

Merleau-Ponty on Nature, Animal Biology, and the Emergence of the *Human Body*

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Introduction The recent publication of Merleau-Ponty's *Nature*¹ (originally delivered as lectures between 1956 and 1960) allows us to re-consider the development of his philosophy as a whole. This text, in my judgment, confirms that we must see his philosophy as an organic whole, not as broken into separate topics, such as, ontology, perception, language, etc., since he argues here and throughout his professional life that all these elements are intimately connected to one another in human experience. Yet even more importantly, *Nature*, when integrated with other texts, provides us with a philosophy of nature that is a profound and significant alternative to the Western tradition's typical options--to reductionistic materialism, with its mechanistic view of both nature and human nature, to various forms of vitalism and idealism, especially those that view nature and human nature through abstract conceptual frameworks, and to the dualisms that uncomfortably attempt to bring these sorts of materialism and idealism together. Moreover, even though Merleau-Ponty's philosophy is intimately tied to the sciences and draws heavily from scientific research, his articulation of his philosophy of animal biology and human nature are especially unique. Now, even though uniqueness alone does not make a theory worthy of attention, if a new theory brings with it significantly increased explanatory power, it certainly deserves our careful consideration.² No one else has done exactly what Merleau-Ponty has done, and the improved explanatory power of his theory certainly warrants our attention, especially with regard to how it attempts to address the relationship between nature, body and mind. It is for this reason that I will attempt to present here, integrated in one place, his theory of nature, animal biology, and the human body as he developed them in different studies throughout his life.

We get some help with this complex task by briefly considering what came to be labeled "An Unpublished Text by Merleau-Ponty: A Prospectus of His Work."³ In this *Prospectus* Merleau-Ponty states that his first book, *The Structure of Behavior*,⁴ published in 1942, establishes perception as an original order of meaning and does so in two ways: 1.) by arguing that perception cannot be understood

as either the result of nature in-itself or as an act of consciousness for-itself, and 2.) by showing that human perception/behavior reveals itself as an order different from both the order of nature (physics) and the order of animal biology, even while emerging from and remaining intimately connected to them.⁵ *Phenomenology of Perception*,⁶ Merleau-Ponty's second book, published in 1945 and widely recognized as a classic of 20th Century philosophy, installs itself in this original order of perceptual meaning. It takes off from what is already established in the earlier work: it begins with both perception and the body understood as a lived-through being-in-the-world and will use this approach to explain what cannot be adequately explained by either empiricism or the rationalism. Merleau-Ponty will repeatedly argue that it is this theoretical approach that best makes sense of how human beings experience their world. The 1956-1960 lecture notes that came to published under the title of *Nature* return to the themes addressed in both of his earlier books, but especially in *The Structure of Behavior*, to investigate the ontological orders of nature, animal life and human life, and do so in order to trace the *emergence* of the embodied human subject from nature and animal life. *Nature* goes back to more thoroughly deal with the emergence of perception and human perceptual consciousness from nature, animal life, and the human body--to more completely establish human consciousness as an embodied natural process that is not merely a mechanical event but that is also not the detached intellectual consciousness, the pure for-itself, of the Cartesian tradition. Let us turn first to *Nature* and then to *The Structure of Behavior*, taking the texts out of historical sequence, in order to better grasp the author's general ideas and how they can be integrated.

Nature In his own separately published summary of his lectures on nature,⁷ Merleau-Ponty states that the philosophy of nature has largely been neglected, a neglect that has resulted in a superficial dualism of mind and matter, of a pure for-itself set against a mechanical in-itself. What he hopes to do is offer a more thorough study of nature, offer a study of the history of the concept of nature, and, subsequently, offer a philosophy of nature that more thoroughly understands the integrated relationship between the mind and the body. (TFL 62-65) As an alternative to treating nature as either a pure in-itself or a pure for-itself, Merleau-Ponty states that we should not consider nature as a mere collection of things in mechanical relationships but as that "from which we have arisen," as that which continues to support

and nurture us from within. (TFL 54) Moreover, nature cannot be treated as a mere linguistic signification or concept because “it presents itself always as already there before us, yet as new before the gaze.” Nature presents itself in our experience as always already prior to conceptual or linguistic signification, and we wouldn’t keep trying to capture and express it if this were not the case. “Must we not recognize a life in language, which would be neither fortuitous nor a logical, immanent development?” “We are looking for the primordial, non-lexical meaning, always intended by people who speak of ‘nature.’” “Nature is the primordial—that is, the non-constructed, the non-instituted; hence the idea of an eternity of nature (the eternal return), of a solidity.” “It is our soil—not what is in front of us, facing us, but rather, that which carries us.” (Na 3-4) Furthermore, idealism has difficulty capturing nature because it cannot grasp this “immemorial in the present.” If we treat time, not as a collection of discrete moments expressed in the mutually exclusive categories of past, present and future, as idealism does, but as a dimension of reality that begins with a present that opens out to and blends with the past and future, then we can account for an existential eternity that presents itself in our lived through experience of nature’s present, while idealism cannot, since it must hold eternity in existence by means of abstract thought. (TFL 65) Clearly, then, for Merleau-Ponty there is something beneath language and thought that language and thought attempt to express. Nature is not just a word meaning,⁸ and, yet, we will have a better idea of this primordial notion of nature if we attempt to trace various historical attempts to express it. This historical attempt, the author states, should begin with Aristotle.

Aristotle and the Stoics As is well known, Aristotle insists on a teleological view of nature, that things tend toward a natural kind. Light objects tend to rise and heavy objects fall because they move toward their natural kind, toward the upper atmosphere and the earth respectively. Nature, then, at least for Aristotle, is “divided into qualitatively defined regions,” into regions that are teleologically determined. Following Aristotle, the Stoics maintain that nature reveals “the idea of a *sympathy*, of an action at a distance between the parts of the world, the idea of Destiny...” These ideas persist through the Middle Ages and even into the Renaissance. (Na 7)

Descartes In a section tellingly entitled “Nature as the Idea of an Entirely Exterior Being, Made of Exterior Parts, Exterior to Man, and to Itself, as a Pure Object,” Merleau-Ponty recognizes that the idea of nature as a purely external being, associated with the more recent thought of Descartes and Newton, must certainly be confronted, for it is still present. This idea has its origin in various forms of pre-Socratic atomism, for which “[e]ach piece of being is a totality enclosed within its own ‘naked’ or ‘disrobed’ state.” (Na 8)

Both Descartes and Newton take up and thematize the idea of nature as composed of purely external objects, yet neither denies Aristotelian finality, which, rather, is incorporated into the idea of God. “From this point on, nature is made double, as *naturans* [active, creative, becoming] and as *naturata* [passive, a result]. Thus, all that could be interior to nature takes refuge in God. *Meaning finds its refuge in the naturans; naturata* becomes product, pure exteriority.” (Na 8-9, my bracket additions) For Descartes, then, *naturata* becomes the external manifestation or expression of God. Yet, Merleau-Ponty comments, this finality really has no meaning for God, for means and ends are the same in God. There is nothing holding God from the finality to be achieved, since conception and accomplishment are one and the same in the mind of God. For humans, on the other hand, this finality is totally beyond our reach, since we are incapable of grasping the whole of nature, i.e., the whole of God’s expression. Finality, then, “is no longer applicable because it can express neither what happens in God nor what human beings see...” Nature, then, in this Cartesian schema, loses its interior and becomes the immediate “exterior realization of a rationality that is in God.” As such nature becomes the expression of a system of God’s rational laws. (Na 9-10)

As is well known, Descartes argues that it is impossible to think of the existence of a thing without its extension. Extension is a necessary condition for the existence of any real thing. However, Descartes also maintains that our intellectual understanding of extension is different from our experience of it. As Merleau-Ponty expresses it, for Descartes “when we think of space, we think of an intellectual unity...; when we see it, we find ourselves faced with juxtaposed parts.” (Na 15) Rationalists like Spinoza, on the other hand, incorporate real extension into mathematical relations, and thus claim that there is no

difference between real extension and extension rationally conceived, between the actual and the possible. This does perhaps seem odd, Merleau-Ponty reports, since Descartes is frequently thought of as the progenitor of Modern rationalism, yet, it seems that it is Spinoza that has dominated the scientific view ever since. However, this is precisely the point that Merleau-Ponty is attempting to make: Descartes, who is thought to be one of the founders of Modernism, including the identification of mathematical thought and reality, actually provides a counter example to this claim. Descartes' later work (*Meditations*) reveals an existential dimension that cannot be incorporated into abstract mathematical thought, reveals "a new type of [bodily] space that is no longer *partes extra partes*." For Descartes, then, experience reveals a mode of existence not grasped by thought at all, and, moreover, experience reveals that abstract thought cannot grasp the mind/body interaction, the "human composite." (Na 16, my bracket addition) The problem for Descartes, then, is to relate these two modes of understanding, that of the pure understanding and that which is revealed in "the soul-body composite." (TFL 70) Yet Merleau-Ponty believes that Descartes' philosophy thus leaves us with two points of view that are irreconcilable, since the pure understanding, which ponders the definition of being as the expression of God's rational laws, is different from our very experience of being.

Kant What Merleau-Ponty finds promising in Kant is his treatment of living organisms as natural wholes, as wholes that are not just a collection of *partes extra partes*, wholes whose parts influence one another simultaneously to create a functional unity that is not the unity of a concept. Yet, Merleau-Ponty critically comments, Kant has trouble grounding these natural wholes in anything other than his anthropology, in the human need to organize contingent events conceptually. (See TFL 70-73) Thus, "Kant opposes human being to the cosmos and makes all that there is of finality rest on the contingent aspect of humanity—freedom." (Na 26) Finality, for Kant, is in human beings, in human freedom, not in nature in-itself, as it was for Descartes. As we will see developed further below, Merleau-Ponty has difficulty with the notion of finality, regardless of whether it is attributed to a detached consciousness or to nature in-itself. As we will see immediately below, one of the things he finds and values in Husserl is the attempt to integrate, without finality, the subjective and objective.

