# Goethe and the Phenomenological Investigation of Consciousness

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ABSTRACT

*Experience is an irreducible and essential component of any future science of consciousness. Goethe provides the basis for a phenomenological method well-suited to the scientific exploration of consciousness. This method itself opens up new approaches to the "hard problem."*

When physics reduces color to a wavelength (or more accurately, to tristimulus values) the loss seems slight. Whether a human visual system is registering red, or an electronic device detects 630nm radiation, is of little consequence to the science of physics. For that matter the electromagnetic radiation being studied may well be outside the visible region of the spectrum entirely. Thus the qualitative experience of color in humans is purely incidental to the discipline of physics. This situation is emphatically not the case for the science of human consciousness. The phenomena at the center of study are precisely the phenomena of conscious experience. They cannot be replaced or reduced to more material mechanisms without doing violence to the subject itself. One could even go so far as to state that while the neural correlates of conscious experience may be interesting, they are incidental to consciousness studies. Physics aspires to study the physical universe and its laws independent of human experience. Consciousness studies, by definition, must be concerned with conscious experience.

Unlike the emerging science of consciousness, neuroscience can proceed quite satisfactorily without recourse to the idea of consciousness. In this sense neuroscience is like physics. It is the physics and chemistry of particularly complex biological systems. From its standpoint consciousness can justifiably be treated as a "behavior" associated with a tiny part of a much richer range of processes, most of which, like the UV part of the spectrum, do not show up in consciousness at all. If in addition to a science of neurons we are to develop a science of consciousness, then science must investigate conscious experience itself and not reduce it to, or replace it by, unexperienced mechanisms. In such a science the phenomena of consciousness will be systematically studied and carefully analyzed, but, in this instance, no photodetector or even a sophisticated MRI can stand in for the conscious, experiencing subject.

This fact complicates the study of consciousness considerably. For better or worse, the phenomena of subjective, first-person experience are the objects of investigation. This is not to deny or diminish the considerable contributions made by cognitive neuroscience to consciousness studies. Nevertheless, I would like to emphasize the need for a science that concerns itself with the phenomenal field that is subjective human experience itself. We, therefore, require a method of scientific investigation that

works intensively with experience. In Goethe's phenomenological method of scientific investigation, especially when developed in the light of recent philosophical and scientific advances, we possess a candidate methodology for a science of consciousness that stays close to phenomena from our first naïve observations to the deepest theoretical insights.

Goethe and the Sciences

While best known for his literary productions, Goethe considered his greatest contribution to be in the sciences, particularly in the study of color.[1] In retrospect it seems clear that Goethe's particular contribution lay not so much in the specifics of his Theory of Color[2] but rather in his whole way of doing science.[3] In contrast with the conventional scientific method of his day, Goethe emphasized the role of phenomena at every level of inquiry. In some ways Goethe's criticism of naïve scientific realism anticipated the work of Duhem and van Fraassen, and his stress on lived experience foreshadowed the later philosophical positions of Husserl, Merleau-Ponty, and the phenomenologists generally. Yet Goethe, like J. J. Gibson, distinguished himself not so much as a philosopher but as a practitioner.

As we work towards a science of consciousness, Goethe's method of inquiry offers a distinctive approach that holds much promise. Moreover, implicit within it is a way of re-framing the so-called "hard problem" of consciousness. From this novel vantage point, a way of resolving the hard problem opens out -- an important issue to which I will return.

Critical to an appreciation of Goethe's approach to science is a thoughtful understanding of the purpose of scientific investigation altogether. Without such an understanding we might well conclude by holding Goethe accountable to an artificial standard of what science is. In Goethe's time, and to some extent even in our own, the purpose of science was to provide an account of the universe in terms of the dynamics of simple material objects endowed with primary qualities only (extension, position...). Following Galileo, Descartes and Newton, one reasoned from experiment to the fundamental, if hypothetical, entities that made up the "real" world behind appearances. Goethe was cautious about this as the goal of science.

