
Qualities

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THE CELEBRATED GENETICIST, Barbara McClintock, was well-known—and considered rather eccentric—for cultivating what has been called a “feeling for the organism.” A life-long student of corn and its genetic organization, she would observe every plant she studied, starting when it was a tiny seedling. “I don’t feel I really know the story if I don’t watch the plant all the way along, so I know every plant in the field. I know them intimately, and I find it a great pleasure to know them” (Keller 1983, p. 198).

McClintock’s biographer, Evelyn Fox Keller, tells of the geneticist’s meeting with a group of graduate and postdoctoral biology students at Harvard University. The students were responsive to her exhortation that they “take the time and look,” but they were also troubled. Where does one get the time to look and to think? “They argued that the new technology of molecular biology is self-propelling. It doesn’t leave time. There’s always the next experiment, the next sequencing to do. The pace of current research seems to preclude such a contemplative stance.”

McClintock went on to tell the students how fortunate she had been for having worked with a slow technology, a slow organism. Other researchers disliked corn because you could only grow two crops a year. But she found that even two crops a year were too many. If she was really to observe her plants adequately, one crop was all she could handle.

McClintock had little patience for her many colleagues who were “so intent on making everything numerical,” and who therefore missed much of what could be seen. Because of her commitment to the whole, qualitative organism,

her own method was to “see one kernel [of corn] that was different, and make that understandable.” She felt that her colleagues, in their enthusiasm for “counting,” too often overlooked that single, aberrant kernel.

Through such oversight, those colleagues sacrificed the potential richness of science. “Things are much more marvelous than the scientific method allows us to conceive” (Keller 1983, pp. 198-207). As for McClintock herself, her “slow” attention to the qualitative nuances of individual corn plants led eventually to discoveries for which she was awarded the Nobel Prize.

A World of Qualities

To pursue a line of thought suggested by the student of language, Owen Barfield: imagine a geologist who, one thousand years from now, uncovers a statue of a human being. Assume further, and quite fantastically, that this geologist has never heard of sculpture. We can, therefore, imagine him contriving various explanations based on geological, hydrological, and meteorological processes to account for the remarkable shape of the statue. But, of course, if he should subsequently learn about sculpture, at least some of his explanations would assume a radically different form.

The difference is instructive, and points us toward what it would mean for science to become qualitative. The key here is not that the geologist would now account for the existence of the work of art by referring to the sculptor’s purposes and material activity. Rather, it is that any adequate attempt even to *describe* the statue requires use of a language quite unlike the conventional terminology of science.

Here, for example, are some descriptive phrases applied to statues by the art historian, Ernst Gombrich (1989): “an expression of bold defiance”.... “gesture of lassitude and resignation”.... “air of dignity and repose” “expression of pain.” Such phrases point to that interior or psychic domain where expressions and gestures arise. An expression, we could say, is an inner movement of consciousness with its own peculiar “shape” or quality. I wave my arm in a threatening way, and you recognize in the contours of the movement a particular inner stance. I wave again, signifying that I was joking, and the inner gesture evident in my arm’s motion invites you to enter an altogether different psychic context from the one you were in a moment ago.

Everyone, regardless of philosophical beliefs about psyche, consciousness, or soul, reads the body—and above all the human face—as the expression of an interior that is doing the expressing. When a beloved one smiles, we do not normally occupy ourselves with analyzing the structural features of muscle and bone “explaining” the smile. We explain it with reference to an inner world we share. If we did not do this kind of thing moment by moment, day in and day out, we would find ourselves adrift in society, unable to weave our own meaningful activity into the larger fabric of the world in which we live.



“Hunger,” after the drawing by Käthe Kollwitz. By Christina Holdrege.

My arm is part of my physical body, and as such its movement is the external embodiment of an inner expressing. But the human arm itself, apart from its movement and fully as much as the motionless limbs of the statue, is the result of a sculpting—in this case, a sculpting by the complex life process sustaining the physical organism. No less than the statue’s arm does this sculpted organ of flesh and bone and blood bear an expressive freight, whether it is the arm of a blacksmith or scribe, queen or scrubwoman, infant or octogenarian. We read something about the inner life, character, and circumstances of the person by observing the gestures “frozen” into the bodily form.

We can say, then, that qualities consist of that inner movement which we might call an “expressing” or “gesturing.” The “shape” of the movement, when outwardly embodied, is available for others to read—as a smile or scowl, dismissive wave, come-hither invitation, recoil of surprise, and so on. They achieve this reading by reproducing within their own consciousness the inner movement that is imaged in the outer form.

