor botanical knowledge, and for reliance on classical medical philosophy exclusively rather than the folk wisdom of village healers, all of which frequently align with the concerns of contemporary herbalists (Griggs 1997, 51-53). I invoke Paracelsus here for the ways he was invoked by advocates of a medicine of abstract disease categories.

[16] To explore this terrain, I will follow most David C. Lindberg's *The Beginnings of Western Science* (2007), and Stephen Gaukroger's *The Emergence of a Scientific Culture* (2006), *The Collapse of Mechanism and the Rise of Sensibility* (2010), and *The Natural and the Human* (2016). I hew most closely to these sources because both take the *longue durée* historical approach, drawing arguments from broad, long-term trends, that I find valuable for the purposes of the argument at hand. Both authors also strike a balance between internalism and externalism, presenting the history of science as a product of developments within science and in the socio-political realm both. I am encouraged in this *longue durée* and synthetic approach to the use of history in anthropology by the example of Philippe Descola's *Beyond Nature and Culture* (2013) and Bruno Latour's *We Have Never Been Modern* (1993) and *Facing Gaia* (Gifford Lectures, 2013). I am guided as well in this approach by the genealogical method of Michel Foucault.

[17] In many ways, this model of disease was closer to Plato's notion of the Forms than to Descartes' model of mechanism. Indeed, Paracelsus was a neoplatonist. But it was during the time of mechanism that this notion of abstract disease first gained significant traction. Rather than a contradiction between mechanism and Platonism, I see in this observation evidence of an overall climate very hospitable to the split-world idea that buttressed Christianity in Plato's and Descartes' ideas alike. In this climate, the disease concept of a neoplatonist found fertile soil. In their relationship to Christianity, the two philosophies bore a family resemblance. As the following sentence in the main body text argues, the neoplatonist notion of disease as a Form was merged with mechanistic ideas fairly seamlessly. For a fulsome discussion of disease as an abstract idea (specific entity), see (Rosenberg 2002). A brief indication of the Platonic nature of the abstract disease entity appears on p. 250.

[18] At this time, the training of Galenic physicians was more strictly theoretical than it had been at nearly any other point in its history (Griggs 1997, 58). In the 1700s, vitalist physicians would attempt to re-energize European constitutional medicine specifically by returning to these principles of observation of natural patterns, body-environment analogy, and change, which they linked with the tradition's Hippocratic roots (La Berge 2005).

[19] Constitutional medicine forms a major part of the curriculum at Marigold. It is somewhat uncommon in other parts of North American herbalism, and I include it here so prominently for two reasons. First, as we will shortly see, it forms the basis of vitalism, which is the most widely-dispersed medical philosophy among Western herbalists. The major principles of vitalism, such as treating the individual rather than

the disease and attending to the connection with the environment, are very explicit in constitutional medicine, vitalism's immediate historical roots. The second reason I treat constitutional medicine in such depth is that it seemed to be a growing phenomenon in the herbal community at large. Leading teachers were writing books encouraging the revival of constitutional medicine and adapting it toward the contemporary.

[20] This particular connection comes from the Ayurvedic (Indian) constitutional system, which Sarah had relied upon most prominently in Vanessa's case. I have used the more common elemental descriptors here rather than the Ayurvedic ones for simplicity and legibility.

Marigold teaches the Ayurvedic, Traditional Chinese, and Galenic constitutional systems side-by-side. They do so because the Indian and Chinese systems have been both much better preserved than the Galenic and also much more thoroughly adapted to the contemporary. For both reasons, the Ayurvedic and Chinese medical systems are often more clinically useful for present-day herbalists. But the faculty acknowledge plainly to their students the problem of cultural appropriation inherent in a group of mostly white Americans teaching and using these systems. White culture makes use of Oriental knowledge, the faculty explains, but has yet to pay its debts for centuries (ongoing) of denigrating that very knowledge or for materially under-developing the societies from which it came. As they laying this predicament forthrightly before their students, the faculty offers another form of initiation into constitutional medicine as a practice of thinking through complexity and change. They introduce the work of herbalist colleagues who are attempting to re-invigorate and update Galenic constitutional medicine for the contemporary. The faculty authorizes students to break open and re-fashion these wisdom systems in response to current medical and psycho-emotional problems, which students are invited — or perhaps nearly mandated — to become co-responsible for comprehending. Sarah, in light of all of the above, told me she could apprehend Vanessa's embodiment most effectively through the Ayurvedic frame of mind.

