

Chapter 7

Parts, Wholes, and the Forms of Life: Husserl and the New Biology

John C. McCarthy
The Catholic University of America

Abstract: With the success of modern analytical biology, and in the absence of adequate reflection on the wholeness of living wholes, our understanding of living things has come to be characterized by a neglect or even a denial of biological form. This essay invokes Husserl's logic of parts and wholes, and his doctrine of categorical intuition in order to argue for a reconsideration of the place of form in biology. Rightly understood, the notion of form neither supplants analytical investigations nor does it lead into a realm of spurious abstraction. Rather, form makes our understanding of life more concrete by expressing the radiant unity constitutive of every living thing.

I

Coeval with the discovery of nature as such is an awareness that nature is articulated into determinate wholes, or as we say, kinds. As is shown by the experience of childhood, our idea of the natural order first takes shape in and through an encounter with rocks, trees, and frogs. Only subsequently does science make that idea its theme. Indeed, even after science has introduced us to subatomic structures, gravitational forces, DNA, and other marvelous

abstractions, we continue to regard the language of kinds as the most "natural" way to articulate nature. Natural kinds are, in short, part of the "life-world."

Invoking Husserl's concept of the life-world does not draw our persistent belief in the kind-character of nature into some charmed circle of inviolability. The phrase merely calls attention to a problematic gap between scientific and pre-scientific conceptualization. The gap is problematic because science has, since Bacon and Descartes, advanced largely by calling our kinds into question: its discoveries are not simply supplements to our everyday experience of the natural world. Science and the life-world are at odds, then, on the status of kinds.

A second source of tension between science and the life-world, in view of science's profession to be "value-free," is the fact that our everyday treatment of nature's kinds is not the least bit even-handed. We do not think twice about boiling water, and we would have no objections to a scientist boiling a beaker of amino acids. But should he propose to boil a kitten, we would take exception. Our partiality to living kinds appears once again to be quite "natural," whatever a morally neutral science might have to say on the subject. For of all the beings, the living especially seem to define themselves as kinds. Not just we, but they too have an interest in being kinded.

The gap between science and pre-scientific experience was not always so wide. Prior to the modern era, science or philosophy had a special term to designate the kind-character of things, especially living things, namely "form." The form of a living thing was meant to account for no more nor less than its specific unity, for its being a determinate whole. Thus formal investigations were meant to intensify our understanding of, without ever straying far from, phenomena readily available to all. If what is first in itself was not simply identified with what is first for us, neither were the two ever separated. Accordingly, the modern scientific turn away from kinds was at its core a dismissal of the ancient philosophic preoccupation with forms.

The history of opposition to formal descriptions of living things is a long and involved one. A brief thematic summary will prove helpful. Objections to formal explanation in biology have taken two main tacks: from above and from below. The objection from above, by turning Plato on his head, takes the forms to be imitations of the real particulars they are forms of: there are bears and alongside them there is the Idea of Bear. It goes on to complain that such secondary entities ought not to be postulated. Apart from the fact that we have quite enough on our hands with the real world without populating an

ideal world running parallel to it, the first objection points to insoluble quandaries of correspondence, infinite regress, and so forth. We are advised, therefore, to cancel all flights to the forms and to make do with the here and now.¹

The second objection concedes that nature appears to be defined by kinds. But it claims that in taking our bearings by these we are blinded to more fundamental truths about the beings. It proposes instead that we cut across or beneath the kinds in pursuit of their common parts or moving principles. The wholeness of things is to be accounted for solely in terms of their partedness. As these parts or principles are discovered, formal explanations will seem ever more superfluous. In keeping with this approach, we now spend billions of dollars annually in search of the "building blocks of life."²

Both objections to form are subject to difficulties. As for the first, it is unclear how it could tolerate science of any sort, so wedded is it to particulars. The second, despite its evident success, remains but a promise: a comprehensive science of the parts exists only in anticipation. Nevertheless, a restoration of formality to a position of authority seems unlikely. Sciences such as ethology, ecology, and cladistics, which are concerned with wholes as wholes, offer limited support for formal investigations, but theirs is the minority position.

All the same, reasons for thinking form indispensable still exist. Critics of Aristotle and his followers rightly judged the notion of biological form to be superficial. Yet that need not be a decisive argument against it. The present essay, drawing from the phenomenology of Husserl, joins with a small but growing number of voices in arguing for a reconsideration of formality in nature. There are, we hope to show, dimensions to living beings which compel

¹ See *Parmenides* 130b - 135c. The current version of this argument echoes Parmenides in suggesting that no biological form can adequately account for each particular member of a given species in its particularity. Since, according to evolutionary theory, species change over time, since there are believed to be no permanent species-characteristics, there can be no meaningful form "apart." Among others, see David L. Hull, *Philosophy of Biological Science* (Englewood Cliffs, N.J.: Prentice-Hall, 1974), p. 52; and Michael Ruse, *Philosophy of Biology Today* (Albany, N.Y.: State University of New York Press, 1988), pp. 52f.