Two Ways of Looking

Every naturalist is familiar with identification keys. An aid for identifying species, the key typically presents you with a series of yes-or-no questions. For example, in trying to identify a particular tree, you might be led through the following

dialogue, where each succeeding question follows a “yes” answer to the previous one:

Is this a broad-leaved plant with simple rather than compound leaves?

Are the leaves opposite one another on the branches?

Is this an erect tree or shrub?

Are the leaves toothed?

Are the leaves also lobed?

Are the twigs neither red nor hairy?

Are the buds red and blunt with several scales?

Is the trunk bark rough and not flaking?

Then this is a red maple.

The key, in other words, presents you with a neatly logical framework consisting of a set of crisp, yes-or-no forks in your path of inquiry. Such guides are standard tools for every field naturalist.

Nevertheless, experienced naturalists do not often use a guide of this sort. The recognition they normally rely on in the field is, as zoologist C. F. A. Pantin has pointed out, strikingly different from the laborious, step-by-step logical exercise demanded by the key. “Our recognition of species in the field is commonly instantaneous. We do not consciously traverse a series of dichotomous alternatives, excluding one possibility after another before we arrive at the answer. Indeed it is difficult to believe that we do anything of this sort even unconsciously.”

Pantin also notes that the errors committed in what he calls “aesthetic recognition” (and which I will here call “qualitative recognition”) differ from the wrong turns we take when traversing a logical key. The latter mistakes are “as disastrous as an arithmetical error in calculation.” It is not hard to see why. Taking the wrong fork of a path whose divergences are designed to be clear and unambiguous quite naturally lands you in territory that is clearly and unambiguously the *wrong* territory. Every fork you take after the first wrong turn only confirms your lostness.

An error in qualitative recognition, on the other hand (“For a moment I thought you were your brother”) is less clear-cut. In general, Pantin suggests, there is truth in such errors. We were not *altogether* wrong. The mistaken impression was more or less *like* the thing we were really after. “You really do look a little like your brother. In taking you for him, I was genuinely recognizing aspects of him.”

This relates to another feature of qualitative recognition, which is that it is not analytical. “It seems to depend on the whole available impression,” and this totality is liable to various associative connections. Pantin illustrates this with wonderful examples:

Even a statement such as “The spines of the sea-urchin I am looking for have something of Chippendale about them — whilst that one looks Hepplewhite” may be significant. And if, when we are collecting *Rhynchodemus bilineatus* together, I say, “Bring me any worms that sneer at you,” the probability of your collecting the right species becomes high.

In this case, not only is the probability of correct identification high, but the collection rate will be much faster than when the students are directed to look for the various separate anatomical features that might be analyzed out of the “sneer.” Moreover, because the whole impression is an impression of the whole, it does not arbitrarily discard the greater part of what we can recognize in the organism. By contrast, once we have run through our list of yes-or-no features, “a very great deal of the impression which the organism makes upon us still remains ‘unused’. This residue is undoubtedly important in our recognition of species even though it cannot be analyzed in just this [yes-or-no] way” (Pantin 1954).

We Cannot Escape Qualities

The idea behind the identification key is straightforward and valuable: break the task down into discrete steps so that each one can routinely and reliably be executed. We arrive at simple, yes-or-no choices by reducing them to the terms of more-or-less unproblematic givens. When, in his famous experiments laying the foundation for modern genetics, Mendel counted violet-flowered and white-flowered peas, he did not puzzle over this or that peculiar shade of violet. Or, if he did, the fact is not reflected in his final tabulation of results.

Similarly, the analytical key aims for judgments that can be automatic and sure-fire: “This is that”—this pea flower is violet, this tree has red buds. But it is crucial to notice that the simple, yes-or-no question does not deliver us from the need to recognize qualities. It merely removes our attention from the recognition. It treats qualities as fixed and obvious, so that we need only count their instances. When we say, “This is that,” we increment our count without feeling any need to characterize either this or that.

In slightly different words: the analytical key requires us to recognize qualities without asking questions of them. The demand is, “Have you counted another instance of this quality or not?” rather than “By the way, what is this quality? Please describe it.” Adequate recognition is simply assumed. This is well and good, since we would be of little use in the world if we were required ceaselessly to contemplate or re-

examine every feature we routinely recognize and take for granted.