> The investigator of nature should take heed not to reduce observation to mere notion, to substitute words for this notion, and to use and deal with these words as if they were things.[4]

His objection was not to working hypotheses, but to the establishment of them as truths about the world. Time and again he saw hypotheses become dogmas that dominated thinking for centuries, holding back fresh observation and insight. He would write:

> A false hypothesis is better than none at all. The fact that it is false does not matter so much. However, if it takes root, if it is generally assumed, if it becomes a kind of credo admitting no doubt or scrutiny – this is the real evil, one which has endured through the centuries.[5]

When hypotheses become dogmas they are "the lullabies that the teacher uses to lull his pupil to sleep."[6] Rather we should treat hypotheses in a provisional, workman-like way. They help us to understand the structure and relationships that exist within and among the phenomena, but they are not themselves the endpoint we seek. Rather,

> Hypotheses are like the scaffolding erected in front of a building, to be dismantled when the building is completed. To the worker the scaffolding is indispensable, but he must not confuse it with the building itself.[7]

If the hypothetical model is not the endpoint of scientific understanding, but only a means to another end, then what is the goal of scientific inquiry; what is the building that is hidden behind the dense hedge of scaffolding? In the following quotation we gain a glimpse of that which Goethe saw at the heart of the inquiry.

> Yet how difficult it is not to put the sign in the place of the thing; how difficult to keep the being (*das Wesen*) always livingly before one and not to slay it with the word.[8]

Goethe sought always to maintain a living connection to experience, be it a color appearance or a plant. Through lived experiences one could maintain a relationship to *das Wesen*, or the building behind the scaffolding of hypotheses and models. As we will see, it is through the systematic development of this experiential relationship that Goethe sought scientific insight.

At this point one might worry that Goethe is slipping into a vague and mysterious *Naturphilosophie,* or veering onto obscure Heideggerian pathways. While aspects of Goethe's thinking are indeed related to these directions, Goethe developed his own distinct and grounded way of doing science. Thus while Goethe's metaphysics embraced a non-reductionistic conception of nature, he also shunned the speculations of "nature philosophers," so characteristic of his time.[9] Rather he sought a form of empiricism.

Goethe's value to us regarding consciousness studies rests precisely in his reluctance to follow the conventional route of replacing phenomena with mechanical models or "objective" physical process. By insisting on a phenomenological method, Goethe seeks a mode of inquiry that stays with the phenomena of consciousness at every stage. It now remains to explicate briefly this method, and to explore its implications for the 'hard problem.'

Goethe's "Delicate Empiricism"

Prompted by a question from his friend Schiller, Goethe wrote him a letter describing his method saying, "In my observation of nature and reflection on it, I have attempted to remain true to the following method as much as possible."[10] He then described three stages of his phenomenological method:

1. "empirical phenomena" are the ordinary observations any attentive observer might make,
2. "scientific phenomena" arise through systematic experimentation, including the variation of external conditions,
3. "pure or archetypal phenomena" are the highest form of phenomena, and permit a perceptual encounter with the laws of nature (or consciousness).

At each stage Goethe sought to move deeper into nature, to understand her workings more thoroughly, not by abstracting from phenomena to models but by refining the phenomena themselves.

The process culminates in the encounter with an archetypal phenomenon. When a scientist sees the archetypal phenomenon rightly, he or she sees through it to the pattern or intelligibility of nature. It is the moment of epiphany which every scientist longs for. When Galileo looked at the swinging chandelier in the cathedral of Pisa, in a flash he saw the archetype for isochronous motion of a pendulum. Others in the cathedral were still at the level of empirical phenomena, seeing only a swaying chandelier. But Galileo had been prepared through his long study of mechanics and so had the eyes to see the archetypal phenomenon. This is the moment of discovery, of reaching to the nature of the phenomenon before us. The distinguished philosopher of science N. R. Hanson got it right when he wrote,

> Perceiving the pattern in phenomena is central to their being "explicable as a matter of course"... This is what philosophers and natural philosophers were groping for when they spoke of discerning the nature of a phenomenon, its essence: this will always be the trigger of physical inquiry. The struggle for intelligibility (pattern, organization) in natural philosophy has never been portrayed in inductive or H-D [hypothetico-deductive] accounts.[11]

A perceptual encounter with intelligibility is the goal of Goethe's method. He is not concerned to formalize that insight into a mathematical or mechanical model. In his opinion these detract, in fact, from the subjective and personal dimensions of the encounter. Rather Goethe would have the investigator stop here and rest content.

