The Responsive Order: A New Empiricism

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Abstract. The uniqueness of logic is upheld and contrasted with twenty roles of a wider "responsive order" that includes us and our procedures. Empirical responses are precise, but different in different approaches. Procedures and findings are independent of (not separable from) "their" concepts. Two-way feedback obviates a top-down derivation of findings from assumptions, hypotheses, history, or language. The postmodern problems of "interpretation," "conditions of appearances" and relativism involve the ancient error of making perception the model-instance of experience. Instead, bodily interaction functions in language and precedes perception and interpretation. Logic, space time locations and individuated referents involve positional relations derived from comparing. Beyond Kuhn, Feyerabend, Newton and Einstein, if we can give interaction priority over comparing, the "responsive objectivity" of both can be upheld. A new empiricism, neither naive nor constructivist, uses the words "order," "explication, "truth," and "exactly" to build on Wittgenstein and on Dilthey's hermeneutic. Natural language is metaphor-like, "originally crossed." Logic must ignore its assumptions. It must render everything as a machine and drop humans and animals out. A new discipline is proposed, to move between the logical and the responsive orders, to deal with the machine/human interface and the social uses of science such as bioengineering.

The purpose of this paper is to establish a new empiricism, one that is not naive. It will incorporate the insights of postmodernism and move past the dead end where postmodernism seems to stop. It will be an empiricism that does not assume an order that could be represented, and yet this will not lead to arbitrariness. We assume neither objectivism nor constructivism. The results of empirical testing are not representations of reality, nor are they arbitrary. Our empiricism is not a counterrevolution against Kuhn and Feyerabend, but it moves beyond them.

The key is what I call the "responsive order," but this involves a new use of the word "order." To develop this new use, we have to understand and employ the capacity of words to make new sense, a power of words that Wittgenstein showed so well. I will need to refer to Wittgenstein and others, as well as to philosophical works of mine.

We will generate a kind of term that can enter into relations between the logical scientific order and the responsive order. A list of its distinguishable characteristics will show that the empiricism of the responsive order is useful in specific ways.

We can pinpoint the *roles* of the empirical, although it is not something separable. The assumption that empiricism requires a separate given has led many philosophers and scientists to conclude that empiricism is inherently impossible.

Section I shows why the things we study are not the same in different approaches, but the empirical contribution is not derived from the top down, from "history and language." We can state detailed characteristics of the responsive order. We and our procedures and concepts are within it.

In section II we discuss how the patterns of science change over the years. The change is not a logical progression. We consider the claim and the denial that they increasingly explicate what "was" implicit. Our new kind of term employs the relation, which is not an equation, between implicit and explication.

In section III we examine relationships between two kinds of explication, the logical and a greater order.

In section IV we ask how our thinking process can employ these characteristics. We recall two strands of philosophy that help us to do this: dialectic and hermeneutic. We can employ more than one approach simultaneously without relativism.

Section V shows how human beings can be understood by moving back and forth between the logical and the responsive order.

Section VI outlines some broad implications of the responsive order.

I. The responsive order

An anthropology student returned from two years in the bush studying a primitive society. Now he was reporting his observations in my cross-disciplinary seminar. The group was intent as he talked, then alive with questions. In response to one question he said: "Well, we all know from postmodernism that I cannot claim that what I say about this tribe is actually so, *anyway*. So I can really say anything I want about them." There was silence. It stopped the discussion.

The rejection of representational truth must lead us to a more intricate understanding, rather than arbitrariness.

I meet a Nobel Prize physicist and am eager to show him my critique of Einstein's relativity theory.[1] We arrange a meeting and I arrive with a list of points which I hope he will corroborate, perhaps with more details and findings than I command. He nods and approves every point. "Yes." "Yes, indeed." "Yes, perfect!" I feel very happy but I want to draw him out a little more on one of these points, so I ask: "But is this really tenable?" He answers: "Today, in physics, you can say whatever you want."

Many physicists now say that science is invented and arbitrary, but this is not quite what they mean. They lack the terms to articulate the changed outlook.

I begin by exhibiting two conflicting points which must be thought together:

Exhibit 1A: Different approaches lead to different findings.

All scientific findings seem determined by one of various alternative approaches (values, questions, methods, theories, hypotheses). Even the ordinary objects of perception involve many cultural assumptions, distinctions, organizing principles, and political influences. With another set what we perceive and what we find in science would be different. Currently many philosophers say that "nature" is a cultural idea. The scientific universe seems to be a mere "construction." If you do not like your findings, just change your hypotheses. Science is said to be just a game.

Exhibit 1B: Certain events can be brought about only with measurements and a precise combination of factors.

Since we arrive by airplane at our conventions, let us not announce there that science is a mere construction. While in the air we have been hoping that factors such as the weight, speed, and amount of fuel have been correctly calculated in relation to the curvature of the wing. While we are in the air, science is not just a game.

To keep both points and think them together can lead to an empiricism that is not naive. On the airplane we know that the empirical plays some role. Let us see if we can specify its role:

1) Many events (e.g., flying) can be brought about only by certain carefully measured procedures. This shows that what responds is stubbornly empirical. Empirical findings do not come just from hypotheses alone.

We can see that empirical results are more than the hypotheses also because:

2) Whatever we study (nature, reality, the world, events, experience, practice .....) often gives back not only the precision we already know, but surprising and more precise effects which could not possibly follow just from the theory and hypothesis we had at the start.

This makes it quite clear that there is no mere construction, no one-directional top-down determination by history, theory, or a "horizon" of assumptions. Although the empirical and the approach are not separable, the determination moves in both directions.

3) On the other hand, whatever we study responds also to other theories and procedures, but with different new precision.

Since it responds to various systems, it cannot be how one system renders it.

4) Whatever we study is very orderly indeed, but this cannot be the kind of order that conceptual systems have, since it can respond precisely to mutually exclusive systems.

5) Since the findings exceed the hypotheses, they have objectivity, but since they are responses to various procedures, they have a responsive objectivity.

Although what I have said so far is obvious, there has been no way to formulate what is empirical and objective in science, because in our new sense of the empirical, it is a response to what we do. Let us see if our formulations enable us to think further.

Implicit assumptions such as our interests and our methodology partly determine what we do. They limit the validity of this responsive kind of objectivity. But just how do they limit it? We cannot be satisfied with the answer that this is a matter of degree. The demanding accuracy of the empirical is not a matter of degree. We fail completely if we are even slightly inaccurate. We must examine the interface between our activities and the responsive objectivity more exactly.

In what sense do we interact with a continuing thing, a stable referent, and in what sense does the identity of the referent depend on how we study "it?"

The problem cannot be solved along the lines of the famous story of five blind men examining an elephant from different sides. They report different findings depending on what part of the elephant they touch. That is not much of a problem, because the story assumes an elephant. If the world (events, experience, let us put "**.....**" to indicate the many quite different words that might be used here) consisted of distinct things like elephants, the problem would not be difficult. One could have many attitudes, theories, and findings about "the same thing," and eventually reconcile them when the thing becomes more wholly known. But, as Austin put it, things don't come in "handy denotative packages." The thing does not remain the same.

For example, in animal psychology the Skinnerians study pigeons in a box. If the pigeon behaves in a certain way, it may be rewarded by a food pellet, or punished by an electric shock. Skinnerians have found that punishment quickly suppresses a behavior to zero, but as soon as the punishment no longer comes, the behavior rises to three or four times its original frequency. The finding has established that punishment is an extremely counterproductive mode of education. This is only one of their great findings.

