

CHAPTER VI-B: THE DEVELOPMENT OF BEHAVIOR SPACE

1. Motivation

Once a behavior sequence occurs, the sequence is implied as a whole. This is not a new implying just of behavior, but part of the body-process in which the behavior is a detour, a string of versions of a stoppage of the stoppage of some body-process. The whole sequence is implied since the body implies the resumption of the body-process (which happens at the end of the behavior. We have derived "motivation."

No amount of just behaving (versions of stoppage) will keep an animal alive for long; at some point it must resume the body-process, feeding, copulating, and so on. Eventually it must ingest and digest, it cannot live just from tracking food. Behavior must return to the body-process in which it is a detour. This return is often called "consummation." The consummation is that event which is both behavior and the body-process resumption.

Consummations are not only those bodily events that existed before behavior developed. Behavior elaborates the body. Some behaviors now lead to consummations that didn't exist before behavior developed.

For example, if the relevant context for certain special behaviors never occurs (say the animal it is in captivity) these behaviors will go off anyway after a time. (This is called Lehrlauf, "an empty run") (See egg rolling in Braun). This does not violate our rule that behavior is "motivated" by a body-process stoppage. It would be better to say that as behavior elaborates and rebuilds the body. Stoppage develop from some behaviors.

We might be tempted to say that a familiar consummation defines the motive of a familiar behavior. It seems that the consummation defines the sequence, but as with all implying, the resumption need not be what it was before. What turns out to be consummation is determined by the motivation, the implying, the evening, the stoppage-resumption itself. It is always the carrying forward that defines and generates the sequence.

Since evening is part of occurring, carrying forward is an occurring into evening. If a changed sequence leads to a new consummation, they have become part of even. Evening is always the body's implying -- but with the en occurring into it.

2. Cross-contextual formation

We saw (in IV) that eevening does not occur and make or take time of its own. The environmental occurring occurs into the eevening. If a sequence is implied but cannot happen, and the animal doesn't die, some other body-process immediately forms instead.

In the case of behavior, since it is not implied alone but as part of an implied body-process, when a focally implied behavior cannot happen with the en, the bodily implying may continue without any behavior. Or, a different or changed behavior may form

The formation of a behavior involves both the body's implying and how the en occurs into it. The eevening is both, since it is part of occurring. As we said all along (and in the two change-avenues), the actual eevening is a result of the en-happening-into how body would have implied its next step. Eevening is a crossing of everything by everything (IVAe) and in it the en also crosses with how the body would have implied the en if it had not occurred into it differently.

If a new behavior forms, it will be by the open cycle occurring into the implying of the sequence that cannot form. The new sequence which does form is therefore an eevening which would have formed the other sequence, but with this en, forms this new one. In other words: **the old sequence is implicit in the occurring of the new one. The new one happens into the implying of the old one.**

This means the old sequence now has the new one implicitly, and the new one has the old one implicit in it. The next time that the old sequence becomes implied, the new one will also be implicit. Both will be part of the eevening along with the environment at that point. The sequences are not separate. They are implicit in each other. They form a context. **Each sequence is a string of versions of the "context" in which the other sequences are implicit.**¹⁸

Bodily process (including behavior) is always a fresh formation, whether an observer has seen it before or not. Now we can add: An observer might see only the same as before, but this time it might have one or more new sequences **implicit** in it.¹⁹

When a sequence functions implicitly, "it" is not quite the same "it." But this is true of any kind of "it" that may function implicitly in the formation of something else which may then, in turn, be implicit in "it." "It" functions insofar as "it" participates in shaping what occurs, hence differently in each new sequence.²⁰ And, how "it" participated is part of how "it" is eevened at that point, and from then

The bodily implying includes a whole context of mutually

implicit behavior sequences, eveved and focaled with the actual environment happening into it.

The actual environment includes the body's en#2 and the leafing interactions of the open cycle sector. In eveving this crosses with the body's implying of the open cycle (now the "context" of mutually implicit behaviors sequences.) The two systems cross in the eveving that is part of any occurring.

If the actual open cycle happens as the body implied it, the usual sequence occurs. If not, something else results in the eveving in which the implied behavior-context crosses with the actual open cycle, which we can call the "environmental behavior context. I say that behavior forms **"cross-contextually."**

The word "crossing" could be freshly derived here, as it is used in this "cross-contextual" formation. (The word can speak from many kinds of "crossing.") Here two systems of crossed, mutually implicit behavior sequences cross in a single eveving and occurring. What occurs is their crossing.²¹

Let us now permit our concepts to develop this formation of the "behavior context" of mutually implicit sequences:

3. Behavior Space

Once many behaviors have occurred, each sequence consists of a string of evenings of them. Each implicitly involves the others in its formation. Each **is** a way of carrying forward a mesh consisting of the others.