> This is perhaps the ultimate goal of our efforts, at least if we have the right sense of our limits... [It] is the very point where the human mind can come closest to things in their general state, draw them near, and, so to speak, form an amalgam with them.[12]

Yet, of course, it is exactly here that scientists do proceed further, seeking the causes of the observational pattern in terms of underlying mechanisms. This was as true for nineteenth-century physics as it is true today for cognitive neuroscience. For example, explanations for the psychological laws of color perception are sought at the neuronal or cortical level. Goethe was well aware of this tendency, allowing for it when sensible to do so, but also highly critical of it when taken as the only form of explanation.

Goethe's phenomenology is, thus, uncompromising. Theory, for him, is not to be couched in the formal language of mathematics. Rather he understood it in the root sense of the word *theory*, which means in Greek "to behold." Nature only becomes intelligible to the scientist by being rightly beheld. Clearly, naïve empirical observation is insufficient, but one can remain at every stage within the phenomenal and still rise to the theoretical level. The multiplicity of individual phenomena is gathered up into the archetypal phenomenon, which "is to be seen as a fundamental appearance within which the manifold is to be beheld."[13]

> The ultimate goal would be: to grasp that everything in the realm of fact is already theory. The blue of the sky shows us the basic law of chromatics. Let us not seek behind the phenomena – they themselves are the theory.[14]

Learning to See

As any science educator knows, students do not instantly "see" the pattern Galileo saw in the swinging pendulum. To move, in Goethe's language, from empirical phenomena through scientific phenomena to archetypal phenomena requires discipline, and most of all, a cognitive maturation of the student. In one sense, the brute facts of nature are forever the same. But as Goethe rightly remarks, every fact is already theory; that is to say, it is already seen in the light of a particular understanding. We bring ourselves to every observation and so see everything in the light of our habits of cognition. Epiphany waits on the remolding of our cognitive capacities: we must learn to see anew. This requires patience and an intimacy with the object of study; active engagement, but also a proper reticence about applying preconceived notions to the novel. This is what Goethe meant by "delicate empiricism."

> There is a delicate empiricism that makes itself utterly identical with the object, thereby becoming true theory. But this enhancement of our mental powers belongs to a highly evolved age.[15]

The "enhancement of our mental powers" of which Goethe writes is essential to the education of a scientist, and to his or her continued productivity. Goethe could be describing the marvels of recent research on neuroplasticity when, in a letter to F. H. Jacobi, he writes,

> To grasp the phenomena, to fix them to experiments, to arrange the experiences and know the possible modes of representation of them … demands a molding of man's poor ego, a transformation so great that I never should have believed it possible.[16]

"Molding of the ego" is central to Goethe's understanding of the scientific project. The relationship between the observer and the observed is dynamic and inseparable.[17] For Goethe, every attentive investigation of experience implies the transformation of self. "Every new object, well contemplated, opens up a new organ within us."[18] Scientific discovery presupposes such a transformation of self. Each epiphany waits on the "new organ" required for that specific knowledge. It is this that separates the unseeing novice

from the insightful scientist. Information can be found in books and databases, the manipulation of equations is an important technical skill better done by software packages these days than by mathematicians, but the ability to "see" a law of nature is reserved for the human scientist. Here lies the thrill that makes it all worthwhile.

Goethe's approach to science emphasizes this perceptual encounter with the laws of nature and not their abstract or mechanical representation. While important for all forms of scientific inquiry, Goethe's understanding of science is especially useful for the developing science of consciousness where the phenomena of lived experience comprise the very field of study. Increasingly we will need to learn to "see" deeper and more subtle patterns within conscious experience.