² The ancient atomists still accorded some ultimacy to the wholes produced, whereas in the modern era the primacy of the parts is more radicalized, and nature's wholes cease to enjoy any special standing. Cp., e.g., Lucretius, *De rerum natura*, I, 585-592 and Francis Bacon, *Novum organum*, II, §3.

an appeal to the forms. Only by refusing to look beyond the surface of things can we truly see to their depths.³

Husserl was frequently accused of "Platonism." This should suffice to establish his credentials as a friend of the forms, yet he seems an unlikely source should one be interested in the facts of life. When he used the word "form" he usually had certain logical-ontological realities in mind. It is true that on occasion he employed the word with reference to living things, but he never made this usage thematic. In any case, form in this sense, *Einheitsform*, refers indiscriminately to living and inanimate beings.⁴ And while scattered remarks on biological issues can be found in his writings, they are scarcely more than digressions from his main theme. Perhaps this was to be expected from a man who took mathematical physics to be the paradigmatic natural science. However that may be, it cannot be denied that there are limits to what the letter of Husserl's writings can teach us about the forms of living beings. Nevertheless, implications of his phenomenology can be drawn which have great relevance to our theme. His thoughts on form can be transposed, so to speak, and the outcome of such a transposition is a more thoughtful engagement with nature in its kindness. Toward that end we will focus on two central Husserlian topics: the logic of parts and wholes, and the concept of categorical intuition.

II

Husserl treats parts and wholes thematically in the third of his *Logical Investigations*. Here as elsewhere in that work he is concerned not with any particular region of being but with the meaning of objectivity as such. The bulk

³ Cf. Leo Strauss, *Thoughts on Machiavelli*, (Glencoe, Ill.: The Free Press, 1958), p. 13. Also, Edmund Husserl, *The Crisis of the European Sciences and Transcendental Phenomenology*, trans. David Carr (Evanston, Ill.: Northwestern University Press, 1970) §66; *Phenomenological Psychology. Lectures, Summer Semester, 1925*, trans. John Scanlon (The Hague: Martinus Nijhoff, 1977), §5.

⁴ Hubert Elie, "Etude logico-grammaticale sur les *Logische Untersuchungen* de Husserl," *Studia Philosophica. Jahrbuch der schweizerischen philosophischen Gesellschaft* 23 (1963): 63f.

of Investigation III, as he himself observes at its outset, is devoted to the "relation of parts"; very little is said about wholes simply as wholes.⁵

For Husserl, "part" in the widest sense refers to any distinguishable aspect of an object. He is aware that ordinary discourse does not use the term so widely. We tend to limit "part" to those features of a being which can be taken a-part, teeth and claws, for example. Such parts Husserl calls "pieces" (§1). These he distinguishes from "moments," the second and phenomenologically more important kind of part. Unlike pieces, which enjoy a degree of independence from their proper wholes, moments are "non-independent." That is, pieces may be "presented" on their own whereas moments are always bound to some other aspect of the thing. Color, for instance, belongs together with shape, and weight with extension. Note that moments need not be sensible aspects of the thing. Obedience is as much a moment of some dogs as is their height. Even relations can count as moments of a thing (§2).

Although the distinction between moments and pieces is fairly straightforward, it is not without its subtleties. Let us consider pieces first. It is important to realize that the independence of a piece is relative, not absolute (§13). To say as Husserl does that a horse's head is a piece clearly does not mean that, like the Chesire cat's, it must be capable of existence apart from its body. A horse's head is a piece because it can be imaginatively disengaged from its proper whole and be considered on its own (§6). In somewhat non-Husserlian terms, a piece is potentially but not actually independent from its whole. If it were actually independent it would cease to be a part, because a part is always a part of something else.

The independence of a piece may be relative for a second reason. While the horse's head can be presented apart from the horse, *qua* spatial it is "unavoidably given as an element in a total visual field" (§7). Even in imagination it can be experienced only as a figure against a ground. In this respect it must be called a moment because it is now given as dependent upon something else. This reversal shows that a part may be appreciated in a variety of different contexts, and that when it is variously regarded its status as a part may change.

We have been describing how a piece is given to us, but note that its relative separability is a function of the piece itself; it is not merely the consequence

⁵ *Logical Investigations*, trans. J.N. Findlay (New York: Humanities Press, 1970). Further references to the *Logical Investigations*, abbreviated *LI*, will appear in the text. For recent work on Husserl's logic of parts and wholes see *Parts and Moments: Studies in Logic and Formal Ontology*, ed. Barry Smith (Munich and Vienna: Philosophia Verlag, 1982).

of the way we think about things (§7). Similarly, the non-independence of a moment is an inherent feature of that moment. Consider, for example, a horse's age. Its years simply cannot be disengaged from the horse as a whole. They cannot be seen or talked about except in connection with the wear of its teeth, the health of its coat, the curve in its back, and so forth. The distinction between piece and moment is in things, not just in us.

Another point deserves mention. Our examples of pieces have been quite elementary. Yet the fact that such parts are relatively independent is of considerable significance scientifically. Because pieces may be separated, scientists are able to intensify their investigations by "momentarily" overlooking the indebtedness of pieces to wholes (the moment may last a lifetime). Thus a paleontologist can compare dorsal fins of related fossil fish, while a cell-biologist can devote himself exclusively to the cells of the pancreas.

Let us turn now to moments. In the relationship of figure to ground one moment can easily be marked off from another; the boundaries of such moments are quite distinct. More commonly, however, moments are not so localized. As Husserl puts it, moments tend to "blend with" or "flow into" other moments, pieces, or even the whole. In such cases no cut of whatever sort can be made. The striking iridescence of a raven's wing is distinct but in no way separable from the blue-black color of the feathers. Or again, permeability is a moment of a cell membrane which itself permeates every piece of that membrane. Pieces, by comparison, never blend with each other in this way (§8, §21). Because of their radical dependence on other parts, Husserl calls moments of whatever sort "abstracta." Pieces, in turn, are relative "concreta."