[21] I am thinking here also with Eduardo Kohn's contention that general ideas, such as constitutional metaphors, are real. Kohn offers a useful distinction between 'existence' and 'reality.' 'Existence,' for him, is what belongs to the material realm. 'Reality' comprises anything that has an effect upon the material realm. Thus, general ideas may not have material substance, but if they spur action in the existing world, then they become real. Kohn's distinction helps to bridge the gap between the mental and the material proper to modern Western thought. Here, I present metaphors as 'real' entities, insofar as their action upon the existent can be seen and known (Kohn 2013, 57-67).

[22] I borrow the notion of the 'great chain of similarity' from Philippe Descola's theory of analogism, which he argues characterizes European (and Asian) constitutional medicine systems (Descola 2013, 217-218).

[23] I do not mean to say here that Ayurvedic medicine derives from Greek philosophy. In mixing the two, I follow the categorization used by herbalists, in which constitutional medicine (of Indian, Chinese, and European origin) is opposed to clinical trials, vitalism, or laboratory research as a way of assessing the body. I am also following Descola (2013), who situates Traditional Chinese constitutional medicine and Galenic medicine in his ontological category of 'analogism,' and opposes these to Western science, which he situates as 'naturalism.' I am intending to highlight here the connection between an analogical diagnostic approach and a set of ontological assumptions that guide it.

[24] This vision was laid out perhaps most paradigmatically by the Marquis de Condorcet, in the *Esquisse d'un tableau historique des progrès de l'esprit humain* (1795).
[25] Temperature, for example, was assessed qualitatively by the Galenists, who felt subtly for a diverse array of kinds of heat. There was caustic heat, dry heat, burning heat, and more; physicians would even feel for such a thing as a cold fever. When the thermometer replaced hands-on evaluation, the wealth of ranges that could be evaluated qualitatively were replaced by discrete and standard digits. Reliable thermometers were available in Germany since the mid-1600s, but they entered widespread use in German hospitals only in the second half of the 1800s. It was neither a scientific nor a technological advance that made thermometers standard, but the spread of a way of thinking about health and disease (Hess 2005, 110).
[26] Cassandra was playing on the longstanding dual meaning of the word 'nature,' which, as far back as the 1100s, has denoted both the way that an individual person or species is, and the overall ordering principle of the universe (OED)
[27] In the famous 1977 paper in which George Engel introduced the 'biopsychosocial' model of disease, he claimed that biomedicine had become "the dominant folk model of disease in the Western world." (Engel 1977). Within the anthropological literature, see (Descola 2013).
[28] Incidentally, Pasteur was incorrect in that assumption. Public health measures to clean up the environment and raise the standard of living of the working class reduced most of the overall burden of infectious disease before most of the major vaccines were invented (McKeown 1976; Szreter 2003).
[29] As Stephen Gaukroger argues, it was a series of findings in natural history, much more than the progress of science, that led to the diminished influence of the Church over knowledge (Gaukroger 2006, 3-43).
[30] See the Introduction for a brief expanded discussion of the politics of this knowledge among herbalists.
[31] Brian was a herbalist whom I met and spoke with, but these particular quotations come from a herb walk I did not attend. It was video-recorded, and he referred me to the video online:
[32] This claim about the action of astragalus that I insert parenthetically reflects knowledge I heard expressed very commonly among herbalists rather than an assertion of my own. As such, I do not provide a reference to support it. In general, herbalists could direct me to textual sources for their medical claims, whether those texts were traditional or scientific, if asked. However, as in any culture, a large body of commonly agreed-upon knowledge circulates in ordinary conversation, and I heard of the immune-boosting action of astragalus such a context.
[33] This quotation from Jasper and the one that follows were excerpted from an email correspondence in which I shared the outline of some of Deacon's ideas with him. I didn't have the necessary scientific background to go as deeply into Jasper's ideas about pharmacology as I would have liked, and so I suggested some of Deacon's philosophical ideas as a bridge. Jasper responded with excitement, telling me that Deacon's ideas did indeed capture some of the ways in which he understood herbal pharmacology to operate. The close similarity here between Jasper's language and Deacon's reflects my having shared Deacon's ideas with him; the close conceptual similarity between them reflects the extent to which the two thinkers, Jasper and Deacon, agree in their biological views.
[34] Ethnobotanist and nutritionist Timothy Johns explains that the compounds plants

produce to defend themselves have in many cases become essential health-promoting compounds for the human body. These are often bitter-tasting. Taste, as Johns explains, is an evolved predictor of the likely physiological effects of a given food, and bitterness indicates toxicity. Over long co-evolution, Johns explains, these compounds have influenced our inner ecology(Johns 1990, 14-16,210-211,247).