The Place of Neuroscience

Unlike Goethe, Paul Churchland and many others have argued for the explanation of consciousness on the basis of neuroscience, likening its role in consciousness studies to that of electromagnetic theory in the study of light phenomena.[19] That neuroscience has much to offer at both the theoretical and practical levels is obvious. Lithium can change the life of a depressed individual profoundly, and brain surgery can provide significant relief to the epileptic. We now largely understand these and other interventions in terms of the neuroscience that underlies consciousness. We can even monitor the neural correlates of specific emotional and intellectual states non-invasively and in real time -- all very impressive. And yet we can rightly ask, is this the only or most appropriate form of investigation, and the only modality of explanation applicable to consciousness? At this point it is instructive to look at explanation in physics, especially since Churchland and others often refer to it as the model science.

Explanation of physical phenomena in terms of material mechanisms reached its zenith in the late nineteenth century. The theories of relativity and quantum mechanics both underscored the already growing concern about the fundamental limitations of mechanistic models. Classical physics was too constraining, it simply had no place for the anomalies of the Michelson-Morley ether-drift experiment nor the puzzling spectrum of blackbody radiation.[20] It took many decades until finally the habits of nineteenth-century mechanical thinking could be set aside, and room made for a more sophisticated understanding of scientific theory required by such evidence. Relativity theory says nothing about the particular machinery of nature, but rather works at the level of the fundamental symmetries of space and time. It specifically overturned Fitzgerald's notion of physical length contraction at high speeds, and the mechanical ether theory held on to by all nineteenth-century physicists including Maxwell. In the Copenhagen interpretation of quantum theory, one gives up speaking about a real world of atoms with pre-existing properties and instead sticks with observables, that is, with correlations between specific measurement outcomes.[21]

Understandings at the level of mechanism have tended to come and go. All this is of little consequence to the practicing physicist because he or she has learned to treat mechanistic accounts heuristically, shifting from one account to another as seems useful, even if they are mutually contradictory. In quantum mechanics there is no consistent mechanistic picture. In relativity each observer gives a different and contradictory explanation of "events" depending on his or her state of motion. What remains constant throughout is a deeper pattern recognized within the apparent confusion of outer

phenomena. We can represent or account for that pattern in various ways, but at some level Goethe was right we he said, "The constancy of the phenomena is the one important thing; what we think about them is quite irrelevant."[22]

Today's exhilaration within the neuroscientific community is reminiscent of the optimism of late nineteenth-century physics prior to relativity and quantum theory. If we have learned the lessons of physics, we would do well to hold our mechanistic theories of consciousness lightly. Otherwise, for example, we may inappropriately dismiss states of consciousness that cannot be accommodated in our limited models. This is especially tempting in consciousness research because reports of subjective experience are always first-person accounts. From the standpoint of neuroscience, therefore, they are always suspect. Yet if we eliminate experience by replacing it with the output of instruments (as is done in physics), we have changed the field of inquiry entirely. No, the first-person phenomenology of consciousness is essential to consciousness research.

One sensible way of approaching the relationship between phenomenology and neuroscience is that advocated by such individuals as Varela,[23] Thompson and McClamrock.[24] They advocate a "mutual enlightenment" in which both approaches contribute to the joint project of understanding consciousness.[25] But even here, one must be careful not to constrain the introspective data reported by skilled observers because it does not fit existing theory or show up on lab instruments.

Goethe's commitment to first-person experience opens his method, or any method founded on his, to the criticisms leveled at introspectionism.[26] Although much could be said in response, perhaps it is most important to bear in mind that ultimately subjective experience forms the foundation of <u>every</u> science including modern physics and neuroscience. The so-called "hard problem" is precisely this troublesome relation between subjective experience and objective reality. By taking its stand on phenomena themselves, Goethe's method opens up new ways of resolving the hard problem of consciousness.