In any given whole a wealth of different relationships between its parts may obtain. Husserl describes the principle types of relationships in some detail. The key term is "foundation." A non-independent part is "founded" upon that part whose presence it requires. The latter part is called a "founding" part (§14). Foundational relationships may be reciprocal, or they may be one-sided. Further elements of Husserl's description need not detain us. It is enough to see that given these basic relational possibilities, it should be possible to describe the "logic" of any whole, no matter how complex. Husserl proves to be in agreement with modern analytic science that a great deal can be said about a given being by articulating systematically the network of foundational relationships of its parts. In fact, he even moots the possibility that the notion of whole be dispensed with (§21). If one can exhaustively

describe the parts and their relations, there would seem little need for additional consideration of the whole.

Does the grid of relationships between parts suffice to explain all wholes, or to explain wholes in their entirety? According to Husserl, it does not. By definition, a moment belongs together with its correlate, from which it follows that no third thing, no active principle of wholeness, is required to explain the unity of the two. But because of their relative independence, pieces cannot of themselves account for their unity within the whole. Extended wholes, and in general all wholes which contain pieces, do require some principle of wholeness; they are not necessarily one (§22). Husserl follows the tradition in calling the principle of a being's unity its form. Form is that which binds or structures a pieceable whole (§4). Notably, he adds that form is a real part of the being it informs. Specifically, it is a moment.⁶

Form might still seem an extravagant superfluity, however. Surely it is enough to describe the moments and pieces of a thing, and the details of their organization. Is not the whole just the sum, or at least the ordered sum, of its parts?⁷ To the contrary, a true whole is less than the sum of its parts. Consequently it is more than the sum of its parts. A whole is less than its parts because it is one and they, taken as parts, are many. A whole is more than the sum of its parts because it achieves what the parts cannot, namely, unity. The fact of wholeness demands a kind of "new math" according to which "one" and "one" make not "two" but another, higher "one."⁸ It is well and good to speak of the arrangement of the parts, but arrangement is always subordinated to a being one. Take the previous sentence as an example. It is possible to dissect it into its various parts: lines and curves, letters, phonemes, and words. It is also possible to describe the order of these parts, and their spatial and grammatical relations to one another. But if we leave it at that, we have only a string, and not the true sense of the thing, which is to be a single, meaningful expression. Although there would be no sentence without the parts and their succession, nonetheless, the sentence moves "beyond" such

⁶ Were it a piece, another form would be required to explain the presence of the first form in the being, and so on *ad infinitum* (LI §22).

⁷ So argues Ruse, p. 24: "A tent is nothing but canvas and the ropes and the brass fittings and the pegs. An organism is nothing but the molecules of which it is made."

⁸ See Robert Sokolowski, "Ontological Possibilities in Phenomenology," *Review of Metaphysics* 29 (1976): 691-701.

multiplicity. By the same token, a single word or letter has little or no meaning outside of its participation in whole sentences.

An appeal to form, then, does not overlook the partedness of beings. Rather, it combats the tendency to reduce the whole being to its parts. Form is the advocate of the whole as whole, and it becomes an issue for us not when we take things in a naive, straightforward way, but when we begin to look at things analytically. An appeal to form recoups our naive beginnings without simply restoring them: it presents the whole naively experienced as a *hen-diadys*, a one through two, or by extension, a one through many. Attention to form also highlights the fact that parts of a whole are never mere parts. By virtue of their involvement in the whole they have been taken up into a sense of being which they could not have enjoyed as parts alone. In sum, parts can never explain, in the sense of explain away, the whole, for they themselves are explained by it.

Because Husserl understands the form to be a moment and not a piece, he is able to meet the arguments against formalism adumbrated above. The first, to repeat, takes form to be some mysterious new entity in addition to the being before us. But once it is seen that form cannot be separated from that which it informs, the problem of hypostatized forms is dissolved. Form is that which expresses the unity across multiplicity of the being; it is, therefore, a real feature of the being; but it is not a thing, and thus cannot stand apart from the being. As for the second argument, it rightly stresses the importance of pieces, but it wrongly encourages a search for the hidden piece or pieces which would somehow solve the puzzle of the being. Ironically, both "vitalism" and "mechanism" are guilty of the same error. Pieces there are, but no piece can account for the being together of piece and piece.

If the form of the whole is a moment of the whole, what is its proper correlate? Once again, Husserl employs the traditional term of art: matter (§23). But matter as he understands it does not mean some pure, formless stuff, a kind of metaphysical plasma. It means all the parts of the being, great and small, considered in abstraction from their being together in an organized way. Matter is every bit as much a moment as is form. Thus the form does and does not stand for the whole being. It does in the sense that there is not one part of the whole that is not permeated by its form-moment; form informs the entire being. It does not insofar as what truly exists is not sheer being-

together, but the being-together of *this* being with respect to *these* its parts.⁹ Form founds and is founded by matter.

Husserl is careful to point out that genuine wholes differ from mere aggregates, and forms of wholes from forms of aggregates. An aggregate is any indifferent assemblage of pieces. While it does enjoy unity of a sort, its pieces belong together only in the weakest sense: they might equally well have been presented in whole or in part in some other aggregate. Furthermore, the sense of the aggregate could remain the same even if its pieces were replaced in whole or in part by others. So we might speak of this or that "clump" of aspens, for example. In the final analysis, such groupings are one principally by virtue of the binding force of our thinking them. The unity of genuine wholes, on the other hand, is intrinsic to them. Not thought alone but the parts themselves demand the wholeness of these wholes (§23).

To this point we have been discussing wholes in general. We are now in a position to speak about living wholes in particular. It goes without saying that the form of an animate being is not the form of an aggregate. But what distinguishes animate forms from the forms of natural but inanimate wholes, or from the forms of artifacts? Without descending to the level of specific parts, is it possible to differentiate a bison's way of being one from that of a lump of coal, or of a harpsichord?