[35] The problem to which I am referring here is known in the philosophy of science as the naturalistic fallacy. I define the naturalistic fallacy as the ascription of human values to nature, and then the re-importation of those values into the social sphere with nature's authority. Scientific racism, to cite one particularly egregious example, commits this fallacy. It projects a series of judgments about a group of people onto lineage or genetics, and then claims for those judgments the authority of natural fact.
I think about this problem alongside the arguments made by the historian of science, Lorraine Daston, in her essay, "The Naturalistic Fallacy is Modern" (Daston 2014). In it, she argues that this very problem is an artifact of the strictness of the separation between the realms of nature and culture to begin with. This strict separation, she argues, is a historical phenomenon of Western modernity: "The key shared feature of all these versions of the naturalistic fallacy has less to do with nature than with a militantly policed border between whatever two realms are put asunder. It is the little word 'versus' that shoulders the burden of belief" (586).

As I argue throughout this work, herbalists employ various means of rejecting the modern division of nature and culture. As such, I believe that many of their claims about values in nature do not fall into the trap of the naturalistic fallacy. One such means is on display from the present section through the end of this chapter. Where I claim that nature itself is seen to have a preference, that preference is not a thoroughgoing set of opinions about society, but a materially demonstrable preference for the conditions that create life. Daston claims that it is the modern construction of a great distance between the two realms, and the rigidity of the borders between them, produces the grandiosity of the leaps from one to the other in appeals to the authority of nature (as in the case of scientific racism). In this herbalists' example of ascribing value to nature, it is quite a narrow and circumscribed claim of value in nature that they make.

Herbalists do build up broader philosophies from this limited notion of nature's preference. But I believe that, by and large, these broader philosophies are understood by herbalists to be their own culturally- and historically-bound extrapolations from the simple preference of nature for the conditions that support life. As I will attempt to argue in Chapter 3, herbalists return continually to a personally-felt direct engagement with plants in part for the express purpose of disrupting the solidity of their own symbolic interpretations of nature and culture both. Certainly, there are instances in which herbalists make utterances that could be said to commit the naturalistic fallacy. But I believe that, by virtue of their intricate and manifold rejections of the nature-culture divide, their core philosophical claims of value in nature do not fall prey to it.

[36] It is not impossible for an individual herbalist to profess faith in a Christian or other transcendent God, but such faith seems not to structure the general herbal worldview in any meaningful way. I did in fact meet a few herbalists who professed Christian faith, but they tended toward its more mystical variants, which they described in terms of 'divine energy' and modelling their lives after the example of mystic saints more than belief in a personified God. They also believed in plant spirits.

[37] I have not addressed explicitly in this section a number of important questions about

embodied and nonhuman intelligence and intentionality that are nevertheless begged. Chiefly, I have not addressed questions of determinism and free will, teleology (whether or not plants and bodies have a specific end in mind), or the implications that any of this has for evolution.

I have left these important questions aside because herbalists do not make frequent explicit claims about them. For instance, the principal claims herbalists make about plant intelligence are that it exists and that it is in some way analogous to that of humans (i.e. 'we are nature'). They do not make strong claims about human free will, in any way distinct from others who are not herbalists, and they do not make strong claims accordingly about whether or not plants have it. They tend not to make strong claims either about plant teleology. Their claims regarding intent are closer to what might be called *teleonomy*, or a capacity to be active in a chain of connections without necessarily 'having in mind' where that chain should end.

In terms of debates in the philosophy of science, herbalists are concerned mostly with the extent to which plant and embodied intelligence render plants and bodies responsive to *local* environmental circumstances rather than being governed solely or primarily by *universal* natural laws (cf.Latour 2013). This claim is grounded in herbalists' emphasis on the salience of the environment. These positions do have implications for evolution. In them, I see echoed anthropologist Gregory Bateson's claim that the unit of evolution is not the organism, but "organism plus environment" (Bateson 1972, 489).

When local interactions with the environment are considered, 'thought' does not need to refer to a kind of overarching God-mind or the abstract symbolic thought characteristic of humans. One can consider thought to exist and be salient without needing to stake any claim in debates about free will or goal-directedness. Herbalists reject the sharp Cartesian division between thought and non-thought; with a smaller gap to cross, they can make meaningful claims about thinking matter without drawing in every kind of implication about what it means to think (see two notes prior for a fuller discussion of this as pertains to the naturalistic fallacy). For more on the nature of thought in matter, see Eduardo Kohn's *How Forests Think* (2013), esp. Chapters 1 and 2.

[38] I saw herbalists grasping the presence of what anthropologist Philippe Descola has termed an *integrating schema* — a dominant view of what the world is like that tends to co-opt and translate everything around it into its own particular logic (Descola 2013, 105).

