

At the core of visionary invention lies a surprising skill

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Barbara McClintock, who studied genetics and chromosomes, is one of the scientific inventors I admire. McClintock's ability to research new phenomena and structure information was exceptional and superior. Perhaps this is the reason why she is the only woman in history who has an undivided Nobel Prize in Physiology or Medicine.

McClintock's superiority can be illustrated with a case where a research colleague at Stanford University faced a dead end with his study of the chromosomes of the *Neurospora* mould and called McClintock for help.

McClintock delved into the problem for a few days but made no progress. Annoyed by the situation, she headed to the park and sat beneath giant eucalyptus trees. She described shedding a few tears, but mainly she was intensively and non-consciously thinking for half an hour.

Suddenly, she knew she could figure it all out and ran back to the lab. And voilà – miniscule chromosomes were now visible under a microscope, not only to her, but to others as well. During the five following days McClintock found a way out of the dead end and contributed more to the research being carried out than the original research group had during the three previous years!

What was the secret of McClintock's work? How did she manage to solve everything in such a short time? The book *A feeling for the organism: the life and work of Barbara McClintock* reveals the surprising method she used. It differs significantly from the methods we typically solve problems with.

Traditionally, when we encounter a problem, we start working with the problem. For example, we collect data, which we then process in different ways or develop into ideas. We think that working *on the problem* is the way to solve it. We may also search for a way out of mentally burdensome situations by blaming circumstances, a lack of information or time, resources, other people, or by explaining that the case is impossible. In other words, we are looking for excuses and explanations outside ourselves.

Instead, McClintock did something contradictory, realizing that the cause of the impasse was her own inability to see. McClintock described that what happened to her under the eucalyptus trees was pivotal. A change took place in *herself* then that made it possible to see the solution.

So, McClintock did not continue to work *on the problem* without results – instead she started *to work on herself*. Something was preventing her from seeing – and the obstacle was she herself. Therefore, she worked on herself to gain the ability to see with which to overcome the obstacles.

According to McClintock, the only thing you need to do is to move yourself out of the way. *“As you look at these things, they become part of you. And you forget yourself. The main thing about it is that you forget yourself.”*

She described her experience of knowing with the plants as a *“feeling for the organism”* where she felt *“real affection”*. She knew individual plants so well that she could have written a biography of each one. Thus, McClintock's surprising skill was empathy combined with inner knowing. Her scientific work was strongly based on intuitive, non-conscious thinking.

McClintock described her work in front of the microscope thus: *“I found that the more I worked with them [chromosomes] the bigger and bigger [they] got, and when I was really working with them I wasn't outside, I was down there. I was part of the system. ... and everything got big. I even was able to see the internal parts of the chromosomes – actually everything was there. It surprised me because I actually felt as if I were right down there and these were my friends.”*

This was her primary way of acquiring new, invaluable information for research. No wonder she was laughed at by her peers. *“Mcclintockism”* became a synonym for unscientific methods, and she had to quit all academic publishing – until three decades later she was awarded the Nobel Prize for her pioneering work.

The case example shows that acquiring ingenious scientific insights also requires other skills than those on which the scientific method is currently based. Introspection, empathy and skills of intuiting are needed to support insights.

Would we dare to see how skilful and wise we could be if we were ready to forget our own importance for a moment? Can we see empathy and working with ourselves as a gateway to our own genius?

Do we dare to direct our gaze to where humanity's potential has produced radical new knowledge and amazing pioneering? It does not mean abandoning scientific methods, rather utilizing the full human potential. We may not have time to wait decades to solve the major problems of our time.