Husserl In Husserl's work Merleau-Ponty finds a renewed attempt to integrate the subjective and objective in Husserl's attempt to understand the move from the pre-reflective to the reflective. First, according to Husserl, at least in Merleau-Ponty's eyes, in order to understand perception as a pre-reflective experience we must first grasp it as an active motor power. This involves, even for Husserl, and certainly for Merleau-Ponty, a consciousness that must be embodied. Interpreting this point as it is expressed by Husserl, Merleau-Ponty states the following.

"My body is a 'field of localization' in which sensations are set up. In the act of exploring objects my right hand touches my left hand, touches it touching, and in this encounters 'a feeling thing'. Since there is a body-subject and since it is before this that objects exist, they are virtually incorporated in my flesh." (TFL, 80-81)

Merleau-Ponty fully embraces this attempt to integrate the subject and object and will later develop a "double aspect" ontology, an ontology of the flesh, with different ontological regions crossing and flowing into one another. He also finds, and embraces, in Husserl's work the effort to base objectivity on a theory of intersubjectivity and, ultimately, on a theory of intercorporeality.

"The experience which I have of my own body as a field of localization of an experience and that which I have of other bodies in so far as they *behave* in front of me, come before one another and pass into one another. There are two properties which illumine one another and are fulfilled together." (TFL 81-82)

I experience myself as the seat of experience, as an I think, and yet I also experience the other as the bearer of an I think as well, since I perceive the other as another perceiving body, behind which must be an I think. Moreover, it is the experience of this other that allows us to move toward a theory of objectivity, since objects now are more than the experience of one subject. The ideal object appears "only as the correlative of an ideal community of embodied subjects, of an intercorporeality." (TFL, 82) There is, then, in Husserl's thought, something beneath the ideal meanings that come to be expressed in abstract concepts.

"Beneath Cartesian nature, which theoretical activity sooner or later constructs, there emerges an anterior stratum...Husserl risks the description of the earth as the seat of pre-objective spatiality and temporality, as the homeland and historicity of bodily subjects who are not disengaged observers, as the ground of truth or the ark which carries into the future the seeds of knowledge and culture. Before being manifest and 'objective', truth dwells in the secret order of embodied subjects." (TFL, 82-83)

Merleau-Ponty's presentation of Husserl here, in the quote immediately above, I believe, the presentation of an integration of embodied subjects with each other and with nature that he will develop in his later work. We will observe this integration below.

Philosophy and Science Turning to the more contemporary relationship between philosophy and science, Merleau-Ponty proclaims that the scientific attitude is not wrong; it is not unmotivated or improperly motivated. It is simply caught in the natural attitude. It simply accepts nature, calculates within it, and generally does not think about it critically. However, he proceeds, modern science, at least the science of the 20th Century, does begin to look at and question its own ontology. (Na 85)

How, then, should we think about science and nature? Merleau-Ponty sets forth his own provisional answer: since nature is all encompassing, since it outruns all attempts to express it in conceptual formulas, we should not start with and attempt to derive nature from concepts or first principles, as has frequently been done in the Cartesian, Newtonian, and Kantian tradition. We should begin with the richness of experience, with an experience that is rich with perceptual patterns, and, Merleau-Ponty says, it is science, when it is at its best, that is this experience in its most regulated form. Moreover, as was just mentioned above, science does ask significantly philosophical questions, and this has been especially true in the 20th Century. (Na 87) The 20th Century physics of quantum mechanics, for instance, offers a serious philosophical challenge to its classical predecessor. The classical physics of Laplace claims that discrete units of matter exist with absolute properties, in space, and in determinate external relations to one another. Consequently, Laplace argues, if we know the place and motion of all things, then we should be able to predict all natural events. We should be able to know nature completely. Probability, in this context, merely expresses our ignorance and can be overcome by the accumulation of more knowledge and more accurate factual information. (Na 88-89) Quantum mechanics seriously challenges these claims. First of all, at the quantum level of nature, we cannot predict both the position and velocity of atomic and sub-atomic particles, since the very act of observation interferes with the structure of the atomic event. In this case, our observation does not just see what is there but actually helps bring it about, since the energy of the light involved in the observation interacts with the dynamics of the energy being observed. Yet the

state that does come about is just one among many possible states, one state which we cannot predict with certainty but only with a degree of probability. Moreover, the probability that is spoken of here is not just a result of knowledge that we lack but must be understood as part of reality itself. Probability here thus becomes a part of the very fabric of reality, and as such seriously undermines the certainty of the Laplacean view of the universe.

In addition, Merleau-Ponty proceeds here to claim that neither the atomic particle theory nor atomic wave theory can make complete sense of the atom's behavior. The particle theory, which is consistent with classical theory, with its discrete elements in external relationships, no longer explains the behavior of the atom, since atoms frequently act as if they were part of a field or a wave, and consequently cannot be quantified or measured as separate units. Yet in some cases, as, for example, with monochromatic light waves, energy seems to curl in on itself to form particles, thus negating the explanations of wave theory. (Na 90ff) However, Merleau-Ponty insists that simply because probability leads us away from absolute certainty does not mean that it ends in a complete indeterminism. Probability lies between the completely determinate and the completely indeterminate. He does ask here if quantum mechanics leads us away from the idea of natural perception, and his answer is yes, but only if we consider perception as a result, as a product of cultural and scientific analysis, rather than as a "field of origin." It leads us away from the notion of perception as conceived by classical physics but not perception as it is lived-through naturally. What we have learned from quantum mechanics, he says, is that the classical view of the *precise object of perception* is certainly not the only possible view of the perceptual object, and not even the most accurate. What we learn from natural perception is that there are perceived things that are neither the precise objects of classical physics nor the waves of quantum mechanics. The wind, for example, is neither a thing nor a wave but an imprecise phenomenal something. We also learn that there are indeterminate objects of perception, such as those presently behind my back. There are even absent objects, like the wallet left at home, and there are perceptions that are neither finite nor infinite, like the visual *field* before the perceiver, which Gestalt psychology tried to fix the limits of but discovered that it was impossible to do so. Finally, we learn from natural perception that even the very notion of scale or relative size in itself

is dependent upon perceptual experience, for we have no other way of making this determination. (Na 99ff)

What all this means is that 20th Century physics helps us reveal, in opposition to classical physics, and in agreement with natural perception, that no perception is absolutely certain, fully present, and totally determinate. Yet, it also means that even though physics can never fully determine what is the case (since no perception is complete, and since the perceived itself is not fully determinate), it helps us determine what is *probably* the case, and, conversely, what is probably not the case, since it does provide us with enough information to recognize stable and predictable patterns. In a sense, then, the “internal critique” of classical physics by quantum physics helps us be more aware of our natural perception, of a perception that is not fully determinate but that nevertheless is still meaningful, of a perception that is not conceived but lived-through. (Na 100)

Yet, Merleau-Ponty is fully aware that the information supplied by immediate perception is not enough to account for human knowledge. True, we need to first perceive, but then we must pause, reflect, compare and contrast, test and retest, as science does, in order to move toward a less personal and more abstract knowledge of the world. Yet, simultaneously, what we must remember is that this more abstract knowledge is based in perception and that we should therefore not use abstract formulas to construct the perceived but look back from our formulas toward the perceived to verify them.

We must take this as true of our attempt to understand space as well, in the sense that we should not begin with an abstract representation that we project into the world, but rather, with our actual experience of space. However, as Merleau-Ponty points out, the space that science gives us is an abstract representation of space. It gives us a Euclidean space, for it takes the Euclidean view of space as the *a priori* condition of all experience. Yet, as Merleau-Ponty also points out, the non-Euclidean representations of space, more recently entertained by science, has led to the idea that Euclidean space is not the *only* viable representation of space. In fact, the Euclidean idea of a space in-itself presupposes a *kosmostheoros*, a God’s eye view of space, a view of space seen from everywhere at once, a space that eliminates the situated perspective of the perceiver. But human beings are not gods. They perceive space

from a point of view within it, from the point of view of a situation. This means that the idea of space in-itself, or space seen from everywhere at once, has no meaning for us, and that if we wish to properly understand space, then we must approach it from the point of view of our human experience of it. True, we can pause and reflect, compare and contrast, and we can place ourselves in a variety of situations, and thus arrive at a more complete and abstract understanding of space. Yet, what we cannot do is place ourselves outside of all situations to perceive space as it is in-itself, completely independent of human perspectives. (Na 103)

In addition, Merleau-Ponty critically proceeds, the time that science provides for us is only a measurable time, a time that is broken into discrete units. Science thus once again gives us an abstract view. We see throughout Merleau-Ponty's works that it is not abstraction that he challenges, for he believes abstraction can be properly motivated by our actual perceptual encounters with the world. It is with the abstraction that regards itself as more real than this perceptual encounter, and that subsequently attempts to construct all experience based on its abstract principles as its starting point, that he takes exception. The abstract representation of time should thus be based on our actual experience of it, and not the other way around. Moreover, Merleau-Ponty adds here that if the scientist believes that abstract formulas of time express something beyond these formulas, then this is because the world of perceptual experience is a public world that is experienced as always already there. (Na 106f, 112)

Whitehead Merleau-Ponty next turns his attention to Whitehead, who offers a new view of nature, one that is achieved by a critical re-evaluation of the classical concepts space and time, and, subsequently, of the concepts of causality and probability. (Na 112) The view of Whitehead's philosophy of nature that Merleau-Ponty presents here is, I believe, virtually indistinguishable from his own philosophy of nature.

