

Making a Case for Natural Comb-Ripened Honey and Artisan Beekeeping Practices – Erik Berrevoets

Honey's beneficial qualities – an introduction

Probably like most of us I spent many years enjoying honey on toast, or on its own, without giving too much thought to where it came from, how it was processed, or the treatment of bee colonies. However, Rudolf Steiner's 1923 lectures on bees led me to explore honey and beekeeping in more detail. In these lectures he discusses the unique process by which honey is created and its benefits for people.

It is often thought that honey is made by plants and collected by bees, but Steiner points out that plants make nectar and this is what the bees collect from flowers. Nectar is rich in plant sugars such as fructose and glucose as well as aromatic, chemically volatile oils and other substances. The composition of nectar varies depending on the plant species, the region, time of the day, weather conditions and possibly a range of other factors of which not a lot is known. Once collected the nectar is stored in the bees 'honey sack' and upon their return to the hive the nectar is transferred to other bees and stored in the honeycomb to ripen. Once the honey has reached a certain consistency the honeycomb is capped with a thin layer of wax. These honey stores enable the bee colony to survive during winter or times of drought when no nectar can be found in nature.

In his bee lectures Steiner explains that flowers are strongly influenced by Venus the planet associated with love and fertility. As bees collect the nectar from the flowers of plants, these cosmic influences become part of the bee colony and its honey, and by eating honey we too benefit from these influences. He continues; nectar is plant based, but when it is stored in the bees' honey sack it becomes infused with astral forces. When we eat honey these astral forces stimulate our organs and internal processes, our elemental forces. Steiner also found that the honeycomb's unique shape provides further beneficial qualities to honey as the honeycomb's hexagonal shape is similar to that of quartz crystals made of silica. Steiner explains how silica provides solidity and structure to living matter, and that honey similarly provides structure and solidity to our bodies particularly as we grow older. He concluded that for these reasons honey is a very important food.

Honey and Beekeeping Practices

Once I appreciated the unique and beneficial qualities of honey I wondered how these were affected by beekeeping practices. Naively I assumed that bees foraged on fields of heather and were still kept in skeps as I had seen so often in my youth and as was done by the beekeepers in my grandmother's family. I quickly discovered that this is not so, and commercial beekeeping is as industrialized as most other forms of conventional agriculture: focused on maximizing honey production with little regard to the well being of the bees or

the qualities of the honey. Like industrial agriculture in general, commercial beekeeping too has been helped by science to increase honey production. The focus of this scientific research has been on breaking down complex biological processes in order to control, standardise, and mechanise these.

Steiner criticized this scientific approach for failing to understand nature holistically. Steiner argued that instead of breaking down biological processes, scientific inquiry should focus on the interconnections and relationships that occur in nature. With respect to bees he stated that a bee colony should be regarded as an organism rather than a group of individual bees, and as early as 1923 Steiner predicted that beekeeping practices that breakdown and manipulate the bee colonies natural processes without recognizing the colony's intricate relationships will have negative consequences for the colony's well being in the long term. A prediction that unfortunately appears to be realised in recent years with the rise of colony collapse disorder and damage of pests such as the varroa mite and small hive beetle.

Despite the manipulation of the bee colony's natural processes by most commercial beekeepers, very little attention has been paid to the possible effect of these beekeeping practices on the quality of honey. This lack of information was surprising I thought, as similar to cheese, bread or wine, honey involves the transformation of one type of plant or animal material into another. Nectar is the basis of honey in a similar way as milk, flour and grape juice are the basis of cheeses, breads and wine. With breads and wines this transformation takes place through yeasts, with cheeses through rennet and/or moulds, and with honey through the enzymes in the bees' bodies and the ripening process in the bee colony's honeycomb. Perhaps the lack of information on the effects of beekeeping practices on the qualities of honey shows how successful the beekeeping industry is in maintaining an image of honey as 'pure and natural'.

Industrial and Artisan Beekeeping and the Characteristics of Honey – A Comparison

Faced with this lack of information I considered that a possible way forward is to explore the differences between industrially produced breads, cheeses, and wines, and those made in what has been referred to as artisan food production by organization such as the Slow Food movement.