For Descola, the long view of the intellectual history of the West is the transition from a mode of reasoning that supported a metaphorical logic, in the style of Galenic medicine, toward a view of the world divided sharply between mind and matter (Descola 2013, 65-70,172-228). Since this latter view became dominant, beginning in the Scientific Revolution, Descola writes, it has tended to operate in this integrating way, translating all other modes of thinking toward its own particular approach (Descola 2013, 199).

[39] As the philosopher of science, Ian Hacking, has explained, any style of reasoning is supported by its own rules of what is allowed to be true. When a particular style of reasoning becomes authoritative, as statistical reasoning has in the modern West, it also becomes its own authority (Hacking 1992)

[40] Definitions of 'capitalism' and 'the state' abound, and different herbalists use them to indicate different things. I will be using the terms defined according to those features highlighted in the historical recounting of the systems' origins given in previous

chapters. Thus, I will understand 'capitalism' as that economic system that: (1) originates in the expropriation of land or other property from peoples living in subsistence economies, prompting (2) the consideration of the natural environment as capital rather than human and non-human habitat, as well as (3) wage labour as a principal mode of production, for a (4) large-scale commercial society, in which production is centralized and consumption is dispersed. I will understand 'the state' as that form of governance that: (1) supports the capitalist mode of production, via (2) the large-scale management of the conduct of individuals constructed as populations.

[41] The herbalist emphasis on 'self-responsibility' seemed to me to come troublingly close to the phenomenon of 'responsibilization' that is noted in critiques of neoliberalism. Briefly, under neoliberal governance, the retreat of the state from the practice of regulation and the provision of public services and is legitimated through an injunction to citizens to become more 'self-responsible' (Harvey 2005, 65-66),(Ferguson 2010, 172),(Rose 1996, 327-328). I asked a handful of herbalists whether their ideas of self-responsibility might contribute to the legitimation of the state's retreat.

Two herbal students who are also hospital nurses expressed a difference between self-management as they witness it in the hospital, where they say patients are told to live a healthy lifestyle but given scant tools for doing it, and self-responsibility in herbal medicine, where clients receive extensive lifestyle coaching and herbal support. In herbal medicine, these students reported, clients and students much more often seem to come to acquire the insight and motivation they need to be able to produce their own well-being. They attributed the difference partly to an issue of resources in the hospital system, and partly an issue of medical theory — herbal medicine, they said, has a deeper and wider well of knowledge regarding how to become healthy.

Another student explained that neoliberal discourses tell their subjects that if they have not achieved something in their lives, it is their own fault. It tells them that they should be something that they are not. Herbalism, she said, aims to tell students and clients, by contrast, that they are more than they have been told they are, and it tries to awaken them to that. It was a distinction between an outward-oriented performativity that neoliberalism expects, and an internally-derived vitality that herbalism seeks to make available.

[42] Cindy Samantha's writing on politics and healing can be found at https://cindysamanthalmt.wordpress.com. I use Cindy's real name at her request.

[43] 'Feminist principles' can be enumerated in many ways; in making my comment here, I am thinking especially with Kim Tallbear's concise but effective overview of 'feminist epistemologies' in her *Native American DNA*. She lists:

(1) Situated knowledges - specifying the local contexts in which knowledge is co-constituted, rather than presuming universality of knowledge;
(2) Standpoint - valuing the ideas and experiences of marginal individuals and groups, and inviting these to change normative conceptions; and
(3) Speaking with, not for.

Each of these was quite present to me in herbalists' philosophies of clinical care, theories of health and disease, and attitudes toward the development of their profession.

[44] I do not mean to suggest here (nor does Graeber) that the witches of this society are imaginary. I mean rather that they live in a realm that is unseen (to the ethnographer at

least), different in nature from the social realm but no less real. Certainly, as Graeber demonstrates in his example, they have very real effects in the social realm, ones that *are* visible to the ethnographer.

[45] I intend this not as a comprehensive list of the forms of modern power — basic structures like white supremacy and homophobia are absent. The list draws instead from those forms of power that I saw herbalists most often arraying their medical work against. I certainly met herbalists who tried to employ explicit anti-oppressive positions in their medical work more broadly, and many at Marigold who did so, but this seemed to be less common among herbalists from other places and less deeply embedded in herbal medical theory. (See discussion at the end of the subsection entitled 'The Adequate Idea.'