According to Whitehead the classical view of nature reduces time and subsequently all of reality, to a discrete moment, to a discrete point, to a "flash point." For the classical view, reality is necessarily reducible to the present, leaving the past and the future to be revealed via memory or projection, i.e., by the mind. (Na 113) Whitehead refuses to accept this view, for he believes that it does effectively reduce nature to an instantaneous flash point and subsequently makes the experience and conceptualization of

nature impossible. In order to more accurately understand nature, Whitehead claims, it must be conceived as a process, as a “spatiotemporal unfurling,” as a spatiotemporal gestalt of interconnected elements that human beings exist within, yet that is necessarily revealed through human experience. Time, especially, must be understood as a natural process that runs through the subject. (Na 113ff) “Just as in sensorial fields there is an exigency of quality, and our perception is never empty (that is, it is impossible to understand nothing), so too is the exigency for a future born of my corporal apparatus. The process of time is inscribed in our body as sensoriality.” (Na 119) We have, then, according to Whitehead, the experience of a nature and its temporality running beyond us as perceiving subjects, but for Whitehead this running beyond, this independence of nature and time, is only revealed in and through the perceiving subject. As Merleau-Ponty says summarizing Whitehead’s position, “time realizes the ‘joy of itself’ in the organism. The movement by which a bit of matter folds back on itself prolongs the ‘process of Nature.’” (Na 119) Thus it is impossible to conceive of nature, including the natural process of time, solely in-itself. Nature in-itself is only a limit idea.

For Whitehead this nature that simultaneously reveals itself as running beyond and through the subject necessarily gives rise to two questions. First, how are we to define nature positively? To which Whitehead responds by quoting Schelling: “Nature-philosophy must not construct Nature but let it construct itself.” (Na 120, quoted by Merleau-Ponty) Yet, unlike for Schelling, for Whitehead nature is neither an object of thought nor a subject, “and for the same reason: its opacity.” It cannot be fully captured in thought and its unfolding is contingent and therefore not intentional. Nature “is what always appears as already containing all that appears.” (Na 120) Moreover, Whitehead argues that nature cannot be thought of as composed of isolated things with absolute properties in passive, external, accidental relations with each other. Natures, rather, is a process, and as such all things within it necessarily play some role with respect to all the others.

“...the electron does not exist in the sense of absolute Being, which is all or nothing: the electron does not reside in a punctual and objective spatiotemporality; it is an ‘ingredient’ (this word also has the sense of making an ingression) in its whole vicinity, it is the hallway of certain ‘trace,’ of certain ‘roles’ observed by the observer. It is a transspatial and transtemporal being, but not any more separated from appearances.” (Na 115)

We thus encounter objects that cannot be explained by the classical view of isolated things with absolute properties. The electron is what it is because of its spatial and temporal relations to its surroundings; just as a melody is experienced as a whole whose parts are what they are because of their relationship to each other.

With this Whitehead challenges the distinction between “action-at-a-distance and action-by-transmission,” and sides with neither. (Na 115) Rather, he proposes “overlapping relations” that are prior to the breaking of time and space into separate units. Now, instead of thinking of time and space as containers within which nature is packaged, nature must be thought of as an elemental whole with different manifestations. Yet, even if we think of nature as a whole that manifests itself in events, it may still appear to stand over and against these events. In this case it is still possible to regard the individual objects as possessing attributes that do not change, since they remain separate from the events that unfold around them. However, according to Whitehead, we must also think of *objects* as *events*, fundamentally changing our view of them. The object must no longer be thought of as a separate thing, with absolute properties existing through time, but as unfolding in relationships to other objects both in time and space. In this case “the object is an abridged way of marking that there was an ensemble of relations.” (Na 116) The object is an abstraction. Yet this abstraction is not nothing, for it expresses really existing relations that tend to remain stable through time. Thus, the object and its ensemble of relations appear relatively stable through time; they do not exist independently of nature and time.

The second question that is raised by a nature that runs both beyond and through the subject is the question of the nature of self awareness. What is this self awareness, Whitehead asks, and he offers the following answer: it is an openness upon the temporal and spatial. “The positing of being in perception is simultaneously the positing of a spatiotemporal matter by our body, and defined such as it appears to us who perceive.” (Na 117) Perception thus has an ontological value. When I perceive, I am aware that this perception occurs in me, in my *body*, and thus in nature, and that it thus necessarily opens upon nature. Sense experience puts us in contact with a nature that remains distant from it because nature “rests in-itself,” for it has a thickness and opacity that sensation cannot penetrate. (Na 118) Immanence and

transcendence are thus given together and even as integrated, because nature is presented as transcendent within the embodied perceiver.

Moreover, since nature is in the process of unfolding, perception always reveals something new but that is also always already there. “Past and future meet each other and are mixed together in a poorly defined present. The process of Nature...does not have narrow edges, instantly defined present, within which its potency operates. Its operating presence...must be sought in totality, in the most distant past, as in the present...Maybe also in the unrealized future.” (Na 121) If this is true, that is, if the present moment of the experience of nature does open simultaneously toward a past and a future that are already a part of it, then all attempts to conceptualize or measure time must start from a *process* that is already there. Moreover, this is constantly confirmed by our continuous attempts to make sense of the temporal process of nature, for we would not keep trying to makes sense of it if it wasn’t experienced as already being there. We continually experience the process of nature as “a treasure from which all our perceptions arise.” The role of philosophy, then, must be to express nature as a process and to avoid, at all costs, substantialist thinking. (Na 121-122)

As already mentioned above, the similarity between Whitehead’s philosophy of nature and Merleau-Ponty’s is striking, to the point where it is difficult, if not impossible, to find a substantial disagreement between them. Both accept nature as a “spatiotemporal unfurling”, as a spatiotemporal process or gestalt. Both subsequently reject time and space conceived as a collection of discrete points, and both subsequently reject nature as a collection of isolated particulars possessing absolute properties in merely mechanical, linear relationships with one another. Things are connected to other things, which are connected to other things, and so on, and casual relations must be seen as a part of a field of interpenetrating forces. As Merleau-Ponty expresses it in *The Structure of Behavior*, structure in physics “denies individuality in the sense that classical physics affirmed it—that of elements or particulars invested with absolute properties, and on the other hand it affirms it in the sense that classical physics denies it, since grouped particles always remained discernable in principle while form is a ‘molar’ individual.” (SB 138) Individuals must be seen to be intimately involved in networks of relationships that

help define what they are, but this does not mean that everything is connected to everything else *equally*. With respect to causality we must see things connected by “a sort of lessening—proportional to distance—of the influence exercised on a given phenomenon by prior and simultaneous phenomena.” (SB 140) With respect to the general perception of things, persons, and events, both natural and social, the observer must be sensitive to the structural patterns that appear. Even though everything is connected to everything else, the observer is able to notice partial wholes, structures or gestalt forms that appear in the foreground as others slip into the background. The study of nature, then, must involve the notion of structure, the notion of partial wholes or gestalt patterns, and the notion of a more organic causality that considers a balance of forces in proportional relations.

In a summary comment that is perhaps directed toward Heidegger, Merleau-Ponty mentions that the scientific study of nature leads us to the idea of being in general, but that this general notion of being can only be approached through the study of particular beings. (TFL 88) He then proceeds to claim that the Western dualism of the in-itself and for-itself has led to a “confusion in modern ideas of nature, man, and God,” that we must attempt to get beyond this dualism, that we must attempt to do so by seeing how the particular regions of being cross into one another and overlap, and that we must now think of even physical entities as “structures in an ensemble of operations,” and of nature as a system of forces in relationships. (TFL 90)

“What is called nature is certainly not a spirit at work in things whose aim is to resolve problems by ‘the most simple means’ - but neither is it simply the projection of a power of [our] thought...It is *that which makes there be*, simply, and at a single stroke such a coherent structure of a being, which we then laboriously express in speaking of a ‘space-time continuum’... Nature is that which establishes privileged states, the ‘dominant traits’...which we try to comprehend through the combination of concepts - nature is an ontological derivation, a pure ‘passage’, which is neither the only nor the best one possible, which stands at the horizon of our thought as a fact which there can be no question of deducing.” (TFL, 93)

Nature is always already there before us. It is always already experienced as a primordial given, as a given that displays patterns (not eternal essences) that are not derived from anything else. Nature is always already experienced as a given that remains the ever present horizon for more specific experiences, even if they are negated. (TFL 93-94)

Biology and Animal Behavior Turning to the study of biology and animal behavior in *Nature*, Merleau-Ponty comments that Watson⁹ treated behavior as an *external event*, and that the genuine study of behavior immediately reveals that behavior cannot be reduced to a thing with discrete parts in mechanical relationships, since behavior is *meaningful*.¹⁰ The study of behavior immediately reveals that there is a gestalt meaning present to the behaving organism and that this meaning is at first perceptual, and thus not yet conceptual. The study of behavior also reveals that it is anchored in the body and would not exist without the body. Moreover, since meaningful behavior *develops* with the maturation of the body, it thus emerges from within the organism and can be understood neither as a merely physical event nor as descending into the organism from above. (Na 140) It is this development that Merleau-Ponty proceeds to trace.