The Ethologists study animals in the wild. They find that all animals behave in very complex ways which were never learned. For example, a pigeon raised in isolation up to a certain age can later build a nest without ever having observed or learned it. A great many such inherited behaviors now make it plain that living bodies come with complex behavior sequences "built in" (as the Ethologists call it).

So far the story of the elephant could still apply. Isn't it the same pigeon studied from different angles? No, it turns out it is not the same pigeon.

The Ethologists study each species. They find inherited behavior more complex in the next species higher on the evolutionary scale. In contrast, the Skinnerians are not really

studying pigeons. The object of their study is the conditioning of <u>any</u> animal. The Skinnerians study a stable referent that is common to most of the animal kingdom.

But although the object of study differs, can we not still ask: Isn't the physical thing in the space within the feathers the same? No, that is not so, either. The Skinnerians buy their pigeons from factories that breed pigeons just for science. For many generations *these* pigeons have only sat in cages. Most of the behaviors found by Ethologists have been bred out of them. Science changes what it studies. Each group interacts with a stable referent, but it is not the same pigeon.

For many years the chemical LSD was administered to research subjects in small, whitewashed hospital rooms. The experimenter observed through a peephole in the door. Every precaution was taken to avoid confounding the effects of the chemical with other factors. But "it" is not "the same" when taken along with music and company. The chemical is not one thing with its own set of traits, nor is the human body. The assistants in a research program on human infants are instructed not to emit emotional responses that could affect the infant. A student tells me that his supervisor stands behind him and firmly holds his head by the hair, so that it hurts whenever he unconsciously nods to the crying infant. But other investigators study the capacities of infants that *are* responded to. They say that mother and infant are a single system, and that is "the thing" they study. The infant is not a single thing with one set of traits.

6) The responsive order responds with "stable" referents, but different ones to different approaches.

If we can accept the difficulties, we can specify more characteristics of the responsive order. Alternative approaches develop separate *webs* of precise findings. Precision develops within each web, but they are not consistent with each other. Conflicting webs develop at the advanced edge of science. We can wish they would develop also at other points, so that we would not have to acquiesce to one "agreed upon" monolith of science, since we know that alternatives are possible at any point. Perhaps they exist but we have not heard of them because they are being ignored by the scientific community. Perhaps we can regularly invite more of them.

Quine[2] rightly saw that the order of nature cannot be just one of these "webs." Although they can be internally consistent, they cannot be reconciled. Even if they could be, we know *in advance* that more of them will soon form. Since we know it in advance, we can assert it in advance: Nature **.....** can *respond* with surprising and precise detail, but differently to different approaches.

The responsive order provides a "reality" (**.....**) to check against. We can check each approach (procedure, performance, set of experiments, measurements) against the feedback of an equally precise "reality." But there is no way in which we could "check" so as to decide between *these* "realities."

When philosophers deny the checking, they mean the second order checking. But we need to change the question. Why should we continue to assume that there ought to be only one consistent system? Let us rather ask how to operate with more than one.

We need to raise the quality of the current debate. One side defends the insight that the second order checking is impossible. The other side defends the first order checking and its superiority over unchecked assertions. Both sides understand this difference, but they wrongly assume that empiricism requires a checkable reality to adjudicate between the variety. They both assume that a denial of second order checking destroys the objectivity of first order checking. Both sides believe that without second order checking the result is the kind of thing I reported in my stories at the start.

Since the responsive order includes the production of the systems and pictures, it cannot be a system like them. It cannot consist of mutually exclusive systems nor can it be a picture of inconsistent pictures. We need to think of it as comprising not only the systems, but also the procedures and we who institute them. Then we do not have the trouble of the impossible picture of pictures.

People readily acknowledge that pictures vary with different approaches, but then they still want one picture. They look for criteria to decide which approach to use, because this seems to determine which picture will be considered the true one. If there are no such criteria, the result seems to be relativism -- and still a relativism *of pictures*. The possibilities of action and change are greater than the possibilities of a single picture or system. But objectivity is not therefore lost. It can be found in the orderly and regular character of the processes in which pictures and systems are generated. With this "responsive" kind of objectivity there is no reason why all interactive events should be determinable by one system of measurement, one grid of comparisons, one picture.

From within the responsive order it is not odd that different actions make different changes and enable different measures and precisions. This does not mean that we construct the infant; or that infants have no nature, or that we don't engage a real infant, although it (**.....**) can become a stable referent in many ways (the infant unresponded to, the infant + mother, or some other regular referent) in response to our approaches.

7) Whatever we do engages what we study so that its changes are objectively its own responses, but they are responses in and to activity.

Let us now examine the various things we do and the responses to it. We engage in active procedures with actual findings. And we also formulate theoretical concepts. Procedures and findings are not separable from the concepts that define them. But let me show that procedures and findings do have a specifiable kind of independence from the concepts, which has not been sufficiently remarked upon.

8) Theories can contradict each other, but findings cannot.

For example, the Skinnerians despise Ethology. Naturalistic observation is not science at all, they say. What does it predict and control? On their side, the Ethologists pity the Skinnerians. What can one learn about an animal, if one keeps it in a box? The poor Skinnerians see almost nothing of an animal's behavior. But despite the most intense rejection neither can wipe out the findings of the other. Their theories are mutually exclusive but their findings are not. When punishment stops, the punished behavior will rise to several times its original frequency. Nothing the Ethologists have found can keep this from being the result. And, if you present certain things to a natural pigeon, it will immediately go into a long sequence of complex behaviors which it has never observed or learned. No Skinnerian finding stops the bird from doing this.

Findings cannot contradict each other, even when contradictory theories led to them. It shows that a finding is not just the creature of a theory. Something empirical about findings makes it impossible to discard them.

9) A procedure can be instituted even if we reject the concepts. Procedures cannot contradict each other either.

Procedures have an independence from concepts also in another way: They arise not only from logical inference. Crease[3] points out that experiments have the character of "performances." What enters into a performance is more than the script or score. It includes a whole background of intuitive practices. All sorts of trials and errors, hunches and wildly derived ideas enter into the design of experiments. In a laboratory many improvised moves occur. One may employ procedures that lack theory for years, as well as theory that lacks procedures.

10) Procedures follow directly from concepts only after many retroactive revisions of both. Even then it may be wise to reject the concepts, and devise new ones from the greater intricacy that is involved in doing any procedure.

We see that although concepts are implicitly involved in all our activity, they need not determine the activity. Although findings and procedures are not separable from concepts, they do not function only within the "horizon" of the concepts, nor do they function like concepts. They have empirical characteristics which make them independent of the concepts that seem to define them.

Let us therefore undertake *a reversal of the traditional philosophical procedure* according to which doing (interaction, experiencing, procedure, finding, practice, ordinary speech, experiment **.....**) is considered derivative from pre-existing determinants, (theory, history, language, culture, cognitive systems, comparison, horizon of conditions **.....**). Our reversal is a *second* insight. It comes after the a hard-won insight that observation and experience are *inseparable from* all sorts of social and theoretical assumptions. *After* that insight, one can recognize that interaction (**.....**) *always again exceeds and precedes* the supposed determinants. Here I must refer to a longer work concerning this reversal.[4]

Later I will show how "pure" logical inference can be examined and set apart, within the wider responsive order in which interaction has priority over logical consistency.