[46] Anthropologists and sociologists have often critiqued the extension of medical ideas to social problems. 'Medicalization,' as the process has been called, tends to make matters that were once social concerns and render them medical. Sadness, aging, and children who won't sit still in class are common examples. Giving social concerns a medical definition can render them technical, making decisions about what is good and bad into natural facts to be delineated by experts. It can function as a kind of social control (Lock 2004; Zola 1972; Foucault 2004, 12-13). For Frederick T. Gates, the director of the Rockefeller Foundation, for instance, disease was the prime social ill, and the cause of poverty, meaning that one needed only to cure diseases, through technical means, rather than addressing the political problem of poverty. But when herbalists extend their medical thinking to the social and ecological realms, they tend not to carry their medical definitions with them. By virtue of their close attention to terrain, herbalists are inclined to recognize that the environment matters for human health on its own terms. The terrain already is of medical relevance, without needing to be defined medically. Thus herbalists don't see themselves, in their role as herbalists, as the proper actors for addressing social and ecological problems. Their role as herbalists is to give medical support to the proper actors: social activists. (The same individuals, of course, may also play the social role of activist.)

[47] For more on the social determinants of health in biomedical public health discourses, see (World Health Organization 2008; Evans, Barer, and Marmor 1994; Raphael 2011).

[48] This moment reveals most sharply the multiple ontologies held simultaneously by herbalists. In different instances, herbalists take up each of Philippe Descola's four schemas — animism, naturalism, totemism, and analogies — as described in *Beyond Nature and Culture* (2013). This moment at the chapel is a fairly close approximation of Descola's animism, in which humans share interiority with nonhumans but differ in their exteriority. In the chapel, herbalists use a technological apparatus to bridge the difference in external equipment. In this moment, that technology is electrodes and amplifiers. Among some Amazonian peoples, the technologies of shamanism, plant medicine, or dreams are employed instead.

In working with conventional science, and valuing the focus that its reductive gaze permits, herbalists engage in naturalism, the primary schema of the modern West, in which humans share their exteriority with nonhumans but not their interiority. The split between mind and matter is preserved. Plant medicine can be seen to work upon the body biochemically, because plant bodies and human bodies are composed of the same material, but no 'communication' between the two can be possible.

When they engage constitutional medicine, herbalists are drawing from the schema of analogism, which, Descola argues, characterized Europe from Ancient

Greece through to the Scientific Revolution. In analogism, there is neither exterior nor interior similarity between humans and nonhumans, and instead all beings and objects are related to one another along metaphorical series or 'chains of continuity.' The bodies are 'like' the air that surrounds them, to reprise Galen's gloss on Hippocrates that we saw in an earlier chapter, but they do not, for Galen or Hippocrates, 'speak' with one another, and nor are they identical in makeup. In Aristotle's metaphysics, all bodies are composed of the same elements, but the differing compositions of those elements give different bodies very different 'natures' (and it is the job of constitutional medicine to deduce the fundamentally unique 'nature' of each person, following a system of metaphorical continuities).

Very often, though, I find herbalists practicing something closest to Descola's totemism, in which humans and nonhumans share both interiority and exteriority. The axiom *we are nature* exemplifies this total identification. On this basis, herbalists understand the possibility of plants influencing them on both the material and mental levels. This is possible also in an analogistic view, but herbalists also have personal identifications with plants, which is more typical of totemism. Herbalists identify themselves or their clients sometimes as a 'dandelion person,' or a 'rose person,' in a classically totemic formulation, seeing a close match in both physicality and mentality between person and plant. In Vanessa's case, for instance, Sarah used analogistic reasoning to find a plant that would approximate Vanessa's condition, but when Vanessa smelled the rose petals, she had a trance-like experience, and rose became, as Sarah said, 'her plant.'

As I argue throughout, albeit in other terms, it is precisely this multiple-ontology existence that I believe gives herbalism the possibility of achieving a kind of transformative cultural work (or what Bruno Latour terms 'cosmic diplomacy' (Latour 2004)). According to Descola, ontological change can occur in a culture when an important class of beings is subsumed under an existing mode of relation that is marginal, but then comes to acquire a preponderant position. Then, the original relations characterizing that object can fall away, permitting new relations to arrive at the centre of the culture. This occurs, for Descola, under conditions of major external change (Descola 2013, 388-390). So, for instance, the modern West might be said to relate to plants currently through a mode of extraction. As climate change increasingly draws attention to the work that plants do for humans (as seen in the ecological framework of 'ecosystem services'), plants increasingly are seen to be producers and not only raw material. As the mode of relations shifts, and the work that plants do for humans becomes more central in cultural consciousness (as, for instance, carbon sinks, or simply as providers of food in a world where agriculture may become increasingly difficult), a shift of the kind Descola describes may be possible.

Crucially, Descola writes: "[d]estruction can be wreaked in a thousand ways, but reconstruction can be achieved only with whatever materials are available and by following a limited number of plans that respect the architectonic constraints particular to any edifice" (2013, 390). Thus, in order for ontological shift to occur in a moment of destabilization, there must be templates for other ways of knowing the world already available within the culture, existing in previously marginal spaces. This, I believe, is exactly the kind of work that herbalism is doing, and it is by virtue of its holding multiple ontologies simultaneously that I believe it capable of presenting an alternative to naturalism and effectively translating it into terms recognizable to naturalists.