Consider first the complexity of living beings. Despite the remarkable successes of molecular biology, we are still far off from a complete understanding of the structure and operation of a single species of bacterium. The human brain, to say nothing of the rest of us, consists of about ten billion nerve cells, each of which extends between ten and a hundred thousand connecting fibers, resulting in something on the order of 10^{15} neural connections.¹⁰ Nothing else in nature, and no human construction, approaches the intricacy of living wholes. The complexity of animate forms is mirrored in their astonishing diversity. To date, some fifteen million species have been identified.

A second characteristic of animate wholes is their power to form themselves. Neither artifacts nor inanimate entities found in nature have the ability

⁹ See *Formal and Transcendental Logic*, trans. Dorion Cairns (The Hague: Martinus Nijhoff, 1978), App. I, §5. Further references to this work, henceforth referred to as *FTL*, will appear in the text.

¹⁰ Michael Denton, *Evolution: A Theory in Crisis* (Bethesda, Md.: Adler & Adler, 1986), p. 330.

both to make and to maintain themselves as one. Already at the cellular level, however, living beings produce their own parts: enzymes, ribosomes, membranes, sugars and so forth. And having done so, they are able to sustain, repair, and renew those parts as required (we sometimes forget that cookery and medicine can only assist the digestion and healing which life itself initiates). To be sure, living things do not generate their parts *ex nihilo*. Yet metabolism, respiration and growth are processes remarkable enough in their own right, for they show life to be a cause and not merely an effect of order.¹¹ Finally, through reproduction living wholes are able to generate a privileged kind of part, a piece which either by itself or with another can become a new whole, differing in number but not in kind from the original. To sum up, reproduction, metabolism, respiration and growth prove that the forms of life are unique in their power to constitute themselves as the wholes they are. The parts come and go, but the whole, and the form of the whole, remain.

It is true that inanimate beings tend, simply by virtue of their materiality, to cohere as one. Such forms of unity have the power of endurance, and in this sense might be thought to have a minimal role in securing their being whole. Granite, we say, weathers the ages. Yet even in this respect living wholes differ, for no living thing is truly able to endure [*verharren*]. Nor is this lack the fault of the grim reaper. Suppleness is the hallmark of life. The forms of life maintain their identity not by hardening but by altering it, as Husserl points out in *Ideas* and elsewhere.¹² It is inaccurate, therefore, to say that living things merely decode and execute plans preordained in some genetic blueprint. Even the simplest attend in various ways to the circumstances in which they find themselves and differentiate themselves accordingly, exploiting possibilities in their environment through the production of appropriate parts. Sometimes these "occasional" parts are more piece-like. Thus the willow sends roots deeper when water cannot be had nearer to the surface. At other times, they are more like moments. Rudimentary and advanced forms alike acquire "memories," for example.

¹¹ Hans Jonas, *The Phenomenon of Life: Toward a Philosophical Biology* (New York: Dell Publishing Co., 1966), pp. 64-92.

¹² *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy*, vol. II, trans. Richard Rojcewicz and Andre Schuwer (The Hague: Martinus Nijhoff, 1989) §32; cf. *Ideas*, vol. III, trans. Ted E. Klein and William E. Pohl (The Hague: Martinus Nijhoff, 1980), §1. Further references to these volumes will appear in the text.

In sum, living forms move through time in an essentially different way than do the nonliving. Husserl concludes that animate beings alone have a "history." Their past is taken up into themselves and is thereby able to affect their present. Not despite but because living things form themselves, they are formed by their times. It follows that changes in them are irreversible. Tides ebb and flow and ebb again, but no animate being is ever what it was (§33).

No other forms express such an extraordinary orchestration of parts as do the forms of life. In various ways living forms are self-forming. A third feature of biological form, and the last to be considered here, is the intensity of its unity. No other real being is quite so much a "one" as a living being, the diversity of its parts notwithstanding. Observations in *Ideas* point to this fact. However, they also pose something of a problem for our interpretation.

One of Husserl's principal concerns in *Ideas* is to delimit the purely physical, the animal, and the "spiritual [*geistigen*]" "worlds." He argues that animal existence, although "founded" upon material reality, is not itself truly material. It is part of the essence of a material thing to be extended, which implies in turn that it is "pieceable [*zerstückbar*]." Animals, however, have many characteristics which are not pieceable. Therefore, they cannot be reduced to the level of sheer materiality (§14; see *Ideas III* §2a). The most obvious such characteristic is life itself. Despite Husserl's earlier talk about horse's heads, it is quite clear that in the most important respect, such a part cannot be conceived apart. Only as a moment can a head be what it is, namely, a living part. This is generally true of the parts of animals. Admittedly, animals have some parts which are pieceable—fur, stingers, shells—but these do not enjoy life at the point where separation becomes possible. When, on the other hand, a limb is lost, it is really lost. The attenuated whole may survive, but what remains of the limb is a limb no longer. It is, to speak harshly but truly, only rotten flesh. Parts are only living parts as inseparable parts of the whole.

Has Husserl contradicted himself on the question of animal parts? It is more accurate to say that there has been a shift in perspective, which is possible because of the nature of the thing under investigation. Looked at with an eye to their being extended wholes, the parts of animals are pieces; looked at with an eye to their being alive, they are moments.¹³ Depending on one's

¹³ It is true that some worms, e.g., and most plants can be cut without necessary loss of life either to the whole or to the parts. But such cutting has strict limits. A lump of coal, on the other hand, can be cut *ad libitum*, yet both parts and what remains of the whole will remain coal.

point of departure the way up and the way down are and are not the same. Someone may object that transplants prove that living beings are pieceable after all. The fact remains, however, that being put to the knife is an act of violence to the whole, which the whole does its best to resist. Moreover, any cut to a living whole will always be somewhat arbitrary, no matter how clearly an organ may be identified. Finally, only if extraordinary measures are taken to ensure its fit in the new whole does the transplanted organ stand any chance of surviving.

