APIMONDIA
SCANDINAVIA 2025
SWEDEN | DENMARK | NORWAY

PP-197 [Beekeeping Technology and Quality]

Fig.1 Conversion cell (orig.)

A new type of cells built by bees

Dragos Negru MD
email: carpatica.mellifera@yahoo.de

The most important capacity of the bee colony is the building up of the honey-combs.
Honeycombs are built up by the worker bees with wax secreted from the wax mirror glands. The wax secretion is a natural physiological phenomenon manifesting the moment when there is nectar and pollen in nature.
The honeycomb building capacity signifies the colony's ongoing renewal, and provides it with vitality and good health.
A bee colony always develops according to a certain pattern.
The life of the bee colony cannot exist without honeycombs, for honeycombs, owing to the way they are built up, provide us with the identification elements of the pattern according to which the colony is organized.
The colony does the building following a matrix pattern – the invisible framework. This matrix can be perceived as an invisible higher level or pattern that leaves its permanent print on the colony's activity. The visible performance of the bee colony life, accessible to our physical senses, is governed by the matrix.
Fully understanding that the matrix is the essential element in the bee colony's life, I have tried to emphasize it and to integrate it in my working system.
As the matrix is an impalpable, abstract element belong-ing to subtle levels and plans, I have tried to find its correspondence in organic levels. Starting from the premise that honeycombs are at the very basis of the colony life performance, depending on their specific building modality in nature, I have identified the five elements of the matrix as their links between the material level, and the subtle levels. These elements help us know and understand the pattern governing the colony activity, for they represent the extension of the matrix into our material universe. I have used specific names fit for each element, for the sake of an easier and better understanding.

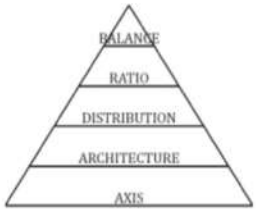


Fig. 1 Matrix and its elements(orig.)

The five elements of the matrix are: AXIS, ARCHITEC-TURE, DISTRIBUTION, RATIO, and BALANCE.
First element: AXIS.
• The axis stands for the colony's capacity to develop from top to bottom through the construction of honeycombs, and not from bottom upwards.

Second element: ARCHITECTURE.
• The architecture refers to the types of cells that make up the honeycombs and their position.
• The architecture is fully depending on the axis. No axis, no architecture.

Here are this element's characteristics:
-The drone brood cells are located at the periphery of the worker bee cells, laterally or at the very base of the nest;
-The cells for the depositing of the honey are located in the upper part, above the worker brood.
• There are at least five types of cells. **Besides the known ones, I have identified a new type of cells that I call "conversion cells."**

Third element: DISTRIBUTION.
Distribution is in direct connection with architecture, for architecture determines distribution.
Distribution is the way in which the colony uses cells, depositing nectar, pollen, and eggs in them.
We notice that architecture refers to the construction of cells, and distribution, to the way in which these cells are used.
Thus, architecture generates distribution.

Characteristics:
-The capped honey is located above the brood, in the upper part of the honeycomb;
-The worker bee brood is under the maturated nectar, whether capped or uncapped;
-The drone brood is under the worker bee brood;
-The bee bread is around the brood, in the upper part or laterally.

Fourth element: RATIO.
Ratio refers to the organization per ages and specializations of the colony population;
Ratio is the basic element in assessing queen bees and directly influences swarming, productivity, and the good health of the bee colony. In this respect, a good quality queen bee that is placed in a system having a faulty ratio may send a wrong message to the beekeeper.
Ratio relies directly on distribution.
Examples:
-A high number of worker bees – increased productivity;
-A small number of worker bees and a high number of "nurse" bees – "meat" colony, low productivity;
-A high number of "nurse" bees – increased tendency for swarming;
-A low number of drones – stress, lack of vitality, average productivity.

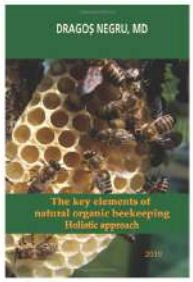
Conclusions:
We notice the synergy of the matrix elements, and their existence in interdependence.
These 4 names are specifically chosen, to make them easier to understand, and to make it easier to understand the colony's development in relation to each of these elements.

