

Plants and People: Education in the Outdoors

In the current dominate American socioeconomic culture of capitalism and consumerism, comes a time of mass-production and the standardization of practices across the board. Two products of these systematic practices are industrial agriculture and standardized testings of our children. A shared commonality they have is being results oriented, focusing on production numbers and grades. As a result of these practices being the norm for the past half century, there is a growing degree of separation of the relationships between people, their environment and the source of their food. This topic is discussed at length in the book *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. It states that the results of this separation are “diminished use of the sense, attention difficulties, and higher rates of physical and emotional illness” (Louv, 2005, p.34). In my studies this quarter, I have explored alternative, nature-based educational models while simultaneously exposing myself to small-scale agricultural models and alternative philosophies to growing food in hopes of reconnecting myself and my communities to the ecological and agricultural systems inherent to human existences.

Through an internship at the nonprofit organization Garden-Raised Bounty (GRuB) I spent the quarter as a part of the farm crew and field trip team, both of which work in tandem with a cohort of high school students enrolled in GRuB's alternative high school program. As a farmer on an small CSA (community supported agriculture) farm using organic practices I was involved in nearly every phase of production aside for the planning of where plants would be put in the field. We began the season with lots of seeding and potting up of already started plants to prepare them for their hardening-off period. This is a phase during which the plant starts are more exposed to natural conditions outside of a propagation greenhouse, which allows the chance to toughen up before they are put into the ground and are fully exposed to whether and wildlife.

Other tasks included tilling the fields and preparing and shaping the bed to get them ready for planting. Much of this work included mixing and adding soil amendments to the land. We built up our compost pile and sifted last year's finished compost to include in our potting soil mixture. Drip-tape, a form of irrigation system, was laid and tested repeatedly, as well as the instillation of mobile overhead watering systems. We tended to the plants in the greenhouses, and direct sowed into several of beds for crops that would be among the first ready when harvest began in May. Then when time came around we began planting outside, and also constructed a temporary greenhouse around several beds in our main field. Hot house plants such as tomatoes, peppers, basil and eggplant were planted here, and trellises established for the tomatoes and peas elsewhere.

One of the big planting projects I was a part of this spring was with the potatoes. We spent an afternoon splitting the seedling potatoes Heather, the farm manager, had purchased and covered the exposed sides with fir bark powder to protect the potatoes from mold exposure. We let them sit a day before planting them in four, deep furrows, 130 feet long that Heather had plowed with a mechanized tiller. Each of the seedling potato cuttings were laid a foot apart with their leaf sprouts pointing upwards, covering them entirely with an inch of soil on top. We had four varieties to plant in the field and four people to do the work. Once they were all in, we covered them with a light cloth known as row-cover, to protect the plants from the elements, and laid the irrigation tapes in each furrow. As the plants grow and their shoots poke through the soil, we continue to cover them in dirt until they become mounds rather than the furrows they began in. This helps to increase the amount of potatoes that are produced as there is a larger portion of the plant underground. With each new layer of soil, the drip tape is set aside and then placed back on top, not buried along with the potatoes. While I won't likely be around for the harvest, I was told that great care is given when digging up the potatoes, and I believe they do most of it by hand so as not to damage any of the new potatoes.

The group of interns, myself included, discussed the specifics of our soil's micro-nutrient and pH levels with Heather and she spoke to why we add each of the amendments. One of the main texts

she references in her work with the soil at GRuB is *The Soul of Soil: A Soil-Building Guide for Master Gardeners and Farmers*. In it lies many tables of information on cation, anion and micro-nutrients, their interactions and organic sources and which plants and weeds favor which specific soil conditions. It also discusses the complex system of living organisms within a variety of soil structures, and techniques for building up the health of your soil, or its tilth. They say, “Tilth is to soil what health is to people” (Gershuny and Smillie, 1999, p. 16). By focusing much of our efforts on creating the ideal balance of nutrients and organisms in our soil, we are setting the stage for our plants to grow and produce highly nutrient rich vegetables. Without such considerations of the soil's well-being prior to sowing seeds and planting crops, the quality of not only the vegetables would suffer, but the system as a whole would deteriorate over time and struggle to meet the demands of production.