Let us now ask about the converse: Do theoretical concepts have any degree of independence from the procedures? Of course the concepts are not separable from past procedures and findings, but at a given moment suppose we sit back and think, for example about punishment and reward. This refers to all animal organisms. If we change to thinking about nesting behavior, we refer to just a few species. There is an objectivity involved each time, but it is *responsive* to our referring. Our mere thinking and relating -- i.e., comparing -- constellates (creates, differentiates, synthesizes, lifts out, *refers* to **....**) different referents, but their objective responses are not deducible from the mere identity determination. If in addition to this identity we still assume a separate single set in nature, we assume someone (the ideal observer?) who compares them. Referents can be constituted and reconstituted by mere comparison, but when given identity, they respond objectively and empirically, not at all arbitrarily. To think that there is no single set of individuated and located referent things has been considered the worst degree of relativism, as if it must destroy the objectivity of the responses. We can reverse this. Comparing and identity are less fundamental than empirical events.

Another activity of ours is similar. When we "only" measure, we are not disturbed by the fact that we have *constructed* the measuring scale, because we obtain the thing's objective measure on the scale. The trees don't compare each other; we bring the comparing. Nevertheless, this tree is *objectively* and *precisely* so much higher than that one. The fact that it is *length* depends on the measure, but this tree's length depends on the tree. On any scale we find objective precision. But different measures *compare* a thing within a different set of other things. The scale of length sets up all things that can have length. If we measure its atomic radiation, we *refer* to a different assembly of things. The referent-assembly can vary not only in extension (part of a cell, the tree, the ecological system), but on many dimensions of comparison. The variety does not destroy the objectivity of the empirical responses.

11) The measure is constructed, but the precision has responsive objectivity.

Comparison is not really possible because earlier interactions are involved in anything, even if we are only thinking just now. Measuring is not supposed to change anything, but it involves procedures that may have interactional effects.

12) Some interactions make some "mere" measurements impossible.

This forces us to notice that there are two different kinds of responsive objectivity: Mere comparing brings the objective (and precise) empirical response of what we compare. On the other hand, actual events or interactions are active changes; they are an entirely different kind of objective response. We understand each kind, but there is a pitfall when we need both at once. Then we may wrongly assume that comparing and referent-identity must come before actual events. But comparing and localizing are *disturbed by*

interaction; they *are not* interaction. We need them to define interactions, but that does not reduce interaction to comparing and referring.

Before Newton motion was considered "relative," merely a change in a thing's relations to other things in our location system. Then Newton's water bucket at the end of a twisted rope showed that there is something utterly different and empirically independent when a thing moves. But Newton continued to think of motion as if it were the change in space and time relations. So he concluded that the space and time relations (which are really just passive comparisons) have to be considered objective as well. Location became "absolute," so that the comparing was no longer something sharply different from empirical effects. But this was a short-cut that did not deal with *just how* space-time relations are objective -- differently from how movement and interaction are objective.

Newton's space and time relations led directly to Kant's "conditions of any appearance." Comparing was given primacy over empirical events. The comparing process then became independent as Hegel's "movement" of differences. The comparing was no longer static but it still seemed to determine everything else. Einstein modified but did not alter the claim of comparing to overarch events. The transformation equations still maintain consistent localization across quantum interactions. Relativity theory limits the greater number of solutions one could write for quantum mechanics alone. Physics may be moving past those restrictions. Logic and analyticity would not be lost, but localization would no longer have a status equal to interaction. (CRL)

If one assumes that localization and reference must be the consistent frame, then the fact that interactions upset localization seems to be a loss of objectivity. But in a responsive order this rather indicates that something more than mere comparison is happening. Perhaps objectivity would be better supported by the ways in which interactive effects can be independent of comparison and localization. In a responsive order there is no reason why a consistency of comparative relations between points should encompass all interactional changes.

Changed relations are not changes. Positions don't relate to each other. They are results of comparing, referring. They are relations imposed from outside upon passive, merely referred-to entities. An observer gives them relations to each other. Their samenesses and differences are not their own unless we first reduce them to those relations. The comparing has no effect on them, unless we think of "them" as mere comparisons. The patterns are not events, only arrangements we place before ourselves. Localization assumes individuated entities that are only "there," only referred to, only related by position. Actual happenings and interactions are supposed to come second, and to leave such a system consistent and undisturbed. Even if one such picture stays consistent, why should we think of changes, interactions, and events as mere changes of the picture?

Many people accept the fact that comparison and interaction are inseparable, but then they conclude that interaction is only comparison. The empirical roles I have been setting out show that if we give priority to interactions over comparisons, we can understand the specific objectivity of both. On the other hand, if comparison is given priority over

interaction, then the empirical disappears and we lose the objectivity of both. We have established a number of respects in which more happens (interaction, the empirical **.....**) than can be derived from comparisons. We have seen enough to refrain from reducing interaction to comparison. We were able to specify some independent empirical roles of findings and procedures (interactions), as well as of stable referents and precision (comparing). Within a responsive order both have objectivity.

II. Explication and carrying forward

If logical consistency does not determine the responsive order, what remains the same? And, is it not nonsense to assert that the order of nature **.....** is not what our assertions assert?"

Exhibit 2A: Putnam[5] asks: "Is water necessarily H2O?" Was it H2O before this was discovered?

Since science changes over time, truth cannot be correspondence. But:

Exhibit 2B: Nature does not change when a law is discovered.

Our procedures *do* change nature. And new laws are rarely just new concepts alone. They come from, and lead to procedures. New laws can formulate ways in which we can now change nature so as to undo some of our previous laws of nature.

Our powers to change nature are ever increasing. New procedures bring forth more varied "things," new responses from nature **......**. Human beings *are* nature still developing, and we also *make* fabulous nature-changing processes. "H2O" allows us to separate H and O in ways that may not have happened before. We also produce water from H and O which could not be done before. Now we consider all the water in the world *as if someone had made it* by combining H and O. I will return to this "made" character that scientific patterns bring to things. We must reformulate exhibit 2B. *In what sense* does nature stay the same?

Putnam assumes that our world obeys something he calls "the laws of nature." He takes them as "physical laws" that are independent of whether we know them or not. We can be with him in spirit, but his carefully differentiated discussion makes no distinction between "the laws" and what does not change in nature, *whatever that is* **......**. I will soon discuss the reason why Putnam and current thinkers refuse such a distinction. I think it would bring him closer to the realism he wants, if he made the distinction. If he had a term for the "**.....**" (the responsive order), he would not have to use "the laws" for both. The unchanging order is not the same kind as a set of laws.

Science is a process of *retrospective revision*. The concepts that were derived <u>last</u> are put first (or the modifications that new findings require are put first), so that the findings

follow from them. At a given date most of science (or each web) is arranged with logical consistency from premises, but *there is no logical consistency across the changed assertions from year to year*.

What we study (**.....**) seems determined by the laws of science; its behavior seems to consist of the latest factors and patterns. But since they will be different in a few years, its behavior is not actually determined by the current scientific patterns or by those we will assert in the future. *So the things are not determined by the conceptual patterns!* Can we face this conclusion, and is there a way to think further?

The traditional move is to sidestep the question, to deny that we can even speak of anything empirical as if we have only the sequence of changing patterns. "Constructivism" reduces everything to comparisons. Sometimes they are spoken of as if they did the comparing themselves. "Difference" happens. Events are thought of as "differences" happening. I consider this a kind of Idealism. Hegel said "the differences march." Interaction is reduced to comparisons[6].

Constructivism negates but retains the assumptions of correspondence and representation since it assumes that if they don't hold, then we have nothing but the sequence of assertions. On the other hand, if we develop terms for a responsive order, we can relate the sequence to something empirical, and we can examine the sequence in a different way. Hegel said that everything true is retained in science when it advances. Kuhn has convinced many people that science does not advance; it simply changes. Promising work is thrown out when there is a shift in scientific style. Certain questions are no longer asked. The hypotheses change and so do the findings. But Kuhn does not say that there is never any relationship between the changing statements, or that any and all proposed changes would be equally (un)justifiable. But why need we assume either that everything true is retained, or that nothing is? Rather than these popular simplifications, we can notice that *various relations* sometimes obtain. We may be able to characterize them more exactly.