A more serious objection would point out that if the parts of a living whole are only moments, then according to Husserl's account in Investigation III no additional form-moment seems needed to explain the unity of the whole. In reply, we note that animate parts are moments of a peculiar sort. While pitch is a necessary correlate to sound, and trust to friendship, animate parts are not necessarily present in their wholes. Certain parts may simply fail to appear, perhaps because of a failure in embryonic development. And one need not be a latter-day Hobbes to insist that violence and death may break in on life at every turn, sundering the forms life strives to secure. Since there is no necessary reason for particular living parts to cohere over time, since their sheer being-together does not assure their continuous unity, a moment of the whole is still needed to account for the achievement of its being whole. This principle, call it form, strives to ensure that life's moments do not degenerate into pieces.

These considerations establish that the form of a living being is anything but static. It is the origin and culmination of that being's ongoing struggle to shore up its fragments against its ruin. Husserl does not flinch from using a philosophically unfashionable word to designate the being-together specific to living things: "soul." Similarly, he reserves the word "body [*Leib*]" for the matter appropriate to that kind of whole.¹⁴ We are comfortable with bodies, but talk of soul immediately puts us on guard, even though on Husserl's reckoning body is no less a moment or abstractum than soul. Be that as it may, is his use of such an antiquated term as soul really necessary?

Soul is frequently conceived by its adherents and detractors alike to be some ghostly stuff arbitrarily joined to body. This conception is not altogether wrong,

¹⁴ See, *inter alia*, *Ideas II* §30. Cf. Aristotle, *De anima* 412a6ff. Husserl does hesitate to speak of plants as ensouled, except in an analogous way (*Ideas III* §2b). But since his reasons do not affect our argument, a discussion of the differences between plant and animal soul may safely be deferred.

for there is something tenuous about the unity of a living whole. Its being alive is not a thing to be taken for granted. But to picture soul as a ghostly presence is, once again, to confuse a moment for a piece—the sort of mistake Husserl calls a reversion to the "mythic."¹⁵ References to "soul" are helpful because there is a dimension of every living being that can be neither weighed nor measured nor timed, yet is still a real part of it: the unity of its parts and actions through space and over time. And since, as we have argued, a living entity is formed as one in ways that are qualitatively different from the way any other thing exists as one, it is fitting that there be a specific term for its specific unity. "Soul" is that term.

To sum up, the orchestration of parts instantiated by each living thing is less a challenge to our analytical powers than a daring victory of the one over the many. Animate form proves that being one does not primarily mean being atomic or monadic. The greatest unity is compatible with, nay requires, the greatest diversity.

Before we conclude this section of the essay, a couple of clarifications are in order. In the first place, form as we have been describing it is the principle of unity of an individual being. It is, accordingly, to be distinguished from "species," understood as the entire class of genetically or morphologically similar organisms. From the perspective of the species, the individual proves to be only a relative concretum; it is a moment in a larger whole. Indeed, the species too is only a moment insofar as it occupies a niche in some ecological system. It is possible, therefore, to look at these more comprehensive unities from a formal standpoint as well. Needless to say, their ways of being one would require considerable nuancing.¹⁶ Secondly, form is not the same as a universal. Universals are realized through a generalization from the experience of several similar particulars, whereas attention to the unity of a single individual, abstracted from its particularity, is enough to yield the form.

¹⁵ See *LI*, "Prolegomena," §22, §38.

¹⁶ The current debate in the philosophy of biology about whether species are individuals or not would be helped by a deeper appreciation of the relativity of wholes, and of the variety of ways wholes can be one. See Ruse, pp. 52-57, for a summary of the discussion.

Incidentally, the evidence of the fossil record indicates that species are very stable wholes once they have become established, Darwinism notwithstanding. See Robert Augros and George Stanciu, *The New Biology: Discovering the Wisdom in Nature* (Boston and London: New Science Library, 1987), pp. 168f.

Formalization abstracts from a determinate one; generalization from an indeterminate many.¹⁷

III

In a celebrated passage from Investigation VI Husserl observes: "I can paint A and I can paint B, and I can paint both of them on the same canvas; I cannot, however, paint the *both*, nor paint the A *and* the B" (§51). That is to say, the "being together" of A and B is, unlike A or B, not something perceptual in the strict sense. Yet if we are to remain true to our experience, we must acknowledge both that this "being together" is a feature of the reality before us and that it is accessible to us. Words such as "is" or "and" express intelligible worldly possibilities; they are not merely elements of a "logic" imposed by us upon the world. Husserl's blanket term for all extra-sensuous aspects of reality is "categoriality." And his theme in the Sixth Investigation is "categorial intuition," namely, the way we apprehend categorial structures.¹⁸

It should be evident from the preceding discussion that form numbers among the categorials. Indeed, Husserl had said as much in Investigation III (§21). Form is a "surplus [*Überschuss*]" experientially given over and above our perceptual involvement with things (*LI VI*, §40). Following Locke, one might wish to distinguish between the "real" and the "nominal" form of a thing, between the form that is "in" the thing and the form we think about. Husserl considers such a distinction illegitimate. There are not two forms, one in itself and one for us. The in-itself is also the for-us. Husserl takes issue with the Lockean view because of a fundamental disagreement about the nature of thinking. Thinking is not representational; it does not generate ideas which must subsequently be paired off with things. Thinking is, rather, intentional.