According to Merleau-Ponty, Coghill's work,¹¹ with its emphasis on the relationship between embryological development and motor behavior, was among the best in terms of its explanatory power and in terms of its ability to move beyond the dichotomies of materialism/idealism, mechanism/finalism, reductionism/vitalism. (Na 140) Coghill's study of the axolotl shows that the animal's first motor behavior develops gradually according to determinate stages of bodily maturation. The animal's walking, for example, develops according to a certain sequential rhythm. The front legs develop before the back legs, and the movement of the legs is first integrated into the movement of the trunk, just as the movement of the forearm is at first integrated into the movement of the upper arm as a whole. The explanation of this sequence can be understood anatomically, at least in part, for the nerves that control movements in the legs are branches of and develop from the trunk, as those of the forearm develop from the upper arm. The development of the embryo thus determines and sketches out the behavioral capacities of the organism. However, the animal organism does not develop piece by piece but according to its *functioning*, that is, its behavioral functioning as a *whole*. (Na 141) "The embryological development progressively realizes the individual parts (anatomically and functionally), at the same time that the behavior of the whole invades the periphery of the body." The parts thus develop toward the organism's mature, adult, future global functioning in the world. (Na 142) How does this happen? Coghill answers as follows: even before it is

fully formed the embryo displays a significant degree of integration. Yet how is this possible? To answer this question Coghill introduces the idea of the functional regions, which define the nature and function of each cell according to regional demands--since we now know that cells transplanted to another region take on the role and function of cells of this region. (Na 142) "The first behavior of the animal is thus organized under preneuronal gradients [or polarities]: the nervous system emerges from a preneuronal dynamic." (Na 143, my bracket addition) According to Merleau-Ponty, what Coghill is seeking to demonstrate here is that anatomy is dynamic, that it is developing or unfolding toward a future, toward the possibility of the organism's mature behavior. If this is the case, then embryological development cannot be understood only from its present form but must include a reference to the future. In fact, Coghill even seeks to establish that the embryological development of the organism and the development of behavior are so intimately related to one another that it is meaningless to separate them. We cannot understand the embryological or neurological functioning of the organism without understanding its integration into the organism as a functioning/behaving whole.

Yet, as Merleau-Ponty again reports, the consideration of behavior as an organic totality that is not reducible to physiochemical functions taken separately does not commit Coghill to any sort of vitalism—with the spirit of animation coming in from the outside and above to enliven the mechanical operations of the body--since behavior develops and matures with the neurological development of the organism and is dependent on this development. Behavior emerges from the organism. It does not descend into it. (Na 144-145)¹² Moreover, the author insists on pointing out here that we must be careful of positing future behavior as a totality that pre-exists its parts. True, behavior is aimed at by the development of the organism, yet the behavior is only realized through the mutual development and cohesion of the parts. (Na 155) True, at each moment in an animal's development certain possibilities are opened for the future, yet these possibilities are not fully determined before they occur. The animal's development, rather, creates certain tensions, certain imbalances that preclude remaining in previous states but that do not prescribe precise solutions for the future. The pubescent period of an adolescent's development, for example,

precludes remaining at the pre-pubescent stage, yet does not prescribe exact solutions for the future. (Na 155)

Merleau-Ponty also turns his attention to Uexkull's theory of animal environments, with its claim that the animal environment or *Umwelt* is the world as it exists for the animal, and not for the animal's consciousness but for the animal's behavior.¹³ This environment is thus neither a worldly thing nor a conscious idea, but is, rather, a lived-through cohesion of the animal's aware behavior and its surroundings. (Na 167) Merleau-Ponty's exposition here seeks to trace out this lived-through whole. Following Uexkull's research, he points out that even the simplest form of animal life cannot be regarded as thing-in-itself, as a machine, because the animal has an environment, and machines do not. Machines have a *Bauplan*, a "plan of construction," that is, they are constructed according to a definite plan. Most animals do not act according to a definite plan of construction, and this is true even of the lowly amoebae. "Amoebae: these are in appearance animals made of 'flowing protoplasm.' They do not have defined organs; at every instant, the amoeba is made of pseudopods (legs) or vacuoles (stomach), and then makes them disappear in order to recreate them." (Na 170) It is difficult and even impossible to reconcile this sort of behavior with the following of a definite plan.

It is with more complex forms of animal life, however, that we observe the emergence of an environment that is truly an opening out rather than the narrow closing off that is typical of simpler organisms. The more fully elaborated nervous system of more complex forms of animal life develops as a rejoinder to the world, for here sensory organs are able to make distinctions fine enough to be able to form precise copies of the world, and the development of the species revolves around the adaptation to certain aspects of the environment. The adaptive development of the organism and its sense organs creates and acts as a sort of "grill" or framework through which the world is perceived or "interpreted." This means, however, that the resulting *Merkwelt* or world of perception can be influenced by the animal's *Wirkwelt*, its active, practical orientation toward the world. "We must [therefore] understand life as the opening of a field of action" (*Wirkwelt*), as creating a milieu that is not that of simply the physical world revealed through disinterested perception, but that is a perceptual field keenly attuned to and organized around the

interests of the sensing species. (Na 173) This means that the organism, and consequently its environment, cannot be regarded as a collection of merely mechanical forces *and* that the *Umwelt* cannot be regarded as the result of some sort of entelechy, as the projection of some already established species essence, and for the same reason: the environment unfurls as a result of the collaborative interaction between the environment and the organism. As Uexkull expresses it, the environment unfurls “as a melody that is singing itself.” (Na 173, quoted by Merleau-Ponty) This melody, as it is created by the organism’s active interaction with its surroundings, seems to sing itself through the organism, in collaboration with the organism, rather than singing solely by itself or the organism singing it. And even more, since the melody unfolds in the organism as a gestalt whole, as a rhythmic structure or form, the beginning of the melody implies the end, just as the end implies the beginning. There is therefore a reciprocal determination of the parts of the melody that cannot be laid out in a strictly linear sequence that is composed of separate moments, and this means that the animal’s response to environmental stimuli anticipates and sets up the interpretation of the next stimulus and subsequently the next response.¹⁴ The relationship between the animal and the environment is thus similar to that of the parts of a melody or the parts of the living organism itself, for in each case the parts exists in relationships of simultaneous reciprocal determination. Thus, when attempting to understand an animal’s behavior in relationship to its environment, the strictly linear sequence of cause and effect relations no longer makes sense. (Na 174)

It is no surprise, then, that what Merleau-Ponty finds of value in Uexkull’s work is that his notion of *Umwelt* escapes the dualism of nature in-itself and consciousness for-itself, of nature as a sum of external events or as the projection of an internal species essence. *Umwelt* cannot be understood as either and must be grasped as the organism’s opening out upon a field, as a sort of intimate collaboration between a species and its surroundings. Yet again, Merleau-Ponty states, even though the animal’s environment cannot be understood as merely physical or chemical events, this does not mean that we must appeal to some sort of vitalism. Since, while helping to form its milieu, “the living being works only with physicochemical elements,” the milieu cannot be regarded as some sort of “new force.” Rather, it is formed as “these subordinated forces join the unseen relations between them.” Merleau-Ponty is

describing here what he will refer as the “invisible” in his later *The Visible and the Invisible*. The later text describes the invisible, at least in part, as the open perceptual horizon that helps present an articulated perceptual foreground. The horizon/background elements act like rays of force that help articulate the foreground as the horizon remains inarticulate. There is thus an *invisible of the visible*, an absence that helps articulate the present. (VI 171, 215) Here in *Nature* Merleau-Ponty discusses the invisible as the biological emergence of global behavior.

“...the organism is not a sum of instantaneous and punctual microscopic events; it is an enveloping phenomenon, with the macroscopic style of an ensemble in movement. In between the microscopic facts, global reality is delineated like a watermark, never graspable for objectivizing-particular thinking, never eliminable from or reducible to the microscopic: we had only a bit of a protoplasmic jelly, and we then have an embryo, by a transformation which, always too early or too late, we were never witness to in our investment in a biological field.” (Na 207)

Thus, just as Merleau-Ponty sees the “invisible” attached to the visible, he likewise sees life attached to the physicochemical, for life is the gestalt whole that maintains a global significance that is not reducible to its physiological elements yet that would not exist without them. In a similar vein, *Nature* mentions that an organism’s regeneration or self-repair is physicochemical but also something more. “[E]verything that happens in embryonic regulation is physicochemical, but it is not physicochemistry requiring an organism of a typical form when the plan of the whole is restored from a part...” (Na 207) Here, again, we see that global functioning would have no existence without a physicochemical substrate, yet also that the global functioning of the organism can guide its physicochemical repairs. It is here, Merleau-Ponty informs us, that we really witness the emergence of the animal subject, since the subject’s experiential environment is not totally dependent on the physicochemical as simply physicochemical processes, and since the regeneration of damaged cells frequently follows the design and needs of the entire organism, including that of the organism’s behavior--which is frequently variable. Similarly, the emergence of the human subject, and subsequently human freedom, is born in a milieu that is already the result of the reciprocal interaction of the organism and the environment. We take up our biological interaction with our environment, and yet we are able to vary the structure or melody that forms in our reciprocal interaction with it.

Merleau-Ponty does remind us here that this experiential whole remains to be more thoroughly discussed with respect to evolution, for the global functioning of the organism must be more completely understood as emergent, as attached to the physicochemical, yet without being reduced to it. He explicitly states that his study of nature was intended to lead to the study of animality, which in turn was intended to lead to the study of the human body and human life. The human being is a natural being and as such *emerges* from nature. The human being cannot be understood as possessing an animal body plus reason, or as a purely mechanical body coupled with a pure consciousness, but rather as manifesting another kind of body, as “another corporeity.” We should understand the human being and its emergence from the animal body just as we have understood the emergence of life from the physicochemical, for in each case we witness a global functioning that is attached but not reducible to other elements. Just as we must understand the physicochemical and life as crossing or flowing into one another (*Ineinander*), so also we must understand the human body and human life as crossing or flowing into one another. So also we cannot understand the one without reference to the other. We observe in the human body the emergence of a new type of corporeal functioning, a new way of being embodied; we observe an embodiment that is aware of its surroundings and aware of itself. (Na 208)