For example, in later years there are almost always *many more terms* than earlier. Sometimes one cannot even find "the same" field. Where before there were three terms, now there are 23 none of which are the earlier three. This recognizable relationship is neither logical deduction nor just difference.[7]

Naive empiricists say that the later versions "*make explicit*" what "*was*" (is now said to have been) "*implicit*" before. "Constructivists" deny anything to which the versions relate. But we can use these terms more intricately:

13 In relation to the future we can always speak of something that is now implicit. But explication is not an equation. It does not displace the implicit: it carries the implicit along with it. The explication carries the implicit forward.[8]

Explication has parts, factors, patterns; whereas what "was" implicit did not. When we say that what we now assert "*was*" already so before (H2O for example), we must recall

Wittgenstein's battle against reading a formulated rule back behind the performance which precedes it. The retroactive "was" is not the linear "was." But it is not just a lie or no relation at all. I have developed the recognizable marks of the term "explication" in other works. It is one among many relations that may obtain. Note that it is both a relation between two versions, and their relation to what (**.....**) they carry forward which is not separable but noticeable in the transition.

The retroactive "was" does not move back; it is a carrying forward. It can generate a new more intricate scheme of time which includes linear and retroactive time.[9] Other terms of this kind have been developed: Next we discuss: shall we accept more-than-logical terms?

So far I have tried to show that our assertions are related to something that functions empirically. A discourse about this is possible if we do not assume that representation is the only possible relation to something empirical, so that its denial must leave everything arbitrary.

III. The logical order employed within the responsive order

The uniqueness and singleness of logical inference must be retained. The responsive order shows itself in many different roles. Of course there are many kinds of logic as well, and they all involve many kinds of assumptions as well as the implicit effort to hold the implicit aside, to make "pure" logical inference possible. The actual process of logical inference and its assumptions can be studied within the wider order. But we must recognize that logical inference is distinguishable from any other process. Postmodernism merges the two orders and loses them both. We need both. We lose ourselves if everything is reduced just to what can follow from premises. But to deny the possibility of logical inference leaves philosophy helpless, while logic changes the world.

On the other hand, the responsive order is *"more orderly"* than a logically patterned system. But can the word "order" be used in this way? Some philosophers might argue that what we call "carrying forward" is nothing more than a paradox -- i.e., neither the same nor different -- just the sort of thing postmodernists delight in. Others will argue that something more-than-logical is simply "ineffable." They all assume that language is conceptually structured. But Peirce, Dewey, and Mead, Dilthey, Heidegger, and especially Wittgenstein were already one step beyond this problem.

Wittgenstein showed convincingly that it is the logical models which must be put in question. What happens in ordinary situations is *more intricate* ("verwickelter") than the artificial models.[10] He showed that one can use the same word in many new situations which give them *immediate* new meanings. The use of words is not arbitrary, but it is not governed or limited by logical patterns. Ordinary language and situations are an intricacy.

14) We can say that the responsive order is an intricacy. Words and procedures have immediate effects when they occur in interactions.

Logical patterns are implicit in all human life, but they carry forward, they do not limit like premises. The concept "carrying forward **.....**" includes the linear time pattern of "forward," but the pattern is exceeded by the sense it makes in use. *So the word says the relation to the responsive order which its use involves*. The "....." is another term of this kind. We can put a "....." after any assertion. (We need not always write it.) Thereby we take any assertion not as an equation but as a carrying forward. Anything we study is thereby formally opened to being carried forward in other ways. Then "it" may acquire different parts, perhaps more parts. We can think it as implicit, as an *unseparated multiplicity .....*, more than can be reduced to individuated units. It is more intricate than a pattern; it can function in *multischematic* relationships. These terms bring a "**.....**" which does what they say. When words are used to characterize the responsive order, they say and instance how their logical structure is exceeded.[11]

Let me cite some relations between logic and the more-than-logical order. For example, computers cannot recognize metaphors. But metaphors do not lack order! We may understand a metaphor *exactly*, yet find ourselves at a loss to convey it in logical terms. The sense it makes is *more precise*. When it expresses something about one thing in terms of another, it *crosses* them in a way that makes more meaning than either had before. It is easy to state many similarities. We can also find many differences to say what the metaphor does not mean. But we cannot easily state the crossing which is the metaphor. We must let the experienced crossing continue to function as such. Logic and metaphor cannot replace each other. Ordinary language is metaphor-like, an immediate crossing of words and situation.[12]

15) When factors (forms, distinctions) function implicitly, they cross in the situation (....). The result is not their lowest common denominator. The crossed multiplicity is more precise than any logical formulations.

Now we can say how an unseparated multiplicity has more order: It makes more meaning than its crossed factors stated separately. In the crossing each factor changes what the others are. If we think of the changes in science in this way, we could say

that the factors of science are not actually working as themselves; they are changed by other crossing factors that we have not (yet) discovered. And those, in turn, by others. The result is more orderly than could follow from explicit factors

The implicitly crossed multiplicity is always prior; it is an *"original crossing."* Crossing a horse with a donkey produces a mule. The horse and the donkey must exist as themselves first. Only then can they cross. But in the responsive order *the mule comes first*. Creating parents for it is one way to carry it forward.

Mules produce no offspring, whereas crossing implicitly enriches each factor so that more can come from each, than if it remained itself. So this analogy would be an unproductive mule, if it could function only logically. But here it precisions (and is precisioned by) saying that the factors are "already crossed." So it enabled us to say something that it does not contain: "the mules come first."

In such a use the concept "already crossed **.....**" says how its logical pattern of crossing is exceeded by the crossing it says. "Crossing" might give the misleading impression that we think of events as consisting just of factors, although crossed. But factors always *work-in* a situation (experience, procedure, interaction, event **.....**). The "**.....**" brings this working-in, and enables us to think from it. Crossing is one way we can speak about the responsive order as more orderly than a logical order.

Understanding anything exactly is a crossing. For example, a new statement must cross implicitly with a great many other things we know. As long as we must think the explicit statement, it obstructs the smooth way in which everything else we know *implicitly governs* our next thought and practice.[13] Let us now examine this kind of thinking process, and see if it can help us to enter into the assumptions which "pure" logical inference implicitly holds to one side.

IV. Dialectic and hermeneutic

In the history of philosophy, did no one develop a way of thinking with concepts that exceed their logical form, to move back and forth between logic and a wider implicit order? McKeon has shown that one ever-contemporary variant of philosophy uses a continual breaking of logical patterns as its very method.[14] Two examples come to mind immediately: dialectic and hermeneutic. Let us understand them in our terms.

We might retain much from Hegel's dialectic although we reject the assumption that everything true is always saved when concepts change. This would be nicely self-instancing -- we would not guarantee that we retain everything Hegel was right about. But he shows us a kind of truth that does not depend on static statements -- a truth that *may* be saved when terms change. But Hegel gave his dialectic a permanent formulation. There can be no formulation of how formulations change in explication.