One of the key characteristics of artisan food production is a recognition that the qualities of produce are strongly influenced by their particular location, or 'terroir' as this is referred to with respect to wines, and more recently cheeses. Artisan producers understand and work with these differences in 'terroir' to bring about the best or unique qualities of their cheeses and wines.

The concept of 'terroir' is also very applicable to honey and beekeeping. Steiner stated that as honey's beneficial qualities are derived from the plants the bees collect the nectar, and hence the 'terroir' in which these plants grow will affect

the characteristics of the honey, similar to how this occurs with cheeses and wines.

Industrial beekeepers have paid little attention to the influences of 'terroir'. Instead they focus on maximizing the quantity of honey by transporting their colonies over hundreds of miles across different climate zones while following the nectar flow. In doing so they not only fail to explore how the unique qualities of a particular 'terroir' is reflected in their bees' honey, but also expose their bees to a wide range of environments with generally unknown levels of herbicides, pesticides, artificial fertilizers or genetically modified organisms, etc. Little information is generally available to consumers about the 'terroir' and the environment in which bees collect nectar, and most honey is sold as polyfloral honey with a homogenized taste and consistency. At best some commercially produced honeys are labeled with the generic floral varieties from which the bees sourced the nectar eg eucalypt.

Artisan producers also recognize and therefore often avoid the effects of chemical fertilizers on the vines or grain crops, and by extension on the quality of breads and wines, and the effects of fodder and the general diet of the cows on the milk and the qualities of the cheeses. Steiner commented that bees become used to the environment in which they live and are sensitive to changes in their diet. Industrial beekeepers prevent their colonies from consuming their natural diet of honey and pollen by replacing this with a mix of sugar syrup and 'pollen' made of soybeans during winter dormancy to increase the quantity of honey they can harvest.

As is well known industrial agriculture shows little respect for the integrity of animals and forces animals to live under conditions referred to as factory farming. Similar to industrial agriculture industrial beekeeping too interferes strongly with the bee colonies' abilities to express their natural behaviour. This occurs not only with respect to artificial feeding and migration as mentioned earlier, but also by disrupting the bee colony's natural reproduction process. Recommended industry practice is to kill a bee colony's queen bee every year and replace this with a younger one. Hence, each year industrial beekeepers need a large number of queen bees to repopulate their colonies. These are raised by specialized queen bee breeders. The queen bees are often knocked out with carbon monoxide before being artificially inseminated and sent across the country to be transplanted (grafted) into colonies from which the existing queen bee has been removed and killed. Steiner considered that bee colonies that result from artificial breeding should be considered ill and that this practice seriously undermines the bee colony's vitality. In fact he concluded in 1923 that if these practices continued, in eighty to a hundred years time no bees will be left.

Industrial beekeeping also interferes strongly with the bee colonies' abilities to build natural honeycomb, which as discussed earlier imparts honey with

beneficial qualities. The majority of bees are forced to build their comb on moveable frames that are hung in evenly spaced rows in a hive of an oblong shape. While this design makes it easier for the beekeeper to inspect the inside of the hive and to harvest the honey, the downside is that air circulates more freely than if the honeycomb was build naturally. The circulation of air makes it difficult for bee colonies to maintain the stable internal environment required for raising healthy brood. Hence bees are not too fond of frames and at every opportunity attempt to build comb structures to their own design. To prevent this, and fool the bees into building their comb on frames beekeepers insert a foundation made out of reused wax or plastic onto frames. Apart from the negative effect on the health of a bee colony, these frames with a foundation of recycled wax or plastic also are likely to affect honey differently to that ripened in naturally build honeycomb.

Another important influence recognised by artisan food producers as affecting the qualities of produce is the material or the equipment that is used in food production. Perhaps the most widely recognized example of this is the effect of oak wine barrels on the characteristics of the wine. Steiner points out that different materials affect bee colonies and honey differently, as do the chemicals and paints that are used on the hives by industrial beekeepers.