<u>Resolving the "hard problem"</u>

The hard problem has at least two distinct forms. The first is the first-person, third-person dichotomy. My subjective perspective on the world is held to be entirely unique, and furthermore I appear to be constrained to my first-person viewpoint. That is, while I can imagine that you have a similar first-person perspective, I can never experience the world as you do. By contrast we can speak of a public, third-person perspective on the world which every conscious entity can assume. It is argued that science concerns itself only with facts that are open to such public scrutiny. Since the subjective experience of individuals is accessible only to first-person investigation, there can be no science of such experience. Rather, it is argued, we should restrict ourselves to the biological correlates of consciousness which *are* open to third-person investigation. Additionally, we can practice a "heterophenomenology" which interprets the first-person accounts of others from a third-person perspective.[27]

A second version of the hard problem is "subject-object" dualism, which is usually taken to be identical with the first-person, third-person dichotomy. I would suggest that we treat these two versions of the hard problem as distinct and that we approach each differently. Subject-object dualism holds that the phenomenal world of lived experience is largely an artifact of human consciousness and so not a fair indication

of the "objective" physical world "out there." In the standard scientific analysis, the red of the sunset, for example, is reduced to the differential scattering of high frequency electromagnetic waves from polarizable particles in the atmosphere. The electromagnetic waves make their way to the human visual system where they provoke complex electrochemical reactions. The subjective experience of "red sunset" is explained by an account in terms of supposed, objective realities: electromagnetic waves, molecules, neurons, etc.. At this juncture we immediately confront the thorny problem of theoretical entities, hypotheses, and models already touched on. What is the place of these in science?

Bertrand Russell's philosophical development is characteristic of many who have tackled subject-object dualism. Russell initially supposed one could rigorously infer physical entities from sense data. By 1914 he came to realize that Berkeley was right; it is in principle impossible to infer an unexperienced objective reality from sense data.[28] Physics proceeded unaffected by Russell's realization, in large part because physics is not really about objective entities. Rather, physics is about qualities. Physics describes the properties of things (mass, charge, frequency, speed...) and the lawful relations between these properties. We may measure some with the human sensory apparatus, other properties may be measured by instruments, but one is always working with properties. In quantum theory, for example, we must define a "complete set of commuting observables" as the basis for theoretical description. It is simply not possible to make meaningful statements about a reality that is, in principle, beyond description. To borrow a term from Buddhist epistemology, one cannot speak about an "attribute-bearer" which itself has no attributes. According to the above line of reasoning, all science is concerned with "subjective" properties. Rigor and "objectivity" arise not by reference to a hypothetical realm but by care in experimentation and through rigor in theoretical analysis. In this view, therefore, the subject-object form of the hard problem becomes irrelevant to science. If the object of study is beyond experience (whether direct or mediated through an instrument), then it is also not amenable to scientific study. Phenomena are at the heart of science.

The first-person, third-person form of the hard problem remains; namely, phenomena seem to be of two types: private and public. Here too an unwarranted assumption causes the difficulty. Experience is always private. We only have first-person experience. We may compare our individual experiences intersubjectively, but the concept of third-person experience is a philosophical construction. The coin looks round to you and oval to me. We can construct the concept of the coin's shape in itself (Russell's term is "sensibilia"), but no third-person perspective exists from which it can be viewed. Apparently we cannot escape our first-person perspective; it is an artifact of the way consciousness is set up. Implicit in this last statement is, however, a way out of the first-person, third-person dichotomy without falling into solipsism. If consciousness itself can be restructured, then it might (at least in principle) be possible to move beyond dualism or solipsism. From Goethe's perspective the mind indeed is open to development, and every discovery depends on at least a small change in consciousness. Only such change allows one to become "utterly identical with the object," or to "form an amalgam with them." Thus he would deny the constraint on consciousness assumed by so many; mind is malleable, even to the point of achieving a non-dual form of consciousness. In this, Goethe's view is like that of the contemplative traditions, locating

the solution to dualism not in some clever philosophical move, but in a profound transformation of consciousness itself.