Through exploring the organic practices used at GRuB, and by getting my hands in the dirt and feeling its powerful potential, I can see the benefits of this form of agriculture as an alternative to the chemical pesticides and fertilizers used in industrial agriculture, which reduce the health and living components of soil by intentionally introducing toxins to the environment we grow our food in. By bringing life back to our soils, and nutrients back to our food, we can begin to mend our broken agricultural systems that are failing to produce healthy food and are damaging environmental integrity in the process. And by engaging in it directly and educating youth to do the same, we are also healing our own personal relationship to the land and by extension how we care for our body's health.

Another form of farming I exposed myself to this quarter is Bio-Dynamic Agriculture, which I believe takes organic agriculture another step further. They strive to not only do no harm, but to also help restore the health, vitality and sustainability of the piece of land on which they are located. To explore this topic I attended a full-day introductory workshop which discussed the basic principles and philosophies that bio-dynamic (BD) agriculture is founded on. Rudolf Steiner first introduced the world to BD in his agricultural lecture series in 1924. In them he lays out his perspective on spiritual and celestial connections to plants and their growing cycles. Through the study of his teachings, modern

day farmers are integrating his holistic perspective of seeing a farm as an individual entity and recognition of the interaction dynamics that exist between each of its parts and universal forces. William Thompson, a BD farmer in California, explains, “The biodynamic approach to agriculture helps us re-envision the farm as an organic, living thing, not a mechanical object.” It is through the careful attention to the interactions of life on a farm that a BD farmer is able to manage the tender balance of growth and decay. One aspect of BD that resonates with me is the treatment of pest species as just another part of the whole. Thompson goes on to say, “There are no “weeds” or “pests” on a biodynamic farm, only plants whose purpose we haven't discerned or populations that are out of control... Rather than destroy them with poisons, we introduce ducks, geese or sheep that have a use for [the weeds]” (1992, p. 2).

The ultimate goal of BD agriculture is to build and support a self-sustaining system in perfect harmony and balance with natural cycles. With that goal in mind, BD farmers try to grow and produce all needed amendments and fertilizer on the farm. The manure is turned into compost and applied back to the soils from which the livestock grazed. One of Steiner's major lessons in his lectures is what are known as The Preparations. Each preparation is a unique combination of organic materials, able to be grown or produce on site, that are fermented and treated as a medicine for the farm land and community. The purpose of the preparations is to help restore and regenerate the natural integrity and resilience that the ecosystem possesses. Each serves a unique purpose for the nutrient development of the land. For example, the Dandelion preparation, also known as 506, made by fermenting dandelion flowers in the mesentery of a cow, helps to encourage the presence of silica, sulfur, potassium and boron in a compost pile prior to application on the land.

While the recipes and theories behind the preparations are detailed and elaborate, and beyond the scope of this paper, I wanted to include this brief introduction to touch on the concepts and show how they bring a spiritual, personal relationship to farming and stewarding a piece of land. Each of the preparations is associated with a planet or celestial object in our solar system, and the forces said to be

carried in each of the preparations are a concentration of those energies. As another example, 505, the Oak Bark preparation, is associated with both the moon and mars, and its affects on the system are correlative. The moon has a strong influence on the waters here on earth, and this preparation is therefore said to help regulate the water content of the soils. Mars named after the Roman mythological figure Mars- god of war and agriculture. The 505 prep similarly has a strong influence on the disease resistance of the farm system.

Another aspect considered in BD is the cycle of the moon, which plays a hugely significant role in daily activities on the farm. A planting calendar is produced each year in the BD community that translate the influence the positions of the planets have on the growth of the plants. Certain days each month are “blackened out,” meaning that they do not suggest you plant anything on those days. Other days are recommended as flower or root days, where you might plant a specific crop that associates with it, like a potato, or choose to harvest your apples on a the day when most of the energy in a plant is concentrated in its fruit. As for the moon's specific influence, I was taught in the workshop that not only the phase of the moon, but also the position in its elliptical orbit around the earth and its movement above and below the equator impact the water in a plant. As the moon passes below the equator, the balance of water in a plant descends into the roots, making it a good time to transplant or prune. How all this is determined is something I am not well aware of, though I do believe that energy exists in all things, and that these energies are constantly interacting and influencing each other.