Wine and cheese makers know that the qualities of their products are affected by the treatment of the grapes between harvest and pressing, and the treatment of the milk between milking and cheese making. For example it is important for wines and cheeses to be kept at a constant temperature during the maturation and storage. So too has cold pressed olive oil a superior quality over oil which has been heated, and there are qualitative differences between cheeses made from 'raw' unpasteurized milk and pasteurized milk. Industrial beekeeping however does not consider the possible effects of interrupting the honey ripening or maturing process, nor of the process by which honey is extracted from the honeycomb.

Beekeepers open their hives regularly for inspection and in doing so disrupt the stable internal environment and change in the temperature inside the hive and of the honey. The majority of honey available commercially is extracted from the comb by heating, the volatile substances of honey change easily, and one of the most critical factors that causes such a change is the temperature at which it is extracted from the comb. Furthermore, the opening of hives is commonly accompanied by the use of smoke to subdue bees and prevent them from aggressively defending their nest. Industrial beekeepers do not consider how these effects can change the characteristics of honey.

This brief overview shows how industrial beekeeping disrupts and mechanizes the intricate relationships between the bees and their environment. Rudolf Steiner identified that these practices resulted in 'sick' bee colonies and lead to a decline in their vitality. The result is the majority of commercial honey we

consume is made by 'sick' bee colonies. In addition to the quality of honey being compromised by being created by 'sick' colonies, this is exacerbated to my mind, by practices such as artificially feeding bees sugar syrup, the use of recycled wax or plastic foundations.

These conclusions about the negative effects of beekeeping practices on the qualities of honey led me to explore the existence of beekeeping practices that showed more respect for the natural processes of bee colonies and the honey they create.

A Brief Outline of Bee Centered or Artisan Beekeeping

I discovered that beekeeping traditions more attuned to the principles of artisan food production are available to us through the writings of Abbe Warre and Johann Thur and Ross Conrad and that these have been taken up by Warre and organic beekeepers. For people like myself who not only want to keep bees in an artisan manner but also in a biodynamic tradition beekeepers such as Gunther Hauk, Michael Thiele and Michael Weiler lead the way. Some of these practice and how they differ from industrial beekeeping are presented in the table below.

Table One Beekeeping practices and their effects on honey

Industrial	Artisan
Little attention is paid to the levels of pollution or toxicity in the location bees gather nectar	As much as possible bees collect nectar in location that are free from toxicity and pollution
Honey comb is constructed in hives made of materials treated with chemical paints and other synthetic substances	Honey comb is constructed in hives that are not treated or only treated with natural products
The bee colony's natural reproductive process is prevented and replaced by grafting artificially inseminated queen bees in a colony	The bee colony's natural reproductive process is allowed
Honey is stored and ripened in honey comb constructed on foundations of recycled wax or plastic	Honey is stored and ripened in natural honeycomb for between 3 to 9 months and harvested once the winter dormancy has finished.
Honey comes from bees that are fed artificially during winter	Honey comes from bees that are fed their natural diet
Honey comes from bee colonies that may have been treated with antibiotics, or chemicals to minimize the effects of pests and diseases.	Honey comes from bees whose health has been build up through natural methods
Honey is heated to facilitate extraction	Honey is extracted at hive temperature and exposure to the air is kept to a minimum

Natural Comb-Ripened Honey – Some Concluding Remarks

In his bee lectures Steiner expressed the hope that once the beneficial qualities of honey become fully realised, beekeepers will receive a price for the honey their bees produce that is based on quality rather than quantity. As consumers develop a greater awareness of the benefits of natural comb-ripened honey that is not heated during extraction and produced by beekeeping practices that respect the bee colony's natural processes, then in turn beekeepers will adopt beekeeping practices that benefit both the well being of their colonies and of those who want to enjoy the benefits of honey.

Until such a time, and except for keeping bees ourselves, the only guarantee consumers have about the quality of the honey they purchase is by obtaining honey that is created in accordance with the International Demeter Standards for Beekeeping and Honey Products, or organic standards.

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