The two forms of the hard problem thus find resolution differently. Subject-object dualism disappears by recognizing that science is only concerned with the subjective world. The first-person, third-person version of the hard problem will only find resolution through a fundamental change in the structure of consciousness itself.

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[1] J. P. Eckermann, *Conversations with Goethe,* ed. H. Kohn, trans. G. C. O'Brien (New York: Frederick Ungar, 1964), p. 149.
[2] J. W. von Goethe, *Theory of Color* in *Scientific Studies*, ed. and trans. D. Miller, (New York: Suhrkamp Publishers, 1988).
[3] D. Seamon and A. Zajonc, *Goethe's Way of Science* (Albany, N.Y.: SUNY Press, 1998). See also A. Zajonc, *Catching the Light* (New York: Oxford University Press, 1993), pp. 188-216; and A. Zajonc, "Facts as Theory", in *Goethe and the Sciences: a Reappraisal,* eds. F. Amrine, F. Zucker and H. Wheeler (Dordrecht: D. Reidel, 1987).
[4] J. W. von Goethe, *Theory of Colors*, trans. C. L. Eastlake (Cambridge, MA: M.I.T. Press, 1970), p. 283.
[5] J. W. von Goethe, *Goethe's Botanical Writings* ed. and trans. B. Mueller, (Honolulu: Univ. of Hawaii Press, 1952), p 239, and in J. W. von Goethe, *Goethe's Werke, Hamburger Ausgabe*, vol. 13 , 5th ed. (Hamburg: Christian Wegner, 1966), p. 51. Henceforth, references to the *Hamburger Ausgabe* are abbreviated *HA* and followed by the volume and page numbers.
[6] Goethe, *Maximen und Reflexionen,* no. 557, *HA,* XII:432.
[7] Goethe, *Maximen ...*, no. 554, *HA*, XII:432.
[8] Goethe, *HA,* XIII:452.
[9] See my "Goethe and the Science of His Time," in *Goethe's Way of Science*, pp. 18-20.
[10] Goethe, *HA*, XIII:23, and in Mueller, *Goethe's Botanical...*, p. 228.
[11] H. R. Hanson, *Patterns of Discovery* (NY: Cambridge University Press, 1958), p. 87.
[12] Goethe, *HA*, XIII:24.
[13] Goethe, *Briefe, HA*, IV:231 (3 May 1827).
[14] Goethe, *Maximen...*, no. 488, *HA*, XII:432.
[15] Goethe, *Maximen...*, no. 509, *HA,* XII:435.
[16] J. W. von Goethe, *Briefwechsel zwischen Goethe und F. H. Jacobi*, ed. M. Jacobi (Leipzig: Weidmann, 1846), p. 198.
[17] See F. Amrine, "The Metamorphosis of the Scientist," in *Goethe's Way of Science.*
[18] Goethe, *HA,* XIII:38.
[19] P. Churchland, *The Engine of Reason, The Seat of the Soul*, (Cambridge, MA: MIT Press, 1995), Chapt. 8.
[20] Zajonc, *Catching the Light.*
[21] G. Greenstein and A. Zajonc, *The Quantum Challenge* (Sudbury, MA: Jones & Bartlett, 1997).
[22] J. W. von Goethe, *Werke*, Weimarer Ausgabe II.13, p. 444.
[23] F. J. Varela, E. Thompson, and E. Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: MIT Press, 1991), and F. J. Varela, "Neurophenomenology: a methodological remedy for the hard problem," *Journal of Consciousness Studies*, 3 (4), pp.330-349, (1996).
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[25] S. Gallagher, "Mutual Enlightenment: Recent Phenomenology in Cognitive Science," *Journal of Consciousness Studies*, 4 (3) pp. 195-214, (1997).
[26] See for example H. Hunt, "Cognition and States of Consciousness," *Perceptual and Motor Skills*, 60, pp. 239-82 (1985).
[27] D. Dennett, *Consciousness Explained* (Boston, MA: Little Brown, 1991), pp. 66-67.
[28] B. Russell, "The Relation of Sense-Data to Physics," reprinted in *Mysticism and Logic* (1917).