By seeing the farm as a self contained entity, an ecosystem within the larger cosmic container, a more holistic, whole-system oriented practice is established. The needs of each of the parts are being met by treating the system as a whole, and by integrating each of the parts into balance with the others. The focus of the BD farm is on the process of healing and providing for the life of the area, rather than the production of as many fruits or vegetables as possible. Focusing on the health of the system over an individual part's ability to produce is one way people are working to mend our relationship to our environment, and our shared health, so that we may learn to live within the means of our planet's

capacity. Putting the farm into the context of the whole reframes the mechanistic world view that has caused ecological systems failure and the poisoning of our air and water, and works instead to regenerate the resilience of the planet's ecological systems.

There is a shared connection between BD agriculture and Waldorf education- both are founded from the anthroposophical teachings of Rudolf Steiner. The common thread that I followed this quarter is the holistic perspective each takes when interacting with either the farm or the child. Like biodynamics, Waldorf strives to see children as dynamic beings, in relationship with their environments. As such, the children's behaviors are put into context with who they are as a developing individual. Volunteering at a Waldorf affiliate preschool for the past 8 weeks, Bird Song Children's Garden, my primary exposure has been to the world of early childhood development. In Steiner's teachings, the child, and all humans are said to have 12 sensory systems, that develop at different points in a person's life. For the young child, there are four foundational senses that are being developed and ideally integrated into the child's being. A well integrated child is healthy, self-confident and able to navigate the world in a constructive manner. The four lower senses are focused on how we experience ourselves in our bodies; they are the tactile/touch sense, the sense of life, the sense of movement and the sense of balance.

The daily rhythms and activities at Bird Song have been established to help the integration of each of these senses, so the children can practice and gain confidence in themselves and their movements. The main lessons of the tactile sense is in knowing you have a physical body, and that it exists in a larger world. It can give a sense of security when well developed, and can lead to poor spatial relationships and feeling on edge around others when not strengthened early on (Ross, 2013). To help the children develop this sense they spend a large portion of every day outside, in all weather conditions. Through exposure to the elements over the course of the year, by moving through rain gear, by playing in nature, and indoors with toys, the child strengthens and integrates their touch sense.

The predictable rhythm of each of the days, particularly the regular meal time, aids in

development of the sense of life- awareness of one's own well being and health. The children learn which plants in the garden and forest are edible and available at certain points in the year, and are exposed to the changes of the seasons and the cycles of life through this practice. Over the course of the year, and particularly if the child repeats the experience two or three years, being outside in nature everyday helps the child build awareness of self and environment and to develop the courage to try new things. This development is crucial to the integration of the life sense, and sets the foundation for the child to further explore their world as they grow and develop.

The sense of movement (self movement) and balance (coming to stillness) are practiced in several ways at Bird Song. First, through outdoor play time spent jumping, climbing, running, skipping, falling, lifting, and building they practice body mechanics. They are also given the responsibility and challenge of chopping vegetables for lunch on Mondays. This activity helps integrate all of the lower four sense, and in particular movement and balance because of the need to have self control while using a cutting implement. The concept of proprioception describes these senses as the awareness of ones own movement and body positioning. As a volunteer, one of my tasks was to do garden work, and the lead teacher emphasized good body mechanics as the children are observant and will learn from watching us work.

Another significant developmental goal, that some of the activities are in place to practice this skill, is known as crossing the midline. This is the ability to perform an activity with your right arm or leg on the left side of your body. Many of the circle song and movement activities are constructed in a way the challenges the children to cross the midline, touching, for example, their right hand to their left elbow. The connection of words to movement in the circles is also a pre-reading and language acquisition development technique. While these are just a few of the early childhood development strategies shared with me by the teacher(A. de Ney, personal conversation, May 24, 2018), I know there are many more in place as a part of the routine, and that in fact every part of the daily rhythm is specifically include to aid in the child's development of the lower four sense and to ready them for

grade school.