Currently what is used of dialectic is only the constant possibility of contradiction and paradox. The rejection of Hegel has made people unfamiliar with other types and powers of dialectic. For example, Plato's dialectic should be resurrected; his was different each time. But most people know only a Plato who proposed eternal forms. Yet Plato makes fun of this view in the Parmenides. The only permanent "form" Plato proposed was the "idea of the good," which is not a form, he said. It is whatever makes some assertions untenable. Although there may be a violent refusal to admit it, people cannot help but recognize when Socrates cites an instance in which their argument implies something they do not want to mean. Cavell has pointed to this implicit level of statements -- which Socrates could inquire into -- what we had to have meant, and how we may want to change it when we have pursued some of its implicit import.[15]

Meno tells Socrates the famous puzzle of Gorgias: "It is impossible to inquire into anything, because either you know what you are inquiring into, then there is no inquiry. Or you do not know it, then how can you know what you are asking about?" Socrates

soon shows that nothing is fully known, nor is anything utterly unknown. The smallest bit of knowledge implicitly contains more, if one pursues it (<u>Meno</u> 86b). Knowledge does not come in individuated units or referents that stay the same, or become just different. But in dialectic the role of the implicit is subtle. How can one find it, to be led further?

We find it when our argument becomes untenable, because then we are not left with nothing. We ask ourselves "What was it that led me to say what I said?" *The good sense we were trying to make is still there, only now it is a "......,"* since we now reject our formulation. But the "**.....**" can lead to a new statement. This is not easy because *the "....." is now further crossed* because we saw a consequence of our previous statement. All consequences are not already implicit. There is no Laplacian system. Now a great many less than perfect statement may come to us, statements that do not carry what is new **......** forward. We may reject those and prefer to remain with ...... We see *how* an implicit kind of truth functions in transitions between statements.

16) What makes implicit sense ..... can be carried forward into language.
Then new patterns can be formed from it, but this is harder. We may fall into old ones.

Plato showed that discourse is not arbitrary although every argument can be made to contradict itself. With our concepts we can notice:

17) Logic does not generate its own contradictions, but it can always be made to contradict itself if some detail from the implicit situation is added into any unit.

This is a precise relationship between logical inference and the more than logical order.

In dialectic the role of the implicit is not always recognized. In the hermeneutic process one cannot miss it. Dilthey developed a general hermeneutic from its role in elucidating texts, books, paintings, buildings -- what he called an "expression." He says that one begins without understanding the parts or the whole very well. Only the whole gives the parts their roles and meanings. But of course we arrive at an understanding of the whole only part by part. A better grasp of any part can change the sense of the whole. So it should be asked how hermeneutic can ever get started. The well known "hermeneutic circle" is often the only way come to understand something, but how do we do it?

The meaning of the parts is not fixed; they must grow in meaning. With our terms we can articulate this. A hermeneutic circle would be vicious and impossible if we could think only with distinctions, parts, units, factors, patterned facts, formed things. We could only combine the individuated units that we already understand. Many theorists still assume that we can understand another person only if we have the same experiences. What a dull world that would be! With our new terms we can say: When experiences function implicitly, they cross with every new event. Statements bring an implicit mesh which grows even if the statement remains the same.

We understand a difficult text better after reading it many times. A sentence which was a senseless jumble before, now it plainly says something. We may later reinterpret it many

times, but the sentence is never again a jumble. It shows how earlier understandings continue implicitly. But they cross; they do not limit our further steps.

Hermeneutic is a way of thinking which does not need unchangeable parts or individuated units. The parts *neither* stay the same *nor* become different. But this is not a contradiction; it is the relation we have called "carrying forward." It cannot long seem strange -- it is the most ubiquitous kind of transition we find in thinking. We only lacked the terms to talk about it, and to think deliberately with it.

Dilthey held that we never really have the same understanding as the author had. If we understand a work at all, we understand it *better* than its author did. We must create the author's process out of our own, thereby augmenting both. In our terms we can say that they *cross*: Some of each becomes *implicit* in the other. The author's statements do not change, but *implicitly* they now contain our own experience as well. So they constitute a "better" understanding than the author's. In the crossing our own experiences are implicitly precisioned so that they can form the author's *exact* meaning. We might render a point in other words and examples, yet render it exactly. Conversely, someone might repeat the author's words, and go on to a total misunderstanding. This use of the word "exactly" functions like "truth" did for us. It is like grasping a metaphor:

18) Exact understanding does not reduce to combined or rearranged units.

Dilthey's point is largely lost today. People follow Gadamer who says that we always understand another person *differently*, as if understanding had to be the same or different. Gadamer does not mean that we can only misunderstand, but to say what he wants to say requires the kind of terms we are developing.

Meaning is not composed of individuated entities; it is an *order-for* continuation, an order-for carrying forward. From our own exact understanding we can make further moves that the author could not have made from the given spot. And conversely, when we turn the page we find the author going on as we could not have done alone. And yet we can follow the author's next move from our understanding of the previous one. Understanding is not composed of unchanged parts that we have in advance. It is an *implicit crossing* in which the "parts" can always be further reprecisioned. Therefore a new and *exact* understanding can be made in different people, that is to say from different crossed multiplicities. Then the meaning is exact, but different further moves are possible from each. Similarly, if we make a point, others can go much further.

19) When we carry an implicit sense forward into language, the more unique and odd it was, the more universally significant it may become.

With our terms and hermeneutic we can now lead beyond relativism:

20) Anything once found remains implicit and participates in our further steps of thought, even if we discard the approach with which we found it.

Mutually exclusive approaches can function in a crossing; indeed there is always a welter of historically transmitted forms in any human moment. We can retain anything we found with one of them, even if we explicitly discard the whole approach. We can carry the implicit sense **.....** forward with another approach. It will not be the same; "it" will lose and also gain. From the new **.....** we can formulate some of the differences, although we rarely have time to do it. No formulation covers both previous formulations, but our next step is informed by both (though not by all of Hegel's kind of truth, perhaps). We can implicitly retain much of what both theories help find (bring, differentiate, synthesize, make, lift out .....).

There would be relativism if there were nothing but forms and formed things.

They would cancel each other, or we would always have to chose one. But when they function implicitly they do not function as a determinative horizon. In crossing each comes to imply more than could ever follow from its explicit form. We reverse the traditional way of reading formulations back as the basis of experiencing. Instead, the formulations are only relative, but relative *to* the more precise experiential (practical, situational .....) feedback of the responsive order. Hermeneutic shows this especially well.

There are two strands of hermeneutic: The older one grants science its logical methods and proposes only to examine the larger social context of science and its uses. The newer strand considers science itself as hermeneutic. We share much with both strands. We have shown much that is hermeneutical in science itself, but we cannot attempt to reject the special character of logical inference. In the next sections let us enter the context of science, and examine some of the assumptions which it is its essential feature to ignore.

Hermeneutic places the logical order *within* the wider implicitly crossed order. Hermeneutic involves the kind of truth and the carrying forward kind of continuity that does not depend on a congruence of form. It shows how the same statement can have more or less meaning, and how "the same" meaning can lead to a sequence of statements. It shows how a point once understood remains implicit even if we discard its formulation. Hermeneutic provides a process of thinking which moves back and forth between the explicit and the implicit, without reducing them to each other. We can employ logically structured statements that remain fixed, and also think with implicit meanings.

V. Science within the wider order

Science does not include its context. One result of this is that when it has a satisfactory analysis, it finds no reason to pursue the existence of anything it has not found. Then it claims to know all the factors. The caterpillars are eating the food plants and the trees. In the lab a powerful insecticide kills caterpillars. In application it kills great number of them, but the next year they are much more numerous than before. Wasn't it "the same" chemical and "the same" caterpillars? It takes a while to discover the parasites of the caterpillars. Then we find that the insecticide is relatively more effective against the

parasites than against the caterpillars. When the unexpected happens, the difference is investigated, the factors are altered and the claim to know all the factors is reissued. The rub is that there is no finite set of "all" factors.