Commenting on Portmann’s study of animals,¹⁵ Merleau-Ponty reports that it is commonly argued that the one thing that distinguishes humans from animals is the human capacity for self awareness, which of course is taken to be lacking in animals. Yet Portmann points out that animals do show or display themselves to other animals, and thus seem to possess some self awareness, even if this does not match that of human beings. This showing behavior is frequently associated with sexual activity, and as such is usually treated as inherited mechanical stimulus/response behavior. Yet Merleau-Ponty thinks this makes little sense and argues that it makes eminently more sense to treat *display* behavior as the emergence of a sort of primitive language that is specific to the species under investigation. First of all, if the behavior was strictly mechanical, we would have difficulty understanding the great *variety* of sexual display, even in the same species. Secondly, if behavior was strictly mechanical, we would have difficulty understanding the *nature* of the display and the response, both of which are elaborate and not the most

mechanically efficient or economical. Thirdly, if behavior was simply a mechanical response for survival purposes, we could not understand the emergence of this behavior as a *means of expression*. We could not understand, for example, how an aggressive charge is used to signal a threat rather than to make an actual attack. Behavior understood as aiming at survival certainly makes sense, yet it only makes sense for a certain range of behaviors. Contrarily, though, to recognize behavior as a means of expression certainly does not mean that animal behavior can be understood as an intentional aiming at some final goals. “The form of the animal is not the manifestation of a finality.” The form of the animal does not prescribe beforehand an intellectual ideal toward which the animal must proceed, for animals do not possess the cognitive capacities that make this possible. The form of the animal is rather the manifestation of an existential value. The meaning is lived in its presentation; it is not known as a reflective goal or idea. (Na 188)

In an important lecture on Lorenz’s move from instinct to symbolism,¹⁶ Merleau-Ponty points out that there are Kantian tendencies in Lorenz’s work, for Lorenz claims that “the organism posits some *a priori* as soon as it appears.” (Na 190) Yet for Lorenz this does not mean that the organism has the conscious goals generally associated with the Kantian *a priori*. In certain species, some behavioral displays, such as the highly specific ceremonies associated with food consumption, must be understood as strictly instinctual, since these species do not possess cognitive abilities. Moreover, in some cases instinctual behavior must not only be distinguished from cognitive behavior but from perceptual behavior as well, since instinctual behavior can be present without a perceptual object. (Na 190-191) A starling, for example, can be observed taking on the bearing of a bird about to attack. It looks about in the space around it, flies at insects that are not really there, strikes at them, and even acts to ingest them. Clearly these behaviors first developed in the species along with the actual perception of insects, yet they become so ingrained in the species that they can be called up even when no perceptual object is present. This inherited, stereotypical behavior, then, can be thought of as a certain *a priori* that seeks an articulation with its environment. (Na 192) Merleau-Ponty expresses this point as follows.

“What is established in this stereotype is not so much a relation to the object as an attempt to resolve an endogenous tension. This tension meets the object not so much because it is directed toward it as because it is a means capable of resolving the tension, as if the object intervened like a point of contact that is in the animal, as if it brought to the animal the fragment of a melody that the animal carried within-itself, or came to awaken an *a priori* that provoked a reminiscence.” (Na 191)

Objects thus come to release an *a priori* of behavior within a species, and, as just observed above, there are cases when the ingrained behavioral schema is released even without an object. Furthermore, there are even cases when the schema is brought to bear on something that it did not anticipate. Researchers refer to this latter case as “imprinting,” understood as a newborn’s fixation on those that are perceived early and persistently in its life. Merleau-Ponty adds here that imprinting must to be understood as a general and not just a specific elaboration. A duck, for example, will follow any human adult not just the one of its original imprint. (Na 194) The conclusion that Merleau-Ponty’s draws from all of this is that the activities that are outlined in this way, that is, active schemas or *a priori*’s that may be filled with general or variable content, can “become means of communication for the animals.” (Na 195) “‘To do instinctively’ is going to be transformed into ‘seeming to do.’ The outlined act easily becomes signification. In the duck the behavior of taking off in flight--squatting and then projecting the head upward--quickly becomes a sign for training the young.” (Na 195) We must admit, however, since the innate schemas develop in relation to specific properties of the external world, but also that they may be triggered in various ways, that “communication derives from innate symbols, but indirectly.” (Na 195) While Merleau-Ponty admits that it is possible to interpret the derived symbols mechanically, he argues that this sort of rigorous chain of sequence of events cannot account for the reciprocal influences that are clearly present. Using the mechanical interpretation, at least in certain cases, an effect would have to be interpreted as causing something that is usually considered to be its cause—an interpretation rendered impossible by linear rather than reciprocal relations. (Na 197) For example, the act of copulation in various animal species cannot be understood as the simple mechanical result of stimulus and response. Rather, as we have already seen, it is better understood as a broader “showing” or “displaying” behavior, within the context of which animals give themselves to each other. Thus, certain animal behavior, especially display behavior, which reveals that the animal is aware that it is being perceived, cannot be understood as merely

instinctual and must be understood as involving some sort of primitive symbolism. (Na 197) In addition, as we have seen, some instinctual behavior is able to develop into symbolic behavior because it clearly involves a sort of primitive imaging function, a prime force in the creation and use of symbols (Na 197)

The lectures here on Lorenz are important because they begin to trace the emergence of some sort of primitive language in various animal species—which will assist us in our attempt to understand its emergence and use in humans. In fact, Merleau-Ponty says at this point in his lectures that “we have seen the physical,...and we have seen animality. It remains for us to study the human body as the root of symbolism...” (Na 199) The human body as the root of symbolism will be addressed below. For now, however, we should turn briefly to a few of the general conclusions that Merleau-Ponty draws from his studies of animal biology.

Merleau-Ponty summarily mentions that a number of his lectures have focused on various levels of animal behavior, beginning with simple behavior and progressing to behavior that is more complex and integrated. (TLF 94) His lectures have focused on the attempt to perceptually grasp the perceptual and work environments of various animal species (by a sort of epistemological slippage, whereby the perceiver puts him or herself in the place of the perceived), and that his lectures have uncovered the following, which can no longer be explained using classical ontologies. The parts of an organism mutually and dynamically influence and define one another; the organism and the environment mutually and dynamically influence and define one another; organisms, both within a species and between species, mutually and dynamically influence one another—with the lived empathy of members of the same species indicating a sort of pre-linguistic, shared signification; animal behavior reveals meaningful perceptual and work environments; animal behavior must be understood as directive, i.e., not as mechanical, and yet without an entelechy; and, finally, since animals display behavior that can no longer be understood mechanically, this behavior must be understood as involving the emergence of some sort of primitive general symbolism. Again, no classical ontology can explain these sorts of complexities and call for an ontology that captures the co-penetrating regions of structures. (TFL 96) ¹⁷

Moreover, if this is the case, if ontology involves structural relations, then the neo-Darwinian idea of mutation/selection must involve the relationships of an organism or a species and not simply isolated attributes in relative isolation. It no longer makes sense to say that if an organism or a species has an attribute it will survive, and if it doesn't it will not.

“The result of this kind of thinking is to mask the most remarkable characteristics of living homeostasis, namely, *invariance through fluctuation*. Whether we are dealing with organisms or animal societies, we do not find things subject to a law of all or nothing, but rather dynamic, unstable equilibria in which every rearrangement resumes already latent activities and transfigures them by decentring them.” (TFL, 97)

This also means that we must abandon the notion of a strictly hierarchical evolution, since we must now speak of variations of behavior around a norm and of species whose attributes are similar to one another and “overlap.” In addition, this also means that instead of rigidly adapting species behavior to statistical formulas we must adapt the formulas to the fluctuations that we observe in behavior. We must develop a sort of phenomenological topology of species, many of which possess overlapping attributes.¹⁸ This, in fact, is what the author has attempted in *Nature*. We have seen that he has studied biology and evolution through his own unique brand of embodied phenomenology, one that has taken pains to separate itself from phenomenological forms of idealism, since, he says, we can no longer regard life as simply an object for consciousness. “Now we must think of the human body (and not ‘consciousness’) as that which perceives nature which it also inhabits. Thus the relation between *Ineinander* which we thought we perceived can be recovered and confirmed.” (TFL, p. 128) What is now confirmed, among other things, is the flowing or crisscrossing into one another of the body and perceptual consciousness, and of the perceiving body and the world. Moreover, it is the confirmation of this flowing into one another of the body as perceiving (the body as subject) and the body as perceived (the body as object) that allows us to understand the human body as *animated*. Furthermore, if this is the case, there is no longer the need to appeal to the absurdity of vitalism (of a spirit that comes from who knows where) or the impossibility of an organic consciousness emerging from isolated parts mechanically related to one another.

“We are not dealing here with two natures, one subordinate to the other, but with a double nature... Thus the body proper is a sensible and it is the ‘sensing’; it can be seen and it can see itself, and in this latter respect it comprises an aspect inaccessible to others, open in principle only to itself. The body proper embraces a philosophy of the flesh as the visibility of the invisible.” (TFL, 128-129)

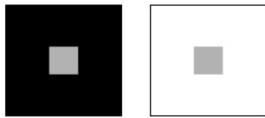
The body as sensible and the body as sensed cross into one another and overlap, thus incorporating nature into embodied perceptual consciousness and embodied perceptual consciousness into nature, i.e., incorporating the “invisible” (embodied perceptual *consciousness*) into the visible, into the observable body and the world—of which it is a part (its other side or inside) and from which it emerged. Moreover, since I am aware that my own perceiving is interconnected with the embodied world that it perceives, I can catch a glimpse of the perceiving that occurs in other perceiving bodies that I perceive. This further means that “the schema of the body proper, since I am able to see myself, can be shared by all other bodies, which I can also see,” and, most importantly, that “the body schema is a lexicon of corporeality in general, a system of equivalences between the inside and the outside which prescribes from one to the other its fulfillment in the other.” (TFL 129) This intriguing comment that will help us understand the move from perception to language will be dealt with momentarily, after a brief treatment of *The Structure of Behavior*.