To connect back to my experience at GRuB, I wish to speak to the field trip program in place there. The scope of the program is entirely different than the routine offered in a school setting, as we are only engaging with the students on one day, for two hours. With that difference comes the ability to adapt each experience to meet the needs of the group. Last year, I worked to rewrite the curriculum used in their workshops and in that work involved the addition of a few activities tailored to different age groups. While that addition was a step forward for the program, I believe a lot more work and development needs to occur to expand the existing workshops to a point where there are essentially three different workshops on composting, etc., each connected to the educational goal of the age group it is tailored for. There would be a different set of language used for each age range, different activities involved and different learning objectives. That change would make the experience more of an educational one, rather than an experiential exposure to farming. For what the program is now, I think it does an excellent job at getting young minds engaged and excited about growing food, which is an invaluable experience in my opinion.

A major change we made to the program this year was offering a more focused experience. Rather than having each group of visitors attend 3 or 4 workshops, we narrowed it to just one or two, and then included a hands-on experience that related to the workshop. For example, we did several tours focusing on composting, and included in the workshop the chance to help us build up our compost pile. They learn in the workshop about the layering technique used at GRuB, and then are able to practice it for themselves adding first a layer of dried carbon material followed by manure full of life or nitrogen rich food scraps. This hands on experience often teaches far more than any orally presented lesson plan could. Keeping in mind that we are only with the group of youth for about two hours, the goal of the experience is mostly for them to make positive associations with farms and food. Connecting the experience to what they are already learning in school helps to integrate the learning perhaps, but most of all the experience of seeing and working on a farm should be an enjoyable one, so

as to help reconnect today's youth with the agricultural and natural systems that support them.

The GRuB School, which enrolls about 20 youth in a year long alternative high school program, is another way in which youth engage on this farm. These students attend class half of the school day, five days a week. They gain high school credits without having to be in a traditional classroom setting. When possible class is taught outside, and a regular part of the curriculum is experiential learning activities. While the school is unable to offer the same routine that Bird Song has constructed, the staff co-creates a safe atmosphere among the youth cohort. They do numerous team build activities, establish cultural guidelines and standards of engagement with each other and activities. They support the personal development of these students by offering opportunities for them to self-direct their learning, share their voice and opinion during group discussions, and challenge them to explore their boundaries and personal beliefs.

The GRuB model, the Bird Song rhythm, and many other outdoor education programs offer an incredible change in the direction and goal of the “traditional” education system. Without having standardized benchmarks of achievement, where each student must prove they possess a universal set of knowledge and skills, the youth is able to choose their interests, explore their personal talents and develop their own voice and opinions. While I do believe that it is worthwhile for people to have a foundational understanding of math, science, reading and writing, I know there are many means to that end, and that each child is unique in their learning style preferences. Education should be tailored to meet the needs of the individual students, not force everyone to learn through a standardized set of lesson plans and tests. By exposing young minds to real world applications of the subject material, and allowing them to explore topics in hands-on activities, the learning is solidified in the mind. Alternative education models, like those at GRuB and Bird Song, connect young people to the growing of food, and get them engaged with their natural environment, which both offer the opportunity for the students to integrate invaluable lessons in identity, community relationships and in personal health and well-being.

The opportunities for learning, healing and growing are abundant in a farm and garden setting. Having a regular connection to nature and the outdoors is integral for human health, something often forgotten in this technological era. By offering chances for developing minds to learn in and engage with the outdoors, they are given the chance to explore the world for themselves, and develop their own individuality. Just as many humans are in need of healing through strengthening connections with nature and natural rhythms, so too is the natural world in need of the chance to regenerate its health. The support offered by combining the two spheres of agriculture and education goes both ways. We need a connection with nature, just as it needs us to have a healthy and sustainable relationship with it. Without those connections, I fear we will continue to deteriorate our ecosystems' health, and in turn our own health will suffer greatly, as it already does in many ways. I will continue to explore alternatives education models and restorative agriculture efforts as I feel that I have much to learn, and much to offer there in, and that nature-based education has the potential to stimulate and support the shift of cultural values needed to sustain a global society.

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