But what if we could *separate* just the known patterns, if those could be physically taken away from any others that might cross? There is a way. Suppose we build the known patterns of one thing into another thing, something else which does not normally have those patterns? Now our known patterns are not connected to the crossed multiplicity of the new thing. There will still be both, but not the unknown factors that cross in the first thing. Those can no longer be discovered because they have been left behind, while we are putting the patterns into a second thing. We separate the gasoline from the rest of the oil, and put it alone into smelted, separated and purified metal so that it acts only with air and sparks. Is this familiar? *We have just derived -- the machine!*

In terms of "crossing" we can define a machine as a set of known patterns separated from the thing in which other factors could cross with them. Now we can notice that science renders everything as a machine!

I said this earlier when I pointed out that H2O makes all water seem as if someone had composed it. A machine embodies a set of externally imposed relations. Science transforms crossed internal relations into external relations between separable units.

Computers are the perfect example -- they are embodiments of pure logical inferences and scientific patterns, but in a physical medium in which they can no longer cross with other factors, as they would in the actual situation we are studying. Once transformed into computer patterns, nothing internally related to it can cross.

Actual events are interactions, never just patterns and factors. In practice the computer people encounter all sorts of unexpected results when they first run a program. Only by running it can one find out what will happen. Even supposedly pure patterns are a crossing. This does not mean that the postmodernists are right to deny logic as such. Computer programs cannot be devised without logic. But the processes actually happen within the crossed responsive order. As characteristic 10) implies, only empirical trials and retroactive revision make machines possible.

We can think with the wider responsive order, as well as with the patterns themselves. In no way can we denigrate them! They lead to the wonderful technology which enables billions more people to live, and many of them better than ever before. We only want to relate logic systematically to its wider context.

The concept of "crossing" leads to a type of research that is now missing. For example, the cells that secrete a certain chemical in the human body can be separated and placed *in a dish*. Now they secrete "the same" chemical cheaply and easily. The porcelain dish will not bring what might sometimes cross with this process when it happens in the whole human body. Currently it is customary to test for all *the differences of which one can think*. If none of those are found, it is announced that there is "no difference." This

violates the well known principle that one cannot "prove the null hypotheses." One could find no difference between any two different things if one does not use the right instruments. And we know that new instruments will soon be developed.

But how can one test for differences one cannot even think of? We need to study the production and effects of such chemicals in the body over a long time and under various circumstances. Then we might find what occasionally crosses into this process. It would not be expensive. Rather than opposing all innovations on principle, or rushing to market, this kind of research would continue long after a product is put on the market. Therefore it might not be supported by either of the currently opposed groups.

Scientists are very concerned people, but there is no easy bridge between their concern and their science. We need to establish not just some research but a whole new field on the interface between humans and machines.

For example, there is very little research concerning computer-and-user <u>together</u>. The research which develops word-processing computers rarely studies computer-and-secretary. IBM has changed the keyboard three times, but the odd and rarely used marks are still in all the convenient positions. The finger has to avoid the little-used slash after every sentence to find the period. Has there been no cheap study of (say) thirty typists typing for two weeks with various keyboards? When I inquired at one company I was told that the designer's assistants (not even the secretaries!) try out the keyboards.

The airplanes fly ever faster, but consider the seats. There seems to have been no research on (say) thirty people of varying sizes trying to sleep in various positions, so that the sharp edges could be designed to make sleeping maximally possible.

Studies of machine and human together are not considered part of the technological process. They are relegated to the business side. Called "operational research," they are only cost-benefit studies conducted by a business that uses the equipment, to devise its own most efficient personnel arrangements with existing machines. Such studies are not used as feedback in the next design.

Following Turing, there is a famous question: "*If* you were totally satisfied that a computer behind a screen produced the same conversational responses as a human speaker, would there then still be a difference?" The argument is that humans differ from machines only "metaphysically" (not really) if the behavior is the same.

Now it must be pointed out that the usual discussion of the issue *assumes* this "If". You are invited to assume it, and then struggle for the difference, but it was already assumed that there is no difference. If there is no difference, would there be a difference? Obviously this makes any difference problematic.

Another fallacy: Artificial Intelligence buffs argue that desire is "only metaphysical," since they can produce a machine that seems to want something and to go after it. So purposeful behavior seems possible without any purposeful wanting. But of course there

is a purposeful wanting in the case of the machine. It is the wanting of the designers who watch anxiously to see whether it will do what they wanted. Is this fallacy an oversight? Or is it rather that *in* the logical order one cannot formulate wanting, purpose, or humans?

In a science fiction story a computerized robot-man realizes its condition and what is planned for him. (When it can realize -- whatever "realize" is -- the robot-man becomes a "him"). In the story he escapes and is caught. He has the reader's sympathy throughout. The story might seem to corroborate Turing, since it assumes that a robot could perform as a human can. But really it shows the opposite. Rather than showing that humans are machines (except in some metaphysical sense), it shows that if a machine could do this **.....**, then the machine would *be* human. The "this ....." is (among much else) wanting, feeling, realizing, appreciating **......**. It would not matter whether it is *metaphysically* human or not; if it can feel its condition and want something else, it is no longer a machine.

Why are animals treated as mere raw material? It is because wanting, feeling, realizing, appreciating **.....** drop out. If we articulate how animals appear in science, i.e., as machines, we can notice how people are rendered -- in the same way: as machines.

In the hospital your leg is strapped up high and suspended. The doctor uses amazing technology to treat your leg. Of course you are attached to your leg but we don't study that. For days you lie on your back staring at the ceiling -- nothing there, not even TV. In a recent revolutionary study the hypothesis was that patients would get well faster when given the right to make a cup of coffee whenever they wish.

Humans cannot appear within the science that underlies our social practices. Even the difference between living and nonliving processes cannot be formulated. Of course there are large segments of our society with other views of human nature, and they may seem culturally dominant. They can obstruct and delay technological innovations, but they cannot interact or modify science in a rational discourse. The bridges are missing.[16] The scientific patterns drop the human out. But since nothing can currently modify them, what else can our social policies eventually enact?

It can be important to know that the actual policies of one's society assume that one is a machine. We are in fact in the position of that robot-man, except that we don't quite yet appreciate our condition!

Wittgenstein would say "We don't comfort computers when they have trouble. We comfort people and animals." The actual quotation is:

"If someone has a pain in his hand ... one does not comfort the hand, but the sufferer: One looks into his face" (PI, 286).

"The human body is the best picture of the soul." (PI, II, iv)

Without substituting theoretical terms Wittgenstein can speak about the intricate way in which what is usually called "self" and "body" are related. We are developing ways to move back and forth between the natural and the logical order.[17]

In the current polarized debates, only one group appreciates the power of logic, while the other is alone in knowing its limits. We need a society-wide understanding of the uniqueness of logic, as well as the irreducible roles of humans making sense.

A discipline moving between the two orders could do what I have outlined, and of course much more that cannot even be envisioned now.[18]

Now let us ask: Exactly why must the logical order drop us out, and how can we deal with this fact within the responsive order?

VI. Interaction vs. logic and perception

It is a huge misunderstanding of our current world to denigrate logic. And quite apart from that, why would one want to? Or why slight positional patterns, for example the beautiful clarity with which three little boxes across and *then* three down lead to the same spot as *first* three down and then three across? The same spot. Here at least we can define *all* the factors that make something the same. (This is where "the same" lives.) A problem might go through many pages and programs, yet come to the same answer that someone else obtains in another way. We can come to a total clarity on why we both arrive at the same answer -- the only answer. And think of the excitement when what I just said doesn't hold, when the pure forms themselves lead to many wild logical problems that seem inherently answerable and yet we find no answer!