It is in *The Structure of Behavior* that Merleau-Ponty presents his philosophy of human biology and behavior. The text begins with a consideration of materialism/empiricism and the classical reflex arc as an attempt to understand behavior, both animal and human, with discrete units of stimuli traveling along afferent pathways and behavior moving out along efferent pathways. Merleau-Ponty argues against this conception of behavior by appealing to the already copious amount of research data then available. He attempts to show that studies of behavior have demonstrated that even animal perception responds to the form, pattern, or rhythm of data and not to isolated units. (SB 11)

“Five different reflex responses can be obtained by stimulating the ear of a cat depending on the structure of the excitant employed. The pinna of the ear flattens out when it is bent, but responds to tickling with a few rapid twitches. The character of the response is modified depending on the form of electrical excitation (faradic or galvanic) or its strength; for example, weak strengths evoke rhythmic responses; strong ones evoke tonic reflexes” (SB 11)¹⁹

More recent research confirms the gestalt nature of perception, especially in humans. We now know that the ganglion cells of the eye have certain receptive fields, usually represented as a circle with a smaller circle placed in its center. Different ganglion cells display different light activated areas and light inhibited

areas, with some cells activated in the center circle and some inhibited in the outer ring, and others inhibited in the center. This neurophysiological structure allows the human eye to be very sensitive to even the slightest differences in light and shade and subsequently to the shapes and boundaries of surfaces and objects. Totally uniform surfaces mean next to nothing to the perceiving organism, and it is thus the differences in light and shade that allow the eye to recognize shapes, and structures. To confirm even more that perception depends on contrasts, consider the following figure.



The so-called brightness illusion represented by the squares demonstrates how much contrast can influence and even determine perception. The brightness illusion demonstrates that the two inner squares, which possess the same brightness, appear to display different degrees of brightness, with the right inner square appearing darker than its counterpart on the left, because of their contrasting surroundings. Thus, even relatively simple perceptions are determined by and rely upon contrasts for their appearance and cannot be regarded as a simple sum or aggregate of discrete units. The parts of the perceptual field here cannot be treated as isolated units because it is the dynamic *relationship* between the parts that determines their appearance. Thus even a relatively simple perception is attuned to structure and form and therefore reveals the primarily gestalt nature of perception.²⁰ Moreover, the fact that the Gestalt principles of perceptual organization are now so widely accepted that they approach the status of theoretical laws certainly lends authoritative support to this claim. Perception responds to perceptual patterns and rhythms not to isolated units of data.

Merleau-Ponty proceeds to make the additional point that researchers generally agree that the intra-organic state of the responding organism also influences the effect of the stimuli and even if they are registered in the organism. We now know, for instance, that the reflex is influenced by a number of chemical and biological “conditions powerful enough to cancel, sometimes even to reverse the expected effect of a certain stimulus.” We now also know “that, in man, paying attention to a reflex is sometimes

sufficient to inhibit it”, that “fatigue or hypnosis modify the reflexes by attenuating or accentuating them”, and that “cerebral and cerebella influences...probably intervene in all reflexes.” (SB 17-18)

Moreover, if the above is the case, we cannot really designate a purely external cause, for all reflexes rely on many intra-organic conditions which influence behavior as much as the so-called external cause. (SB 17) Yet, even though there was still disagreement about how this set of facts was to be interpreted, with some still maintaining that intra-organic conditions, including higher brain functions, merely play an inhibiting role, Merleau-Ponty proceeds to argue that the available research data disprove this claim. If the knee, for instance, is crossed when tapped, it extends; if the leg is merely hanging, it retracts. Should we once again posit a special inhibiting device or sector to account to this difference? (SB 22-23) Merleau-Ponty says no, and for the following reasons.

“Many subjects who present the extension reflex in the normal position, cease to present it as soon as various parts of the body are placed in different positions. If, as it seems, the extension reflex is conditioned by reversal of the chronaxies..., let us say that the relationship...of the chronaxies is determined, not by some local inhibiting device, but by the nerve and motor situation in the whole organism.” (SB 20)

Obviously, this claim, that reflexes are determined by the whole organism rather than by a local inhibiting device, does not mean that higher brain functions do not intervene at all, since in fact they do, only now, as we will see, attuned to and conditioned by the form of an activity. For now we can justifiably say that reactions are more readily explained by the situation of the entire organism—by the position of limbs relative to the rest of the body, by the fatigue and attitude, and even by the organism’s tendency to maintain a certain favored orientation toward the world—such as an upright stance. (SB 25) Furthermore, it no longer makes sense to say that an isolated reflex carries within itself only specific movements in reaction to specific stimuli, since we now know that habits acquired with one group of muscles can be transferred to another, as, for example, handwriting can be transferred to writing on a blackboard and, in feline behavior, the successful action of one paw can be easily transferred to another. There must be, then, “something *general* in our reflex responses which precisely permits these effector substitutions.” (SB 30)

Merleau-Ponty thus concludes that “the adequate *stimulus* cannot be defined in itself and independently of the organism; it is not a physical reality, it is a physiological or biological reality. That

which necessarily releases a certain reflex response is not a physico-chemical agent; it is a certain form of excitation of which the physico-chemical agent is the occasion rather than the cause.” It must be the case then that “the notion of stimulus refers back to the original activity by which the organism takes in excitations which are locally and temporally dispersed over its receptors and gives a bodily existence to those beings of reason such as the rhythm, the figure, the relations of intensity and, in a word, the global form of local stimuli.” Stimuli are obviously received by the perceiving organism, but they are processed according to the demands of the entire organism and must be grasped as organized meaningful wholes. (SB 31)

Evidence further suggests that in order to understand even the simplest eye movements that we can no longer use the classical thesis, with its notion of fixed receptors responding to specific stimuli, which travel long designated pathways, with fixed responses that are controlled by a central sector that merely inhibits these pathways. Even the simple act of viewing four dots placed on a piece of paper before an observer, with the eye shifting its fixation point back and forth between the dots, would require an enormously complex inhibiting coordination of linear sequences. Another, more plausible, more explanatory thesis is suggested, since it would be far “simpler to admit” that sensation and movement cooperate and act together to form a system. The whole of the living organism receives information from the world but is simultaneously engaged in it and thus simultaneously organizes it.

“In order for the vital movements to have immediately the rightness and flexibility which are so striking in them, ...motor innervations must be regulated at each moment and, in each case, account must be taken of the particularities of the situation. ‘[T]he innervations of muscles required in writing even a portion of a letter involves a wide range of variability...’ But all these regulations are executed instantaneously... Thus the receptive motor part of the nervous system must cease to be conceived as independent apparatuses...” (SB 36)

We must admit, then, that “the facts suggest...that the sensorium and motorium function as parts of a single organ,” i.e., the centripetal and the centrifugal pathways must now be seen as forming a gestalt system, with functions influencing each other simultaneously. (SB 36)

Further evidence against the classical thesis of pre-established physiological pathways now presents itself. True, physiological processes are similar to physical fields, where temporary equilibriums are

formed, and where stresses are stored, waiting to be released. However, just as a liquid streaming into a vase will take other paths if the main route is obstructed, so also a reflex can take another route, and this route can vary. It doesn't have to follow a pre-existent path. A constant functional result can be obtained in variable ways, and, if this is the case, it is *function* that we must appeal to in order to understand the organism and its behavior. To offer a few examples, when the internal and external muscles that control a monkey's eye were re-wired, with the classical expectation that function would be reversed, function remained the same. Or, when a beetle's leg was amputated, it continued to walk, but with a different gate. Yet, if the surface is irregular, the beetle reverts to its original/normal gate, revealing both that behavior is not automatically released and that it is *overall function* that determines the insect's behavior. Or, when an animal loses the ability to grasp food with its right limb, it regains this ability if the substitute left limb is amputated. Merleau-Ponty believes that these examples help confirm that a constant functional result can be maintained by variable means, that it is thus function that we must appeal to in our attempt to understand a wide range of animal behaviors, and that the thesis of separate pathways with fixed, pre-programmed responses no longer makes sense. (SB 37-40)

Ultimately, though, "vision in persons with hemianopsia furnishes the best example of nerve activity directed toward functional equilibrium."(SB 40) Let us consider a short series of quotes to see how Merleau-Ponty and others make this point.

"If we adhere to the classical conception which relates the perceptual functions of each point of the retina to its anatomical structure,...the functional reorganization in hemianopsia is not comprehensible. It becomes so only if the properties of each retinal point are assigned to it, not according to establishing local devices, but according to a flexible process of distribution..." (SB 40-41)

Merleau-Ponty is here (above) summarizing Koffka, who is interpreting a study by Fuchs. Koffka states the following:

"In the hemianopic field of vision the anatomical fovea lies at the left or right margin. This anatomical center is, for many hemianopics, no longer the functional center with regard either to localization or articulation. Instead they develop a pseudo-fovea, i.e., a new point on the retina...becomes the place of greatest articulation and clearness. 'This new place of clearest vision has no constant position on the retina, but constitutes a functional center, i.e., a center determined by the actual visual data, changing its location with the actual shape or size of the objects, or the form of the total field which confronts the patient.'"²¹

It appears, then, that the damaged eye shifts to achieve or maintain the clearest, most articulate vision. The eye functions not according to pre-given anatomical locations but in order to maintain the clearest visual field. It is the visual field then that we must appeal to in order to understand how the hemianopic eye functions, and it is this conclusion that Merleau-Ponty draws from the above and that he generalizes in order to understand the functioning of the healthy eye as well. (SB 42) ²²

This generalized conclusion is confirmed by other cases. Consider Helmholtz's experiment, which Merleau-Ponty summarizes as follows.