[49] I am influenced here in my interpretations of herbal visions by Bruno Latour's 2013

Gifford Lectures, *Facing Gaia: A New inquiry into Natural Religion*, and especially the third lecture, "The Puzzling Face of a Secular Gaia." For a rich and nuanced discussion of the ways in which herbalists learn these techniques of sensation, see Charis Boke's 2018 doctoral dissertation (forthcoming), *Ecological Bodies: Learning North American Practices of Care with Western Herbalists*.

[50] For very rich discussions of responsiveness as the ground of an ecological political theory, see Donna Haraway's notion of "response-ability," in *Staying with the Trouble* (2016), among other works.

[51] For a discussion of the implications of Christianity (and other major world religions) for social organization, see David Graeber's *Debt: The First 5,000 Years*, especially Chapter 9.

Bibliography

Agledahl, Kari Milch, Pål Gulbrandsen, Reidun Førde, and Åge Wifstad. 2011. "Courteous but not curious: how doctors' politeness masks their existential neglect. A qualitative study of video-recorded patient consultations." *Journal of Medical Ethics*:jme. 2010.041988.

Andermann, A., and Clear Collaboration. 2016. "Taking action on the social determinants of health in clinical practice: a framework for health professionals." *CMAJ* 188 (17-18):E474-E483. doi: 10.1503/cmaj.160177.

Bateson, Gregory. 1972. "Pathologies of epistemology." *Steps to an Ecology of Mind*:484.

Benatar, Solomon, and Ross Upshur. 2013. "Virtue in Medicine Reconsidered: Individual Health and Global Health." *Perspectives in Biology and Medicine* 56 (1):126-147.

Boke, Charis Ford Morrison. 2018 (forthcoming). "Ecological Bodies: Learning North American Practices of Care with Western Herbalists." Doctoral dissertation, Cornell University.

Brown, E. Richard. 1979. *Rockefeller medicine men : medicine and capitalism in America*. Berkeley: University of California Press.

Canguilhem, Georges. 1978. *On the normal and the pathological*, *Studies in the history of modern science*. Dordrecht, Holland ; Boston: D. Reidel Pub. Co.

Charis Boke, PhD candidate and scholar of herbalism. 2017. "Personal conversation."

Cook, Harold. 1990. "The new philosophy and medicine in seventeenth-century England." In.: Cambridge University Press.

Daston, Lorraine. 2014. "The Naturalistic Fallacy Is Modern." *Isis* 105 (3):579-587. doi: doi:10.1086/678173.

Deacon, Terrence W. 2015. "Steps to a science of biosemiotics." *Green Letters* 19 (3):293-311.

Deleuze, Gilles, and Félix Guattari. 1988. *A thousand plateaus: Capitalism and schizophrenia*: Bloomsbury Publishing.

Deleuze, Gilles, and Felix Guattari. 1986. *Kafka: Toward a minor literature*. Vol. 30: U of Minnesota Press.

Descola, Philippe. 2013. *Beyond nature and culture*: University of Chicago Press.

Dictionary, Oxford English. 2012. Statistics. In *Oxford English Dictionary*. London: Oxford University Press.

Donnelly, Michael. 2005. "William Farr and quantification in nineteenth-century English public health." *Body Counts: Medical Quantification in Historical and Sociological perspectives*.

Dubos, René J. 1950. *Louis Pasteur, free lance of science*. Boston: Little, Brown and co.

Dubos, René Jules. 1987. *Mirage of health: Utopias, progress, and biological change*: Rutgers University Press.

Duffy, Thomas P. 2011. "The Flexner Report — 100 Years Later." *The Yale Journal of Biology and Medicine* 84 (3):269-276.

Ehrenreich, Barbara, and Deirdre English. 1973. Witches, Midwives and Nurses. Old Westbury. New York: Feminist Press.

Engel, George L. 1977. "The need for a new medical model: a challenge for biomedicine." *Science* 196 (4286):129-136.