But if we are interested in science, two considerations become decisive here. One is that we *always* have to do with qualities, whether we are paying attention to the fact or merely counting instances. The other is that paying attention—and doing so by asking questions—is what science is all about. You will recall how Barbara McClintock strove to “see one kernel [of corn] that was different, and make that understandable.” By doing so, she was led to the principle of genetic transposition (Keller 1983). This in turn helped to loosen the logical structure of genetics, which had become rigid and brittle. If Mendel’s important discoveries had provoked as much interest in the qualities of his violet and white flowers as in his neat arithmetic ratios, we would likely have a far richer and more balanced discipline of genetics today (Holdrege 1996).

As McClintock knew so well, a quality always participates in the whole to which it belongs and is therefore revelatory of the whole. The analytical key collapses this revelatory potential down to a single yes-or-no value, or a group of such values. Such a narrowing of focus and restriction of insight serves many practical purposes. But if this “analytical collapse” of the world remains the sole or primary cognitive movement of the scientist, then the qualitative world begins to disappear and science verges upon a kind of formal emptiness disguised by formidable technique. Qualities alone can fill this void.

The Unity of Cognition

The point needs emphasizing: we can never escape qualities. It is easy to contrast propositional knowledge—the kind of knowledge that comes through analysis and results in sharply articulated, logically well-structured statements of “atomic fact”—with recognitional or qualitative knowledge. The contrast is essential, but even more essential is the understanding that the contrast occurs *within* the unity of cognition. There can be no analytic insight without qualitative recognition, just as there can be no qualitative recognition without analytic insight.

The difference between the two is perhaps more readily experienced than their unity. To use an example given by Ron Brady: you find yourself engaging in one sort of activity when trying to recognize an old friend in a crowd, and quite a different activity when struggling to identify a stranger in the same crowd by proceeding through a list of discrete features (Brady 2002).

You already have an overall impression of your friend—one sufficiently rich in its expressive potential to enable

nearly instantaneous recognition of him even in postures or activities you have never witnessed before. As you scan the crowd, there are countless possible gestures of form or movement that might tip you off to the presence of the person you are looking for. Each one of them bears the expressive signature of the same individual. That is, they are all shone through by the same unifying whole—a fact demonstrated by your ability to recognize numerous outward, novel manifestations as nevertheless being those of one individual.

In the analytical approach, by contrast, you are reduced to identifying, one by one, a set of low-level features described in unexpressive and rather more literal terms. Given a set of successful recognitions, you say, “This must be the person”—but you still do not *recognize* him in the way you would a friend. Time and familiarity are required before you can experience the inner, expressive unity that raises the particulars into a coherent and multi-dimensional whole.

Yet, despite these differences, we cannot consider the two strategies of cognition apart from each other. You cannot, after all, proceed through your analytical key—your list of discrete features relating to a single individual—without first being able to recognize human beings as distinct from, say, trees or rocks. Then, too, each of the features you are looking for—a long, straight nose, curly brown hair, a prominent wrinkle—while analyzed out of a larger whole, in turn expresses its own unity and must be recognized as such a unified expression. If you needed to learn to identify a nose (and all the other particular features) with the help of yet another analytical key, then your search would be hopelessly slow. And, even then, the effort to identify a nose would depend upon yet further “givens” that you would have to recognize.

The aim of the analytic approach is to make the necessary recognitions so simple and unproblematic that they are absolutely reliable, or nearly so. It is, of course, always necessary to strive toward reliability, and analytic methods are important to this striving. But any one-sided resort to these methods is itself highly problematic, for two reasons: first, it encourages reliance upon habit—upon recognitions so routine that we need no longer question or deepen them; and second, because it beguiles us into the belief that real knowledge is of a simple, yes-or-no sort, and that we do not have to deal with the qualities of things. Since this ignoring of qualities is an impossible ideal to achieve, we end up relying on qualities that we have unconsciously projected into the phenomena we are studying, as when we think of subatomic “particles” as solid little balls.

(The preceding is extracted from a very much longer paper that will become available next spring. While these extracts focus upon the qualities of living organisms, the point of the larger paper is that the world in general is compacted of qualities. It is an expressive world.)

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Of Bees and Birds (continued from page 11)

Jeanne, who ran these workshops as a benefit for The Nature Institute, has invested a tremendous amount of labor in mowing and maintaining pathways through parts of the several-hundred-acre tract along the Green River.

A substantial chunk of this tract is now on the market, raising fears that it may be lost as a wildlife sanctuary—this

despite the fact that, as Jeanne notes, “It’s a flood plain, not suitable for anything but sanctuary.” Foxes, bears, coyotes, and many other forms of wildlife make the land much more than a bird refuge.

If you have ideas for the future of this land, please call Jeanne at 518-325-5806.