“If a white piece of paper marked with two black dots B and A is presented on one side of a stereoscope and, on the other side, a black piece of paper with two white dots B1 and A1, which are closer together, then when the left eye fixates B and the right eye B1, dots A and A1 are seen as a single dot on a plane situated behind the plane, B-B1. In this case, however, the dot on the right retina corresponding to the one where A is projected is black like dot A itself. The dot of the left retina corresponding to the one where A1 is projected is white like A1 itself. The two dots A and A1 do not present any common qualitative characteristic. They have nothing in common except being dots on a homogeneous background. Thus it is the function, completed by a stimulus in the constellation in which it is integrated, which is determining.” (SB 77)

This experiment demonstrates that the data are associated because of *how they function in the visual field* and not because of their specific qualities or their specific location on the retina. Or consider the well know example of color perception. If a sheet of paper, half red and half green, is placed before an observer, and a gray ring is centered on the paper where the red and green sides meet, the ring appears gray. Yet, when a strip is placed over both the paper and the ring where the colored regions meet, the ring appears half red and half green. This experiment again reveals that the experience of color cannot be regarded as a mosaic of discrete sense data, more generally that the perceptual field cannot be understood as a simple reception of isolated units of data received from the world via separate physiological pathways, and, more generally yet, that perception must be regarded as a gestalt field that must take into account the aware perceiver. (SB 82-81)

Now if the above is the case, if both animal and human perception and behavior must be understood as gestalt structures, and not as the mere reception and summation of discrete sense units, then they must be understood as original structures that cannot be reduced to simpler events. Or, to say this in a different way, the theoretical language that most clearly describes/explains animal and human perception and

behavior is logically irreducible to and incompatible with the language of the simple summation of isolated units. Extending this point, *The Structure of Behavior* reveals three types of behavior that display three types of form or structure: syncretic, amovable and symbolic, none of which is reducible to the other. The first displays stimulus/response behavior that is attuned to form but that is still rigorously pre-determined by the biology of the species—for example, the spider responds not to the dead fly placed in its web but to certain web vibrations. (SB 104-105) The second displays behavior that is not strictly pre-determined for the species but that remains tied to specific practical behavior—for example, the chimpanzee can vary its perspective, since a box can be seen as a place to sit *or* a thing to climb, but only appears to be able to do so within practical context—that of seeking rest or reaching for high hanging fruit. (SB 105-120, 144) While the third reveals the possibility of a variety of behavioral and perceptual perspectives that can be varied with ease—for example, humans can readily vary perspectives on things, events, others, etc. Moreover, it is this capacity that allows humans to construct general concepts and thus to treat signs not as signals for pre-determined behavior but as symbols that are able to refer to general meanings. (SB 122-124)

What we have witnessed here and further above are forms of behavior, structures that are qualitatively new, and that are irreducible to one another. This leads Merleau-Ponty to the following general claim:

“[T]o the extent that a philosophy of structure maintains the original character of the three orders [of matter, life, and mind] and accepts the fact that quantity, order, and signification—present in the whole universe of forms—are nevertheless the ‘dominant’ characteristics of matter, life, and mind respectively, their distinction must once more be accounted for by a structural difference. In other words, matter, life, and mind must participate unequally in the nature of form; they must represent different degrees of integration and, finally, must constitute a hierarchy in which individuality is progressively achieved.” (SB 132-133)

As we have witnessed above, Merleau-Ponty characterizes physical structure as a collection of physical forces in equilibrium, vital structure as living behavior that appears unified around inherent functional norms and preferred behavioral attitudes, and human structure as distinguishable from other vital forms by its ability to vary perspectives with relative with ease. These structures, as we have just witnessed in the quote immediately above, overlap but are irreducible to one another, since each displays a different sense,

a different degree of integration (and with none understood as a mere sum of isolated units).²³ This does not mean however that the more integrated is somehow independent of the less integrated, since these structures overlap, i.e., since human perpetual consciousness and the animal life from which it emerged still participate in the world of physical forms. Moreover, when Merleau-Ponty speaks of these structures as perceptual, as structures that appear to human *consciousness*, he is not leaning toward a description/explanation that must necessarily be interpreted as idealist, since what does appear to perceptual consciousness would not appear without the object perceived, and would not appear without the living structure of the body and the physical structures of nature, both of which support and maintain the act of perception from within. Thus, when Merleau-Ponty speaks of consciousness, he is primarily speaking of perceptual consciousness, and when he speaks of rationality, he is primarily speaking of a perceptual rationality or *logos*. Rationality should not be defined merely by the internal relations of conceptual meanings. True, as I walk around the outside of a building, the profiles or perspectives of the building blend, in part because of their meaning, but also, and primarily, because of the actual relationship between the parts of the building and their relationship to the perceiving body. (SB 186-187) Human perception thus involves relationships of meaning, and there is no denying that the human mind is capable of great conceptual abstraction, but to be meaningful these concepts must at some point relate back to our perceptual encounter with the world.

Returning to the closing pages of *Nature*, a number of “sketches” lay out the general outline of Merleau-Ponty’s biology. Here he states that he has studied animal biology and evolution because he wanted to trace the emergence of the human body and its two fundamental aspects---aspects that overlap and cross into one another. Rather than attempting to understand the human being as a thing-in-itself or a consciousness-for-itself, we must now attempt to understand the human being as an embodied perceiving that is aware of its being perceived. Structural changes at the level of animal biology have given rise to a qualitatively new way of being, to the human body and to an embodied perceptual consciousness that is aware of its act of perception. We must thus attempt to more fully understand the emergence of the more complex and integrated life of human beings from the simpler and less integrated life of animal biology.

(Na 214-215) Moreover, if we understand the human being as an embodied being, as an embodied being embedded in the world, then we can better understand the commonality of the experiencing subject “with this mass of matter” that is the world, and, again, we can do so because we can now understand that the human body is a two-dimensional being. The human body is matter that is aware. It is the body that experiences things around it. It is the body that touches and that is capable of touching because it is aware of being touched from the outside. It is the body that is aware that it exists in the world outside of itself. Furthermore, just as we observed the emergence of life from the physicochemical, we see here the emergence of the invisible (the seeing/touching) from the visible (the seen/touched). “There is no descent of a soul into a body, but rather the emergence of a life in its cradle, a provoked vision. That is because there is an interiority of the body, an ‘other side,’ invisible for us, of this visible. It is not the eye that sees. But it is not the soul. It is the body as open totality.” The human body, Merleau-Ponty says, is a miracle of nature that is arranged in such a way that it supports human perception, and supports it in a way that it is more than a mere mechanical means. True, the human body is the substrate for perception, the necessary condition for any perception to occur, but is not the sufficient condition. It does not, by itself, explain human perception, since relationships emerge from the body that is not reducible to it. (Na 217) Moreover, what this means for the perceived objects is that they must now be regarded as “correlations of the carnal subject,” as joined “to its movement and to its sensing,” as “interspersed in its internal circuit,” for “they are made of the same stuff as” the perceiving carnal subject. “The sensible is the flesh of the world, that is, the meaning in the exterior.” (Na 218) It is with this double aspect theory of the human body, and with its comprehension of the human body as structurally emerging from nature and animal life, that Merleau-Ponty believes that we can better understand the relationship between human consciousness and the human body, and, ultimately, the relationship between mind and matter---and to do so more adequately than the more reductive versions of either materialism or idealism.

Furthermore, it is the human body’s two-dimensionality, as understood by Merleau-Ponty’s theory of emergent materialism, that helps us better understand the relationship between human beings, for “...just as I touch my hand touching, I perceive others as perceiving. The articulation of their body on the

world is lived by me in the articulation of my body on the world where I see them.” (Na 218) Again, just as I am able to perceive myself perceiving, I am able to perceive other perceiving bodies as *perceiving*. Just as my act of perceiving is aware that it opens upon a field that includes it, so also it is aware that it intersects with other acts of perception (i.e., those lived-through by others) that also open upon and intersect with this field. My perceptual bodily orientation toward the world, with its schema, is thus the means by which I know others and that they know me. Human beings are thus able to understand each other because we have similar bodies that perceptually open upon a shared world in similar ways. It is the perceiving body, then, that opens the way to communications with others, that provides the basis for a lateral universal, for a universal that is similar but not exactly the same for all perceivers. It is the perceiving body that is the basis for the more abstract communications of language. It is the perceiving body that is the basis of all symbolism.

Yet, if the perceiving body is the basis of all symbolism, we must ask, as Merleau-Ponty does, the following series of questions. “What difference is there between the ready-made or natural symbolism of the body and that of language?” Is the first completely natural and the second merely based on convention? Moreover, if the relationship between the signs and significations of language are merely conventional, does this mean that they leave nature completely behind? Merleau-Ponty’s provisional answer here is that “convention itself presupposes a communication with self or other, and can appear only as a variant or divergence in relation to a preliminary communication.” If two or more people conventionally define a sign, this means that they understand each other enough to make such a decision, which presupposes that they share a common world. Furthermore, “each sign, being a difference with respect to others, and each signification a difference with respect to others, [presupposes that] the life of language reproduces perceptual structures at another level,” since perception itself is gestalt in nature, is a field of differential meanings. Words express present meanings but these meanings occur within the context of an absence, of an open horizon. Just as the perceptual foreground occurs in the context of an open perceptual horizon, so also words and word meanings occur in the context of an open linguistic horizon. In fact, the latter sublates the former, i.e., the latter takes up and expresses the former in a more

abstract and integrated way. “We speak”, Merleau-Ponty says, “in order to fill in the blanks of perception,” in order to articulate more precisely the open and ambiguous meanings of the perceptual field. Yet “words and meanings are not of the absolute positive.” Words and meanings are still formed and expressed within a field of relations, both perceptual and linguistic. (Na 211-212)

Yet, if this is true, we must all the more attempt to understand the relations between the body’s “natural” symbolism and the “conventional” symbolism of language, even though we cannot derive either from the other in any usual sense. Language is not natural in the sense that the relationship between sign and signification is predetermined by the structure of the body, by nature, or by their relationship to each other. In this sense, then, the relationship between sign and signification is not pre-given. In this sense it is conventional, but not in the sense that it is based on an arbitrary choice or on “one of our empirical decisions in our relations with others, because such decisions presuppose communication, which cannot result from it; they suppose a plan, the imposition of a derisory value on signs, and a language is not made on a plan...” (Na 226-227) Language does not begin with a system of signs that are related to specific significations determined by a pre-given code. “It opens on the signified and articulates the signifiers only by divergences, starting from other signs (= the whole of a language) and from preceding usage.” In this sense, then, language appears like a second nature, for we are born into an already established system of signs and significations. In this sense, then, “it is itself also macrophenomenal; it has an architectonic.” (Na 227) Just as a perception opens upon a foreground within an open ended horizon or background, just as perception is a differential field that is not fully present, so also a sign opens upon a signification within an open ended horizon of significations, so also language is a differential field that is not fully present. These fields of gestalt perceptual and linguistic patterns fuse and are held together by the world and the human body. They do not reveal positive causalities or entelechies because they are fields of open ended relationships and not merely collections of isolated material units or conceptual essences formed in isolation. Yet they are nevertheless systems that pre-exist the human individual, that individuals take up, take further, and vary from within, sometimes with great difficulty.