Therefore each behavior sequence is a string of changes in how the others are functioning implicitly. A behavior sequence **is** a string of versions of the behavior contexts of all the mutually implicit sequences.

An occurring sequence also changes how the others would occur if they were to form after it. For example, let us say the occurring sequence stops and one of the others commences. The latter would form somewhat differently if the first sequence had gone on longer. How other sequences would happen if they did would also be different. Any occurring sequence **is** a string of changes in how any of the other sequences would occur.

Since the behavior context consists of how each sequence would occur if it did, we can think of it as a space, a mesh of possible behaviors that the body implies in all sorts of directions and respects.

It can be called "**behavior space.**" Let us develop it further.

For example, an observer sees an animal make a simple movement in human empty space. Even in that space we can grasp what it means for so many sequences to be implicitly changed by the one that occurs. Having moved, the animal is no longer in the same spot. From the previous spot many other movements might have been made. But now, from this new spot all those movements would happen differently. The animal could still go to that tree, but along a different path. It could now go to that boulder over there, but no longer around it as before, when the boulder was right in front of the animal. **Every conceivable movement--and there would be vastly many -- was changed at once by the move that did occur.**

This example is positional. We think of the animal merely moving, pure locomotion in empty space. But empty space and pure change of place happen only in human empty space. It develops later, and will turn out to involve symbols. Behavior space is not empty, it is so to speak "full." It is the mesh of implied behavior sequences (not just movements).

For example, the implicit sequences might include chasing a bird up a tree, and eating a bird. If one of them can and does occur, it **is** a change also in how the other is implicit. Obviously this would be more than just a change in position.

A behavior always occurs in midst of other implicit behaviors, and as a change in those. The whole mesh is carried forward. The bodily implying of the consummatory body-process also implies the whole open cycle context of implicit of behaviors and it is carried forward as the actual en interacts with the doubled implying. Different body-process detours develop and imply different contexts of implicit behaviors.

In the old model one begins with bits of perception, a patch of color, a smell. We are far from saying that experience begins with such percepts that are then related into a sequence. The reverse: The perception is a whole-bodied carrying forward; the chain of open cycles results from the sequence.²²

a) Had space

We don't want to say the body "projects" space, as if that mysterious word were an explanation. We now have a schematic structure of concepts internal to this "projection" of "space" in front and all around the animal body. The body implies and carries forward

the eved open cycle, with its implicit behavior sequences. As part of this bodily carrying forward the body feels and perceives the whole context of implicit behavior possibilities.

Behavior space is **had space**, that is to say felt and perceived space. It is not the external observer's space within which an organism might be viewed. Rather, it is a process's own space, the body-process's own implying of behavior sequences.

In V our concepts only went as far as the development of a reiterating sector which could be affected by changes. For example, a plant might bodily grow toward the sun.²³ I cautioned there that this is not yet a space that the body -process feels and perceives. Now our concepts enable us think about how a body process **has** a space.

As the doubled bodily-behavioral implying is carried forward, the organism feels and perceives the space (the mesh of the implicit sequences). Any occurring now **goes on in** (is a carrying forward of) that space (that context of other sequences).

We say that behavior space consists of "behavior possibilities," but we must keep in mind that only the occurring one "was" really possible. It is not as if any of the implicit ones could have formed just as well. The one that occurred was focused in eaving with the actual en.

Although a behavior may concern a special object, it takes account of the other objects in the space. For example, the cat runs after a bird, but takes account of the boulder which is in the way. The cat runs around the boulder and does not run into it, nor jump up on it. **Here we see and could derive eaving:** Each sequence **is** an eaving of the others. The bolder is an object also in implicit jump-up sequences and hide-behind sequences which do not now occur. (We will soon return to discuss this boulder, and how objects form.)

Behavior space is a new home-grown environment, a new kind of en#3. The body goes on in it, changes it (goes it on), and as with any en, is itself part of it.

The body implies it, and is self-locating in it, as it occurs into this implying.

b) Had space-and-time.