Evans, Robert G., M. L. Barer, and Theodore R. Marmor. 1994. *Why are some people healthy and others not? : the determinants of health of populations*, *Social institutions*

and social change. New York: A. de Gruyter.
Federici, Silvia. 2004. *Caliban and the witch*. New York: Autonomedia.
Ferguson, James. 2010. "The uses of neoliberalism." *Antipode* 41 (s1):166-184.
Foucault, Michel. 1974. "The Birth of Social Medicine."
Foucault, Michel. 1978. *The history of sexuality*. 1st American ed. New York: Pantheon Books.
Foucault, Michel. 1986. "The care of the self: The history of sexuality, Vol. 3." *New York: Pantheon*.
Foucault, Michel. 1988. *Technologies of the self: A seminar with Michel Foucault*: Univ of Massachusetts Press.
Foucault, Michel. 1990. *The Use of Pleasure: Volume 2 of the History of Sexuality*. Translated by Robert Hurley. New York: Vintage Books.
Foucault, Michel. 2004. The crisis of medicine or the crisis of antimedicine? In *Foucault Studies*. Original edition, 1974.
Foucault, Michel. 2007. "1 February 1978." In *Security, Territory, Population: Lectures at the College de France, 1977-1978*. New York: Palgrave Macmillan.
Freud, Sigmund. 1989. "The Psychopathology of Everyday Life." In *The standard edition of the complete works of Sigmund Freud*, edited by J. Strachey, 37-44, 300-344. New York, London: W. W. Norton. Original edition, 1960.
Galen. 1982. *Galen's commentary on the Hippocratic treatise, Airs, waters, places*. Translated by Abraham Wasserstein, *Proceedings of the Israel Academy of Sciences and Humanities*. Jerusalem: Israel Academy of Sciences and Humanities.
Gascoigne, John. 2010. "The Religious Thought of Francis Bacon." In *Religion and Retributive Logic: Essays in Honour of Professor Garry W. Trompf*, edited by Christopher Hartney Carole M. Cusack, 209. Leiden, Netherlands: Brill.
Gaukroger, Stephen. 2006. *The emergence of a scientific culture : science and the shaping of modernity, 1210-1685*. Oxford, New York: Clarendon Press; Oxford University Press.
Gaukroger, Stephen. 2010. *The collapse of mechanism and the rise of sensibility : science and the shaping of modernity, 1680-1760*. Oxford
New York: Clarendon Press ;
Oxford University Press.
Gaukroger, Stephen. 2016. *The natural and the human : science and the shaping of modernity, 1739-1841*. Oxford: Oxford University Press.
Geertz, Clifford. 1968. "Religion as a cultural system." In *Anthropological Approaches to the Study of Religion*, edited by Michael Banton. London: Tavistock Publications.
Graeber, David. 2011. *Debt: The First 5,000 Years*. New York: Melville House.
Graeber, David. 2004. *Fragments of an anarchist anthropology*: Prickly Paradigm Press.
Griggs, Barbara. 1997. *Green pharmacy: The history and evolution of western herbal medicine*: Inner Traditions/Bear & Co.
Guattari, Felix. 2014. *The three ecologies, Bloomsbury revelations*. London ; New York: Bloomsbury Academic.
Hacking, Ian. 1992. "Statistical language, statistical truth and statistical reason : the self-authentification of a style of scientific reasoning." In *The social dimensions of science*, edited by Ernan McMullin. Notre Dame, Ind.: University of Notre Dame Press.
Haraway, Donna J. 2016. *Staying with the Trouble: Making Kin in the Cthulucene*. Duke University Press.
Harvey, David. 2005. *A brief history of neoliberalism*. Oxford ; New York: Oxford