¹⁷ *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy*, vol. I, trans. F. Kersten (The Hague and Boston: Martinus Nijhoff, 1983), §13. See John A. Driscoll, "EIDE in Aristotle's Earlier and Later Theory of Substance," in *Studies in Philosophy and the History of Philosophy*, vol. 9, ed. Dominic J. O'Meara (Washington, D.C.: Catholic University of America Press, 1981), pp. 129-159, for similarities with Aristotle.

¹⁸ Already in the Sixth Investigation it is apparent that for Husserl the distinction between categorial and sensuous experience is a distinction between moments, and not pieces. Each conditions, and is conditioned by, the other.

Our thoughts are always already "outside" of us, ranging alongside the things we think.¹⁹

The doctrine of categorial intuition is important, then, because it identifies the principle of a being's intelligibility with the principle of its being. By virtue of categorial "perception," a living thing's being-one is also a being-displayed-as-one. Or, to put it another way, through its form a living thing explains itself. Were the unities of things not apprehended in categorial intuition our thoughts would swirl unceasingly. There could be no real articulation of the world because the world as experienced would be nothing but a flux of sensations, an epistemological kaleidoscope. Form anchors the experienced integrity of living things.

That the forms of things are intuited means that they are in a sense obvious. A struggle to get back behind the appearances, to peel away the mask, is neither possible nor necessary. Things are intelligible, they let themselves be known. On the other hand, we do need to look at things thoughtfully if their formal looks are to be appreciated. Husserl stresses that categorial intuition is an activity, it is not purely passive. Scientists and non-scientists alike generally take the performance of categorial intuition for granted. But in fact it depends upon a concord between mind and world that is freely bestowed and hard earned. The English poet Gerard Manley Hopkins, whose diary is filled with entries attesting to the energy he devoted to faithful observation of natural forms, describes very well the uncanniness of categorial givenness: "What you look hard at seems to look hard at you."²⁰

The availability of things for viewing is especially evident in biology: many animals (and some plants) take a very active role in their being seen. As Adolf Portmann has so eloquently argued, countless parts of living things can be understood only if they are perceived to be for the eyes of some beholder, and not always one of the same species. Animals are so constituted as to require a "dative" of display. Hence patterns visible in the throats of certain nestlings, the luminescence of some insects, the speculum of a deer's rump—these are all clearly meant to be seen. Similarly, some animate parts

¹⁹ Cp. *An Essay Concerning Human Understanding*, III, chap. 6 with *LI VI*, §44.

²⁰ *Journals and Papers*, edd. Humphrey House and Graham Storey (Oxford University Press, 1959), p. 204. See also *Ideas I*, §87: "Consciousness of something' is...something obviously understandable of itself and, at the same time, highly enigmatic."

are understandable only in terms of an auditory or olfactory dative. Of course, certain parts may be meant to camouflage the being. Yet even this fact does not negate the essential availability of living things since no being strives to keep itself utterly hidden; and in any case, animate concealment is plainly only a modalization of animate disclosure. Portmann's general thesis might be summarized by saying that nature loves to disclose itself.²¹

Even the higher subhuman forms of life do not, however, move in the domain of categoriality. Animals possess intentionality, and in this way they anticipate our ability to perceive the forms, but their cognitive involvement with others does not move beyond the sensuous. Stated simply, while a lion may recognize one of his fellows, or his next meal, he does not identify it as a lion, or as a gazelle. He is always too caught up in the push me-pull you of desire and thing desired. We, on the other hand, are able to attain sufficient distance from things to name them. Detachment from the urgencies of the present allows us take an interest simply in the thing's being what it is.²² It is, in short, a particularly human excellence to be able to apprehend animate wholes as the wholes they are. This means in turn that only when humans enter the scene are the presentational possibilities in living things brought to fulfillment. By thinking what is thinkable in things we contribute to their perfection (cf. *LI VI*, §65).

It should be said that categorial "intuition [*Anschauung*]" is not intuitive in the sense of being inward-looking. The German simply means to look at or to view. Some critics have balked at Husserl's use of a word denoting a perceptual operation for what is obviously a mental one. Husserl stood by the term because we do apprehend categoriality in an act analogous to sight. It is not through an inference or deduction that we seize upon the forms. Rather, we do so "directly," "at one stroke," in a single knowing act (§49). This is not to say that categorial experience occurs without any mediation whatsoever. Even the purest of categorial intuitions is, he maintains, prepared for by, or founded upon, some sensuous experience. Phenomenology restates the

²¹ *Animal Forms and Patterns. A Study of the Appearance of Animals*, trans. Hella Czech (New York: Schocken Books, 1967), esp. pp. 11-35 and 183-221. For a congenial treatment of the appearances of plants see Agnes Arber, *The Natural Philosophy of Plant Form* (Cambridge: Cambridge University Press, 1950), esp. pp. 1-8 and 199-211. Along similar lines is the more recent work of Leon R. Kass, *Towards a More Natural Science: Biology and Human Affairs* (New York: The Free Press, 1985), esp. pp. 318-345.

²² See Robert Sokolowski, *Presence and Absence. A Philosophical Investigation of Language and Being* (Bloomington, In.: Indiana University Press, 1978), pp. 23-31.

scholastic doctrine of *conversio ad phantasma*. The mediated immediacy of formal givenness may be indicated by an example. Suppose a friend points out a snapping turtle to us. We turn our eyes in search, vainly scanning the log by the river bank where it is said to be. All at once, we "see" it, exactly where we had been looking all along.