With logical patterns we constellate a wonderful world. Positional patterns are inherently movable and can be reproduced on any other thing. With them we generate a space in which they can be freely moved regardless of what else might be there. Our familiar *empty*, geometric space is the space of the mobility of patterns. Everything else now seems to exist within *their* empty space. In that space we can separate factors and rearrange them. We create a patterned, stretched out version of what happens in the more intricate order in which we live. (PM, VII)

So one mistake is to miss the unique character of the logical order. Another is to assume that it must supervene over other kinds. Still another that its relations are equivalent to events, actions, or interactions.

Patterns are mere proportions, repeatable samenesses and differences, They are *comparisons*. That is why they require the observer -- the comparer -- who (as Kant put it) retains the one while turning to the other. Without this there are no likenesses or differences. They are results of comparing. Samenesses and differences are passive products. They do not do anything. They cannot exist alone or determine anything.

Why is nature only said to "obey" laws? Why would "nature (what we study **.....**) not be active? Does it not consist also of active interactions, including our activities? Nature seems only passive because we use logic to study it, and logic consists of positional relations, external relations. The action of projecting those patterns and transforming everything into them cannot *appear* within them. We cannot appear in the world *presented* by science because something is presented to someone; it is something that appears to someone. How does the idea even arise that we should be something presented, something that appears -- to whom? We cannot be appearances to an observer who is in turn only an appearance presented to us. The presented world comes from perception.

Philosophy cannot begin with perception. It has long been traditional to consider perception as the beginning and model instance of all experience. What has been said here leads us to challenge this ancient assumption, and to replace it by giving bodily interaction priority over perception. It is perception which has led to the whole problematic of space, time, and appearance -- the conditions of appearance which cannot appear in the appearance.

Perception creates two dualities. The percept as "an appearance" splits itself off from the reality which it only indicates. Secondly, the percept also divides itself from the perceiver to whom it appears. The to-whom cannot appear. Since the percept appears and the to-whom does not, the percept seems to come first. The to-whom seems to be something added on. Percepts are flat, passive, seen, *imagined*, presen*ted*. Their to-whom drops out. The assumption that a location system must overarch empirical events can be traced to the assumption that experience is perception.

With the percept comes the whole familiar problematic of interpretation (and Nietzsche's puzzle: there are only interpretations; nothing to interpret). This problematic will surely arise if one takes perception as the basic model of experience (events, situations **.....**).

The world presented by science is made along the lines of percepts. The perceived order is "already there." Human interpretations must be brought to it. It has only external relations, and even these must be lodged in observers. The relations are between points, locations, positions. The number 14 is defined by its position between 13 and 15 in the order of counting. But the continuity which defines the positions happens only if someone counts. The positions do not relate to each other of their own accord. Science presented organiz*ed* entities whose relations are given to them by an external observer who maintains the continuity of their relations.

In philosophy this problematic has long been traditional and accepted, as if there is no way out. But this is so only because perception is assumed to be the basic kind of experience. We should not begin with perception. If we do not, then it does not seem strange that an interactional order is wider than positional logic. Perception and logic are inherently products that point beyond themselves. They point to interaction. We can build on the work of Wittgenstein and Heidegger: We do not first interpret things; we live and act in them. We inhale, cry, and feed. We are *always already within interactions* (situations, practice, action, performance **.....**).

Scientific procedures are interactions, not mere interpretations projected by a floating human community of speakers communicating about meaningless objects. People from a different community might not interpret a cloud chamber track as a particle, but it is unlikely that they would build cloud chambers there, and *only interpret* their observations differently.

Can we put interaction first? Wittgenstein and Heidegger give us leads in this direction. We can say that every living species *is* a being-in its world. Its living activity "discloses" possibilities of the responsive order, which cannot emerge in any other way.[19] But Wittgenstein and Heidegger spoke from interaction in the human world. If we take this into account, we may be able to use their way to put interaction first.

Let us first understand the human version of "interaction first," and then transpose it.

For example, Wittgenstein writes: "Why cannot my left hand give my right hand money?"(PI, 268). Here we can distinguish between perception and interaction. Certainly we can *perceive* one hand putting money into the other, but this is not what "giving money" means. Wittgenstein is not speaking as an observer of external objects, but where does he stand? Where does giving money happen? Wittgenstein (in PI) speaks from within situations and interactions.

Am I right that perceptions occur only within interactions, or can one still argue that the interactions are based on prior perceptions and interpretations? "Giving money" might seem to depend on a culturally shared *interpretation*. And since we frequently misinterpret events and other people, someone might argue that the interactions depend on our shared interpretations. But interpretations of what? In an interaction, what would be the object that we perceive and variously interpret? No, we have already lived interactionally to generate the events and objects which we then interpret. Printed bills are not first simply there, awaiting cultural interpretation. I do very often misunderstand my wife, but this is possible only within our marriage interaction. It did not happen so much before we were married. Perception and interpretation must be considered secondary within already ongoing interactions.

Of course, the scientific interactions do not seem to happen directly in Wittgenstein's situations. It might still seem that interaction with each other differs utterly from interaction with nature. Money and cloud chambers are too far apart. It might seem that money comes to be in interaction with others who respond to us as we do to them, whereas cloud chambers are constructed out of meaningless objects. Then the human interaction drops out of "nature," as I have already said. But this gap arises only if we accept how a logical order renders animals -- as objects who do not interpret, upon whom all connections and interpretations must be imposed. Within science humans are no more than this, as we saw, but even outside science the human interpreters are left floating in empty space. We must reunderstand animal bodies in order to understand our own body. (PM, VI)

Our own animal body still functions and still comes with intricate behavior. Its ethologically "built in" behavior has been *elaborated* but not replaced by history and language. Its roles in language can be deliberately employed and carried forward. Our bodies do orient in abstract empty space, but this is a less original capacity than how they sense and imply their situations. We live immediately in our human situations. Most of the day we perform most actions directly from the body-sense of each situation. Our bodies experience (feel, are **.....**) our situations, and imply our next actions and words. The phrases come to us to say, and change, a situation before we need to think about it. And if they don't come, we have to pause and wait for them -- to come.[20]

So we can conclude that philosophy cannot begin with perception anymore than with patterns. We are always already in a wider responsive order which includes us and our comparing, and more importantly responds to us as doers, and as humans saying metaphorical phrases in originally crossed situations. A new empiricism which honors both orders can enable us to move between them in many ways.

Notes

1. Gendlin, E.T. and Lemke, J., "A Critique of Relativity and Localization," *Mathematical Modeling* 4 (1983); 61-72. Hereafter CRL.

2. Quine, W.V., *Ontological Relativity and Other Essays* (New York: Columbia University Press, 1969).

3. Crease, R.P., *The Play of Nature* (Bloomington: Indiana University Press, 1993), pp: 68-71.

4. *Experiencing and the Creation of Meaning* (New York: Free Press, Macmillan, 1962); Paperback Edition, (Evanston: Northwestern University Press, 1997). Hereafter ECM.

5. See the series of articles in Putnam, H., *Realism with a Human Face* (Cambridge: Harvard University Press, 1990), pp. 54-131. For Aristotle the referent of "water" did not include ice and steam which were different elements. But Aristotle's procedure of using heat to convert elements still works, of course. Putnam points out that ways have been found to reconstruct the older referent (, for example common sense "water") from the later more numerous terms. This is also a characteristic of explication. One can look back in many interesting ways which are not available in the forward direction. For example, Hegelian dialectic had not rouble arranging past advances, but a great many attempts have shown that it is nearly useless in further study.