The fifth element is the BALANCE.
• Nothing in the colony life occurs at random; it is all governed by the law of balance.
• A holistic, appropriate maintenance system must comprise all of its elements in synergy one with another.

The last element governing all the other ones, balance, is on top of the pyramid. Thus we notice something extremely interesting: the matrix elements generate one another starting from the base (AXIS) going up to the top (BALANCE).

The matrix can be identified and approached through these five elements.

The synergy of these five elements relies on the performance of all the physical, chemical, and biological processes, in the form of its relation to the matrix.



Conversion cells are the cells resulting from the reduction of the drone cells' diameter until they reach specific dimensions. They represent a particular type of cells that reflect certain changes in the colony. Their peculiarity resides in the fact that only the upper part of the drone cell is modified, but not the interior. Actually, these are drone cells whose outside diameter has been reduced by the addition of wax.
The main characteristic of these cells: they are thick and round, a noticeable difference from the other types that are hexagonal (worker bee cells, drone cells), or linking cells, which are irregular in shape.

Beyond the things we can see, such as cells built up by bees, it is important for us to understand the link between the matrix and the phenomena that occur in the colony.
On this very basis, I have determined my own method of assessing the presence and status of the queen bee in the colony at any given point, emphasizing the existing status by means of one of the matrix elements: architecture. Architecture emphasizes different types of cells built by the worker bees, depending on the specific needs of the colony at the moment. In this way, knowing the matrix and its elements thoroughly, we can evaluate the colony's dynamic development without having to open the nest and analyze the brood frames, or looking for the queen bee or the freshly laid eggs.

The holistic approach that I now advocate relies on the principles of holism, which we find completely in the method which assesses the presence of the queen bee by analyzing one single element of the matrix: the architecture. By evaluating this one component, we access at once the whole, which then reveals to us each of its peculiarities and dynamics in its entirety.
Inserting one single empty frame into the active area of the nest and the next day examining the types of built-up cells, we learn with just one look the status of the colony and what its needs are without disturbing the bees by other operations such as lifting the frames and searching for the brood or the queen bee. I call this method "the eloquent honeycomb method" because the "speech" of the colony is present in the construction modality of the honeycomb.

More information about holistic maintenance of bee colonies on natural combs can be found in the book: The key elements of natural organic beekeeping. Holistic approach

The book can be ordered at the following link:
Amazon.com: The key elements of natural organic beekeeping: Holistic approach: 9781693774393: Negru, Dragos

PP-197 [Beekeeping Technology and Quality]
A new tipe of cells built by bees. Holistic approach

Dragos Negru
no affiliation

INTRODUCTION: There are a known a few types of cells built by bees. However, by giving the bees the possibility to build the combs naturally,appear in addition other types of cells.

Objectives
I sought to identify ways to evaluate the activity of bee colonies and the condition of the queen without opening the hive. The capacity to build natural honeycombs is the bees' most important characteristic,

The conversion cell
Conversion cells are the cells resulting from the reduction of the drone cells' diameter only in the upper part. They represent a partic-ular type of cells that reflect certain changes in the colony..

Method
Inserting one single empty frame into the active area of the nest and examining the types of built-up cells, we learn with just one look the status of the colony and what its needs are, without disturbing the bees by other op¬erations such as lifting the frames and searching for the brood or the queen bee.

I call this method "the eloquent honeycomb method" because the "speech" of the colony is present in the construction modality of the honeycomb. The method is applied during the active season, provided that there is nectar collection in nature.

RESULTS: The use of the eloquent honeycomb method at queen rearing and also when asessing the situation of the queen in the colony.

The interpretation:
- no honeycomb: the queen bee did not hatch;
- drone cells: the queen is not mated
- conversion cells and drone cells: the queen bee hatched and is newly mated, with the spawning about to begin. This type of cells is built when the spawning has not yet begun
- conversion cells and worker bee cells: the queen bee has started laying her eggs.

CONCLUSION: Using this method, a new type of cell built by bees is highlighted, as well as its importance in assessing the state of the queen in the bee colony. The effectiveness and precision of the method also represent an advantage and pave the way for a holistic approach to beekeeping.