Because the form is the moment of the whole, it is given only in and through a great variety of aspects or profiles. It is, consequently, necessary to circle around an animate being, approaching it from all sides, in order to see it for what it is. There is no shortcut to the form (*Ideas II*, §15a). And since sheerly material and ensouled beings alike exist only in relation to their circumstances, since they are causally bound to others, attention to such relations is required for a full understanding of their forms. To know an animal, one must know its habitat (*Ideas II*, §15c). Proof of longstanding acquaintance with an animate form is, however, what we might call categorial "synecdoche," the ability to intuit the whole in a part. A seasoned hunter can "see" a deer in a broken branch or a tuft of fur. Indeed, the wholeness of a whole is never given through an exhaustive apprehension of its parts: in a sense, categorial intuition always "jumps to conclusions." Otherwise stated, there is always the possibility of a richer understanding of a being's being one. Yet even in the absence of perfect givenness, a distinction between a more and a less adequate intuition of form is possible. A child sees a "birdie"; his older brother tells him it is a "robin"; their mother, an ornithologist, sees an example of *turdus migratorius*, the "Eastern robin," and a close kin to the thrushes; but none of the three knows all there is to know about the bird's form (*Ideas II*, §15e).

Faced with the wealth of presentational possibilities of living beings, we tend too quickly to defer to the experts, namely, the scientists. This comes not from too much but from too little regard for the profiles of things. If the experience of form, like form itself, is a *hendiadys*, a one through many, then the ongoing work of formal identification calls for a variety of standpoints, or to use Husserl's word, "attitudes [*Einstellungen*]." It follows that observations which poets, painters, gardeners, and animal handlers make about animate forms ought to be given due regard. Hopkins's diary entries on the characters of trees he has observed would be out of place in a dendrology journal; nevertheless, they can help us to see beeches, oaks, and hornbeams better. The wonderful portraits of George Stubbs tell a good deal about horses (and their riders), even if they say nothing about the fine points of equine physiology. Xenophon and his imitators can teach us many important things

about animal behavior that we would never learn from the technical and quantified studies of the same.²³

Common to all such observers besides experience and a love of their subject is an eye for what is noble or beautiful. Beauty, when understood as the harmonious orchestration of parts to a whole, is not simply in the eye of the beholder. And if the beautiful or noble has not been entirely forgotten by the scientists, neither has it been their main theme in recent centuries. This is a direct result of their preoccupation with parts. A closely related aspect of biological form is suggested by the phrase "the glow of health." It is true that some plants, animals and humans seem to radiate good health. But what we see in such cases is not something physical in the strict sense; it is nothing we can "put a finger on." "Health" is derived from an Old English word, "hál," meaning "whole." A healthy being is one for whom its being one is truly well-tempered, for whom its parts all truly serve the whole. When a thing is ill, on the other hand, its unity is disrupted, and particular parts call attention to themselves. Health, and beauty, then, really are no more nor less than privileged displays of life's forms.

There is an even more basic difference between the categorial intuition of form and scientific analysis. Bacon was the first to realize that the disclosure of nature's more recondite parts would demand more aggressive measures than had hitherto been employed by science. In his *Novum organum* he speaks of the need to "vex" and even "torture" nature in order to coerce her secrets from her. And in fact our science frequently does proceed by means of a forceful manipulation of the things it investigates. Witness the "atom smasher." The intuition of form, on the other hand, is more contemplative in character. It is the activity of giving way; it lets things show themselves as the wholes they present themselves to be. Rather than putting nature to the test, it is guided by nature's self-articulation. A corollary follows. As Bacon anticipated, knowledge of nature's hidden parts has resulted in an unprecedented advance in human power over nature. The "relief of man's estate" has thereby become a motive coloring even the purest research into parts. Categorial intuition, in

²³ An example is Vicki Hearne's provocative study, *Adam's Task: Calling Animals by Name* (New York: Alfred A. Knopf, 1986).

contrast, must ultimately be motivated by the simple good of knowledge itself, for its knowing must leave the known unchanged.²⁴

A reconciliation of these countervailing "attitudes" will occur only when the primacy of form is recognized. Just as the whole makes possible the parts of an animate being, so too the experience of the whole makes possible the experience of the parts. This is shown, for instance, by a conceptual difficulty attending neo-Darwinism. According to that theory, the notion of species is utterly plastic, and thus ultimately empty. What is most fundamental about living beings are the selective advantages afforded by the random variations of species-parts, that is, genetic mutation. Since the significance of any given variation is thought to show itself only over considerable stretches of time, evidence for the theory is sought in the fossil record. However, not only is it true that fossils fail to provide real corroboration for the theory, as is now generally admitted; it is dubious whether in principle they ever could. For nothing whatever can be concluded from fossils about the particular mechanisms of evolution unless those fossils have first been classified according to principles which do not presuppose the theory. And the only such principles are formal ones. Only if we begin and end with species can we talk meaningfully about their "origin."²⁵

We have said that the intuition of animate forms is not inward looking, but this statement calls for qualification. How do we know that animals suffer pain? No one can have any real doubts that they do, just as we are certain that they have appetites, and take pleasure in things. The question is, how can we be so sure? Why is Descartes' animal-machine hypothesis so implausible? Of itself, no bodily gesture, not even a shriek or a howl, can give us a direct experience of an animal's suffering. As Husserl says, it simply cannot be had in "genuine, ordinary givenness." The only pain we know directly is our own. Yet it is precisely through the experience of such pain that the pain of other sentient beings can be "made present." Husserl goes on to say that such an "interpretive apprehension" of the other's pain is truly experiential, it is immediately given; it is not merely a "reproduction" of experience, as is a memory, for example (*Ideas III*, §2b). Someone may object that to take animal

²⁴ Cf. *Novum Organum* with *LJ VI*, §61. See also Portmann, pp. 202-221.