We have seen above that language is the sublimation of perception. Moreover, since language is necessary for abstract thought, it is necessary for the formation of the rationality of abstract arguments. Yet, since language is sublimation of our perceptual openness upon the world, so also is what we come to label rationality. Rationality is the sublimation of the agreement of profiles or perspectives, of mine with each other as I actively open upon and interact with the world, and of mine with those of others as we actively open upon and interact with the world together.²⁴ It is with this new notion of rationality, toward which Merleau-Ponty was straining throughout his professional life, that Merleau-Ponty attacks the rationality of Modernism, a rationality that is pre-existent, either in the mind of God, in the laws of nature, in the minds human beings, or in all three--and that is regarded as both universal and indubitable. We have seen Merleau-Ponty challenge this view in his philosophy of nature, animal biology, and human experience. He has done so by claiming that each of these structural regions displays, not conceptual essences, but perceptual properties that cannot be logically reduced to one another, and, moreover, that they certainly cannot be understood as derived from or unified within one set of pre-existent rational principles. Rationality is an outcome of our perceptual experience of the world, of the patterns we find within it, and of our reflective dialog about it. Rationality is the abstract linguistic system that best describes/explains our collective lived-through perceptual encounter with the world. What Merleau-Ponty has put forth is the description/explanation that he believes is the most rational, that he believes most clearly describes/explains nature, animal biology, and human experience, and that he believes more clearly describes/explains what reductive forms of materialism and idealism cannot. This theoretical description/explanation should certainly be considered and carefully measured against the clarity of our own experience and rational reflection. Not to do so would be irrational.

¹ Maurice Merleau-Ponty, *Nature: Course Notes from the Collège de France*, compiler Dominique Seglard, trans. Robert Vallier (Evanston: Northwestern University Press, 2003). Originally published as *La Nature: Notes, cours du Collège de France* (Paris: Editions du Seuil, 1995). All citations will refer to the English translations of Merleau-Ponty's texts. Referred to in the text as Na. See also Douglas Low, "The Body of Merleau-Ponty's Work as a Developing Whole," *International Philosophical Quarterly*, 2009, forthcoming.

² See Maurice Merleau-Ponty, *Consciousness and the Acquisition of Language*, trans. H. Silverman (Evanston: Northwestern University Press, 1979), p. 8. Here Merleau-Ponty discusses the role of the phenomenological method, which is to both describe and interpret. Perception suggests certain interpretations, yet interpretation is needed to fold back on the perceived to help bring it to more precise expression. Multiple interpretations are always possible, but some are better than others, and it is the interpretation that most clarifies the perceived that should be accepted.

³ Maurice Merleau-Ponty, "An Unpublished Text by Maurice Merleau-Ponty: A Prospectus of His Work," trans. Arleen Dallery, in *The Primacy of Perception and Other Essays*, edited by James Edie (Evanston: Northwestern University Press, 1964). See pp. 3ff. See also Douglas Low, *Merleau-Ponty's Last Vision: A Proposal for the Completion of the Visible and the Invisible*. Evanston, Northwestern University Press, 2000.

⁴ Maurice Merleau-Ponty, *The Structure of Behavior*, trans. Alden L. Fischer (Boston: Beacon Press, 1963). Referred to as SB. Originally published as *La Structure du comportement* (Paris: Presses Universitaires de France, 1942). See also Douglas Low, "The Continuing Relevance of *The Structure of Behavior*," *International Philosophical Quarterly*, September 2004, pp. 411-430, and *The Existential Dialectic of Marx and Merleau-Ponty* (New York, Peter Lang Publishers, 1987), pp. 81ff.

⁵ Again, as discussed in footnote 2) above, the criterion that Merleau-Ponty frequently appeals to is clarity or comprehension, i.e., the theory that provides the greatest clarity or comprehension is the theory that should be accepted. His works seek to demonstrate that a theory of embodied consciousness explains human experience with greater clarity and comprehension than either materialism or idealism. Or, to expand, a theory of *emergent materialism*, which seeks to describe the emergence of human consciousness from nature and the human body, describes and explains the human experience of the world with more comprehension than either reductionist materialism or various forms of idealism.

⁶ Maurice Merleau-Ponty, *Phenomenology of Perception*, sixth printing, trans. Colin Smith with corrections by Forrest Williams (London: Routledge and Kegan Paul, 1962). Referred to as PhP. Originally published as *Phénoménologie de la perception* (Paris: Gallimard, 1945).

⁷ Maurice Merleau-Ponty, *Themes from the Lectures at the Collège de France, 1952-1960*, trans. by John O'Neill, (Evanston: Northwestern University Press, 1970). Referred to as TFL. Originally published as *Résumés de cours, Collège de France 1952-1960* (Paris: Gallimard, 1968).

⁸ See also Maurice Merleau-Ponty, *The Visible and the Invisible: Followed by the Working Notes*, ed. Claude Lefort, trans. Alfonso Lingis (Evanston: Northwestern University Press, 1968). Referred to as VI. See p. 4, which states: "But philosophy is not a lexicon, it is not concerned with 'word-meanings', it does not seek a verbal substitute for the world we see...It is the things themselves...that it wishes to bring to expression." Originally published as *Le Visible et l'invisible: suivi de notes de travail*, ed. Claude Lefort (Paris: Gallimard, 1964).

9 The reference is undoubtedly to John B. Watson, often credited with originating the school of psychology referred to as Behaviorism.

10 We will see momentarily that this will be argued in great detail in *The Structure of Behavior*.

11 G.E. Coghill, *Anatomy and the Problem of Behavior* (New York & London: Mcmillian, 1929)

12 Merleau-Ponty also reference A. Gesell and C.S. Amatruda, *The Embryology of Behavior: The Beginning of the Human Mind* (Westport, Connecticut: Greenwood Press, 1971), originally published in 1945, and in 1953 in French.

13 J. von Uexkull, *Umwelt und Innerwelt der Tiere* (Berlin: Springer, 1909); *Streifzuge durch die Umwelten von Tiern und Menschen-Ein Bilderbach unsichtbarer Welten* (Berlin: Springer, 1932).

14 For Merleau-Ponty's general discussion of time, see *Phenomenology of Perception*, Part 3, Chapter 2, "Temporality."

15 Adolf Portmann, *Die Tiergestalt, Studien uber die Bedeutung der Tierschen Erscheinung*, 2nd edition (Basel: Reinhardt, 1960); English translation, *Animal Forms and Patterns: A Study of Appearances of Animals*, trans. H. Czech (New York: Schocken Books, 1967).

16 Konrad Lorenz, *Les animaux, les inconnus* (Paris: Editions de Minuit, 1953).

17 "The appearance of the notions of 'gradient' and 'fields' -- that is to say, of 'organo-formative' territories which impinge upon one another and possess a periphery beyond their focal region in which regulation is only probable -- represents a mutation in biological thought as important as anything in physics." (TFL, 126)

18 "A truly statistical conception of evolution would, on the contrary, attempt to define vital being starting from the phenomena; it would impose the principles of an 'evolutionary kinetic' free from any schema of timeless causality..., and would openly admit a scalar structure of reality, a plurality of [levels and animal environments]. Organisms and types would then appear as 'traps for fluctuations',...as variants of a sort of 'phenomenal' topology (F. Meyer), without any break with chemical, thermodynamic and cybernetic causation." (TFL pp. 127-128)

19 See also Charles Sherrington, *The Integrative Action of the Nervous System* (New Haven, Yale University Press, 1906), pp.7-15. Sherrington is one of Merleau-Ponty's many references.

20 See Robert Sekuler, Randolph Blake, *Perception* 2nd edition (New York: Mc-Graw Hill Publishing, 1990), pp. 61, 64, 78.

21 K. Koffka, *Principles of Gestalt Psychology* (New York: Harcourt, Brace, and Co., 1935), p. 202. Kaffka cites W. Fuchs, "Eine Pseudofovea bei Hemianopikern", *Psyc. Forsch. I*, pp. 157-186, 1922, p. 158.

22 And here is the general conclusion that Merleau-Ponty states regarding the above study. "It seems then that the quantity of space encompassed by our perception and the place of the zone of clear vision in the phenomenal field express certain modes of generalization of the sensory field related to the characteristics of the objects presented to the eye much more than the geometrical projection of the objects on the retina..." (SB, p. 42)

²³ The arguments that have been presented here against the reductionistic materialism that understands nature, and everything within it, as discrete units in mechanical, linear relations can be applied with equal force to the AI positions that compare the functioning of the human mind to the functioning of the computer, with its binary switches governed by preprogrammed rules.

²⁴ See Merleau-Ponty *Phenomenology of Perception*, “To say that there exists rationality is to say that perspectives blend, perceptions confirm each other, a meaning emerges.” (PhP, pp. xix-xx)