University Press.
Hess, Volker. 2005. "Standardizing body temperature: quantification in hospitals and daily life, 1850-1900." *Body Counts, Medical Quantification in Historical and Sociological Perspectives, edited by Gerard Jorland, Annick Opinel and George Weisz (Montreal: McGill-Queen's University press, 2005)*:109-26.
Hodges, Brian. 2005. "The many and conflicting histories of medical education in Canada and the USA: an introduction to the paradigm wars." *Medical education* 39 (6):613-621.
Jackson, Michael. 1989. "Paths toward a clearing Radical empiricism and ethnographic inquiry."
Johns, Timothy. 1990. *With bitter herbs they shall eat it : chemical ecology and the origins of human diet and medicine, Arizona studies in human ecology*. Tucson: University of Arizona Press.
Kohn, Eduardo. 2013. *How forests think: Toward an anthropology beyond the human*: Univ of California Press.
La Berge, Ann. 2005. "Medical statistics at the Paris School: What was at stake." *Body counts: Medical quantifications in historical & sociological perspectives*:89-108.
Latour, Bruno. 1988. *The pasteurization of France*. Cambridge, Mass.: Harvard University Press.
Latour, Bruno. 1993. *We have never been modern*. Cambridge, Mass.: Harvard University Press.
Latour, Bruno. 2004. "Whose cosmos, which cosmopolitics? Comments on the peace terms of Ulrich Beck." *Common Knowledge* 10 (3):450-462.
Latour, Bruno. 2013. Gifford Lectures. "Lecture 3: The Puzzling Face of a Secular Gaia." In *Facing Gaia: a new inquiry into Natural Religion*. University of Edinburgh.
Lindberg, David C. 2007. *The beginnings of western science : the European scientific tradition in philosophical, religious, and institutional context, prehistory to A.D. 1450*. 2nd ed. Chicago: University of Chicago Press.
Lock, Margaret. 2004. "Medicalization and the Naturalization of Social Control." In *Encyclopedia of Medical Anthropology: Health and Illness in the World's Cultures Volume I: Topics Volume II: Cultures*, edited by Carol R. Ember and Melvin Ember, 116-125. Boston, MA: Springer US.
Löwy, I. 1998. "'The Terrain is All': Metchnikoff's Heritage at the Pasteur Institute, from Besredka's 'Antivirus' to Bardach's 'Orthobiotic Serum'." *Greater than the Parts: Holism in Biomedicine, 1920–1950*.
Makari, George. 2015. *Soul machine : the invention of the modern mind*. First edition. ed. New York, NY: W. W. Norton & Company, Inc.
McKeown, Thomas. 1976. "The modern rise of population."
Mikkonen, Juha, and Dennis Raphael. 2010. *Social determinants of health: The Canadian facts*: York University, School of Health Policy and Management.
Nader, Laura. 1972. "Up the anthropologist: perspectives gained from studying up."
OED. "nature, n.". In *Oxford English Dictionary*: Oxford University Press.
Porter, Theodore M. 2005. "Medical quantification: science, regulation, and the state." *Jorland G., Opinel A., & Weisz G.(eds.)*:394-401.
Pressman, Jack D. 1998. "Human understanding: psychosomatic medicine and the mission of the Rockefeller Foundation." In *Greater than the parts: Holism in biomedicine, 1920-1950*, edited by George Weisz and Christopher Lawrence, 189-208. London: Oxford University Press.
Rabinow, Paul. 2011. *The accompaniment : assembling the contemporary*. Chicago:

University of Chicago Press.
Raphael, Dennis. 2011. "A discourse analysis of the social determinants of health." *Critical Public Health* 21 (2):221-236. doi: 10.1080/09581596.2010.485606.
Rees, Tobias. 2010. "To open up new spaces of thought: anthropology BSC (beyond society and culture)." *Journal of the Royal Anthropological Institute* 16 (1):158-163.
Rees, Tobias. 2014. "Humanity/Plan; or, On the" Stateless" Today (Also Being an Anthropology of Global Health)." *Cultural Anthropology* 29 (3):457-478.
Rose, Nikolas. 1996. "The death of the social? Re-figuring the territory of government." *Economy and Society* 25 (3):327-356. doi: 10.1080/03085149600000018.
Rosen, George. 1958. *A history of public health, MD monographs on medical history*. New York: MD Publications.
Rosenberg, Charles E. 2002. "The Tyranny of Diagnosis: Specific Entities and Individual Experience." *MILQ Milbank Quarterly* 80 (2):237-260.
Sharp, Hasana. 2011. *Spinoza and the politics of renaturalization*. Chicago: The University of Chicago Press.
Simpson, Audra. 2014. *Mohawk interruptus : political life across the borders of settler states*.
Sub.Media. 2017. No Permission Needed: Mutual Aid in an Age of Climate Catastrophe.
Szreter, S. 2003. "The population health approach in historical perspective." *Am J Public Health* 93 (3):421-31.
Szreter, Simon. 1988. "The Importance of Social Intervention in Britain's Mortality Decline c. 1850? 1914: a Re-interpretation of the Role of Public Health." *Social history of medicine* 1 (1):1-38.
TallBear, Kim. 2014. "Standing with and speaking as faith: A feminist-indigenous approach to inquiry." *Journal of Research Practice* 10 (2):17.
TallBear, Kimberly. 2013. "Native American DNA : tribal belonging and the false promise of genetic science."
Weber, Max. 1930. *The Protestant ethic and the spirit of capitalism*. New York London: Scribner ; G. Allen & Unwin.
World Health Organization. 2008. Closing the gap in a generation: Health equity through action on the social determinants of health. edited by Commission on Social Determinants of Health. Geneva.
Young, Allan. 1976. "Some implications of medical beliefs and practices for social anthropology." *American Anthropologist* 78 (1):5-24.
Young, Allan. 1982. "The anthropologies of illness and sickness." *Annual review of anthropology* 11 (1):257-285.
Zola, Irving Kenneth. 1972. "Medicine as an Institution of Social Control." *The Sociological Review* 20 (4):487-504. doi: 10.1111/j.1467-954X.1972.tb00220.x.