²⁵ Cf. Tom Bethell "Agnostic evolutionists: the taxonomic case against Darwin," *Harper's* (Feb. 1985): 490-61; also Augros and Stanciu, p. 216.

behavior in this way is to "anthropomorphize." He might as well say that the presumption of pain in other humans is equally illicit. Certainly it is possible to anthropomorphize. But the fact remains that we must bring the experience of our own life to bear on the experience of other living things. Perfect self-forgetting is impossible. Were it otherwise, life would be perfectly unintelligible.²⁶

In the Sixth Investigation Husserl describes categorial intuition as an "identity synthesis" (§§40, 49). The synthesis in question is not, as one might suppose, a unification of diverse experiences of a being so as to form a whole. We repeat: the unity of things is given, not constructed. What a categorial intuition synthesizes are, rather, "empty" and "filled" intentions. That is, a given categorial structure must first be meant by us before it can be taken for what it is. Or to state the thought in more classical terms, cognition is recognition.²⁷ To see the forms of things is to see things as what we knew them to be.

This last development enables us to return to our beginnings. We have emphasized throughout that "form" is always form of a particular enmattered whole. But the notion of "kind," which set this discussion in motion, is born of the awareness that individuals are never merely individuals. When we recognize a possum we also recognize, or "co-intend," that there are other animals just like this one; alternately, we can step back from this particular possum and reflect on the fact that nature allows for an indeterminate number of possums, this one included. "We grasp the *what* both as a surplus whose sense exceeds the particularity of this instance, and as the condition for the manifestation of this particular as *x* or *y*."²⁸ Husserl's doctrine of the identity-synthesis means to give voice to this very doubleness in the meaning of form. Because the wholeness of a whole is available in other wholes I can recognize it in this one; and because it exists in this one, I can recognize it in others. How is our notion of a given form first given? What is the origin of the cognition which makes

²⁶ "Taking man as the exemplar for biology has much to recommend it, since all levels of nature are reflected in him....The more contains the less, not the reverse." Augros and Stanciu, p. 83. See also *Crisis*, §62.

²⁷ Cf., e.g., Plato, *Meno* 81d; Aristotle, *Metaphysics* 992b26ff. In contemporary terms, Husserl is describing the "hermeneutic circle."

²⁸ Richard Cobb-Stevens, "Hobbes and Husserl on Reason and Its Limits," in *Edmund Husserl and the Phenomenological Tradition. Essays in Phenomenology*, ed. Robert Sokolowski (Washington, D.C.: The Catholic University of America Press, 1988), p. 56.

recognition possible? *Logical Investigations* does not even pose the question. Only with the development of genetic phenomenology, which articulates the temporal constitution of categoriality, will an answer be possible.

IV

Karl Valentin, the Munich comedian, told the story of a man who went to a hardware store to buy a yardstick. Having selected one, he brought it to the cash register, only to eye it rather doubtfully. He then turned to the salesclerk and said, "I'd better have two of these." The clerk, puzzled, let his curiosity get ahead of his sales acumen and asked whether one would not suffice. "Of course," the man replied. "I need the second only to measure the first to be sure it's really a yard long."²⁹

Valentin's story illustrates what was for Husserl a cardinal philosophical error: the tendency to confuse measure for measure. Husserl thought many of his contemporaries were all too willing to let the methods, presuppositions, and results of science determine what was and was not philosophically legitimate. Science, in short, was permitted to be the measure of itself. To philosophy was left the task of *ex post facto* clarification. The classical name for this philosophical error is "positivism," and as Husserl frequently argued, its necessary outcome would be skepticism of one sort or another.

Yet to be fair to Valentin's story, his protagonist is absurd not primarily because he mistook the proper measure for his measure. His root mistake was to suppose any supervening rule necessary: the first yardstick was perfectly adequate for his purposes. Here again Valentin and Husserl are not far apart. Husserl thought it an error equal to the first to set philosophy up as the imperial censor of the sciences. Phenomenology does not propose a transcendental justification of the scientific enterprise. Husserl began his career as a mathematician, and he had implicit confidence in the ability of the sciences to obtain real objective knowledge of the things they investigate.

Phenomenology is opposed, then, to two countervailing tendencies: the desire to outstrip the positive sciences and a readiness simply to submit to them. Husserl's own confrontation with science steered a middle course. It made scientific paradox its preserve. One paradox in particular came

²⁹ *Gesammelte Werke*, ed. Michael Schulte (Munich: Piper, 1985), p. 636.

increasingly to occupy his attention: the sharp discontinuity between scientific theory and the origins of such theory in pre-scientific experience (cf. *FTL* §71). Our own discussion has made one aspect of that paradox its theme.

From the standpoint of phenomenology, our everyday experience of living kinds proves to have its own legitimacy. This is not to deny the discoveries of modern biology, but only to maintain that in the final analysis living beings provide their own measure. There are limits to what a radically analytic science can tell us about the wholeness of things. On the other hand, a phenomenological defense of biological form does not herald a simple restoration of the pre-scientific experience of life. Everyday experience is too caught up in life's forms to see them as forms: we register an osprey as an osprey, but we do not fully appreciate the significance of its being what it is. Phenomenology helps us to see better the radiant and binding energy which is constitutive of every living thing.