6. The Idealism is not intended today. The "movement" of difference is meant to correct the earlier view that science and discourse have their source in us as subjective "agents." But difference is comparison.

7. But isn't this relation the opposite of Occam's and Kepler's long-standing rule that the explanation with the fewest terms is the truest and most elegant? The two relations can be distinguished: Someone may want to resurrect an older theory, but no one wants to go back to all the simpler versions of 1970. We do not call them all "more elegant." These are only two of many different relations we find, -- although each is stated as if it were the only one.

We can specify other relations: A sub-sub-detail of the situational intricacy of procedures or findings can generate a new overarching category. A detail may define new generalizations that alter the whole theory

which first led to finding that detail. This provides another traceable relationship between later and earlier versions. It also allows us to reopen everything at those junctures when we think about a new empirical detail. A detail may be logically deduced from a set of conceptual patterns. But when it is found *empirically*, "the same" detail may implicitly contain and lead to further detail which may be inconsistent with that very theory. This is another way we can notice that an empirical detail is not the same thing as one deduced from a theory, although the same proposition may seem to state both. A new formulation may arise through the linkage of a deduced detail which -- when found empirically, -- first "confirms" the theory, and then turns out to contain more than can follow from the theory. Attention to the implicit intricacy of the empirical detail may help one form new concepts.

8. The term *"carrying forward"* has been derived in other places in my work. But it is characteristic of such terms that they are derived in use. Therefore they can be derived from any fresh use they acquire. Those who know the term find it indispensably coming in a whole range of different contexts in which there is a continuity other than logical deduction. No single conceptual pattern determines its many uses. Language (the use of words) is a responsive order. See "Thinking Beyond Patterns: Body, Language and Situations," in *The Presence of Feeling in Thought*, ed. B. den Ouden & M. Moen, (New York: Peter Lang, 1992), pp. 25-151 Hereafter TRP.

9. See chapter IVB, *A Process Model*, in eight parts, 422 pp., available on http://www.focusing.org/apm.htm, or New York: Focusing Institute Publications, 1996. Hereafter PM

10. *Philosophical Investigations* 182, hereafter *PI*. See my "What Happens When Wittgenstein Asks: 'What Happens When ...?' " Paper from the Conference: "Zur Sprache Kommen: Die Ordnung und das Offene nach Wittgenstein." University of Potsdam 1996. *Philosophical Forum* 28/3, (1997).

11. See "How Philosophy Cannot Appeal to Experience, and How It Can." in *Language Beyond Postmodernism:. Saying, Thinking and Experiencing in the Gendlin's Philosophy*, ed. D.M. Levin (Evanston: Northwestern University Press, 1997). Hereafter HPC. See also ECM and "Crossing and Dipping: Some Terms for Approaching the Interface Between Natural Understanding and Logical Formation," *Minds and Machines* 5/4 (1995), 547-60). Hereafter CD.

12. See CD and my "Reply to Mark Johnson," in *Language Beyond Postmodernism: Saying, Thinking and Experiencing in Gendlin's Philosophy*, ed. D.M. Levin (Evanston: Northwestern University Press, 1997).

13. See "crossing" and "restored implicit governing" in HPC and CD.

14. McKeon, R.P., *Freedom and History and Other Essays* (Chicago: University of Chicago Press, 1990) and *Thought, action and Passion* (Chicago: University of Chicago Press, 1954).

15. Cavell, S., "Must We Mean What We Say?" in *Ordinary Language*, (Englewood Cliffs, NJ: Prentice-Hall, 1964).

16. Heelan has a promising approach. He develops a single two-sided term consisting of the scientific rendering one side, and its location in the human world on the other. See *Space-Perception and the Philosophy of Science* (Berkeley: University of California Press, 1983).

17. Wittgenstein planned to publish his *Tractatus* and his *Philosophical Investigations* under the title: "*Philosophical Investigations set against the Tractatus Logico-Philosophicus*." "*Philosophische Untersuchungen der Logisch-philosophischen Abhandlung entgengengestellt*." What an elegant way to contrast the two orders by juxtaposing one work on each! This title is discussed in Michael Nedo's volume introducing the new publication of Wittgenstein's works in parallel German and English. See Nedo, M. *Introduction*, *Ludwig Wittgenstein, Wiener Ausgabe* (Vienna: Springer-Verlag, 1993), p.42.

18. For example, a discourse that employs both orders could provide a context for bioengineering. It could define the kinds of research which one can formulate only with both orders. It would also enable the various interests to be represented at an early stage. For example, billions of dollars were invested in bioengineering as soon as a few applications became probable, before anyone could know what they will really be. Those billions are now a force that makes the new technologies almost unstoppable, but everyone including the investors might have liked to know the issues in advance.

On not knowing the uses in advance, see Joseph Rouse, *Knowledge and Power: Toward a Political Philosophy of Science*, Ithaca: Cornell University Press, 1987.

A structured discourse would also give the scientists a voice in deciding what is done with their discoveries. For example, one biochemist in a drug company developed a chemical that has the effect of lengthening the time before a cancer spreads. He does not know by how much time. Of course it is the product department that decides about uses. It decided that testing the drug in relation to cancer was too expensive. Since the drug also darkens the skin, it is now used in the company's sun tan lotion.

This example does not show that the government requires too many tests, nor that companies are selfish. The department decided rationally within the bounds of what it is empowered to consider. My point is that no *other* agency is appropriately empowered to bring up other considerations. Such an agency could share the risk of more research and perform other functions, if the science/human interface becomes a special field that develops beyond the current polarization.

Currently one side views the market as an extension of evolutionary selection. The other sees only profits for a few corporations. But no general position can cope with these issues. The circumstances differ each time.

The Monsanto company's soy beans are engineered to resist only Monsanto's herbicides. In this case it seems easy to decide for whose benefit the market works, but more information along several parameters might change our minds.

Cows engineered to give more milk have swollen udders and fall ill more often. In the U.S. the same amount of milk as before will be produced by fewer farms. Many will go out of business. But perhaps in India these cows might be a blessing. My point is that there is a whole field here which the wider order opens.

Another issue: Evolutionary selection benefited the given species. Is it wise in the long run to engineer new animals without considering their benefit? For example, a combination cowpig was created a few years ago. It was in constant pain. This "evolution" was not in the interest of the creature. The purpose was an all-lean pig for the market. The farm organizations stopped this development, to keep one company from patenting a "superior" animal and eliminating everyone else who now raises pigs. But the creature's own interest could not enter in. Of course it cannot even be conceptualized in logical terms. But could an interface discipline add something to the market, to approach evolutionary selection?

In a similar way, much that matters to us about human beings is not detectable because of the inherent character of our scientific terms. With the responsive order we neither disorganize those, nor reduce everything to them.

19. On my use of Heidegger's "being-in" see "Befindlichkeit," *Review of Existential Psychology and Psychiatry* 16/1-3 (1978/79); 43-71.

20. See my " The Primacy of the Body, not the Primacy of Perception." *Man and World*, 25/3-4, 1992, 341-353 and "A Philosophical Critique of the Concept of Narcissism," in: Levin, D. (Ed.), *Pathologies of The Modern Self*, 251-304. N.Y. University Press. 1987. For psychological and social applications of this philosophy see *Focusing*, second edition. (New York: Bantam Books, 1981) and http://www.focusing.org.