One always hears of "space and time" together, but what is their **inherent** relation? Why are they always together? Were they born separately and then introduced to each other like two strangers?

Could one just as well have three, perhaps time, space, and causality? What is **internal** to each that links it to the other?

We want to be able to think clearly and exactly how behavior, feeling, perception, space, and time are interlocked. We cannot understand them if we simply assert that they are each just there, as if they were things which first just lie there, and then relate.

In the classical positional model, space is three parameters, and time is one more. If you first fix your gaze at any one point in empty Euclidian space, what you see changes if you move your gaze to the left or right, or up or down, or further forward or back. But if you hold your position and wait a while, what you see right there in that one spot will also change. It will change in time.

Without holding a spot constant one would not notice time separately at all. (See my KH.) Only by fixing the gaze at one spot can we find a change that happens only in time. Then one can turn about and say that the other changes -- and change in general -- happen in time. But all this concerns positional space and time.

The space and time of the old model are very limited. They cannot be accepted as an ultimate frame of reality. They are very abstract positional relations of comparison imposed by someone. Who? Obviously a perceiver, and not one who perceives-in-behavior, rather a perceiver who only perceives and does only comparing, a spectator who has only an external relation to what is perceived. But "external" is something we cannot derive until VII - in fact later in VII, VIIB. In order not to assume that this kind of perception and its space and time are "basic" we need an alternative. Otherwise even if it is our general position to reject all "basic" models and all assertions, the old model remains basic after all, since we cannot help but assume it in everything we actually think (although we might reject it all in general).

To think more deeply than positional relations is not just a general question. Nearly every specific parameter in physics involves the old model of time and space. For example, velocity is distance per unit time. The structure of localization is soon revealed also inside most concepts even when they don't mention it explicitly. Social science concepts and "common sense" concepts render "things" in space and time.

But what does the perceiving and holding at one spot? What or who compares and notices the change so as to generate the four abstract dimensions of change? Obviously something that has memory and continuity. The moving images in the spectated frame cannot be primary and ultimate at all.

The point is not to give up science and computers; the point is to think further. In VII we will become able to generate positional space and time and thereby also to grasp their limitations and how we can formulate assertions that go beyond them.

As human beings of course we begin with human experience.

From ourselves we develop concepts about what is less than human, and supposedly earlier. But perception need not be our "basic" model-instance (especially not just-perception cut off from behavior and the body, mere positions that are external to each other. What are positions? They are pure externality.

In our model there is as yet no distinction between an "external" environment and "internal" experience. We will derive that distinction in VIIB.

Our own bodies generate a kind of space and time, and from this we can say that all life-process does so. There is always already the implying which occurring carries forward.

We have now built the concepts of a doubled implying and a doubled bodily-and-behavioral occurring which generates a doubled space and a doubled time. The doubled body-process generates itself with the sentient having of the occurring.

In our model the inherent tie between space and time lies in behavioral implying. There is not yet even a distinction between space and time in the physically focused behavior possibilities. Let me show this exactly:

Say someone throws a snowball at you, and it is coming on. Now you are living (feeling and perceiving) the future "time" (the snow ball hitting you) and you are living in the space between it and you, trying to move out of the way and also duck which is hard to do, perhaps also trying to catch it, jump, run, drop to the ground, crawl, retaliate, -- many more which make up the "space" and "time," the context in which all this happens.

The relation between what we call "space" and "time" is internal to the very way behavior forms and occurs into an implying. Within behavior we can now separate the spacial (not just here) from the temporal (not just now), but we have found them together in behavioral implying.

From behavior can we set "had time" up as something that is separately had? But if not, if we leave had space and time together, then what we called "had space" is not just space, either. Of course

implying and behavior-space already involved time. "Behavior space" was already "**had space-and-time.**"

The cat stands before the door, calling. She wants to go out, and lives in the behavior of going out the door and beyond. I say she **has** space-and-time in a way a tree or an amoeba do not. Her bodily implying includes the doubled implying of running out the door, and if the door remains closed, this doubled implying remains "the same" and occurs in slightly changed **versions** as she run-readies and meows in front of the door.

In this way our concepts link body, behavior, feeling, perception, and had space-and-time in any single behavior sequence.

c) Two open cycle sectors.

For some years it seemed to me that the staggered way the open cycle is both ahead and behind the body's implying might require two sectors of body structure. The implying is part of occurring and is changed by that very occurring. In carrying forward the implying is, is changed, and is also the changed. Since implying is both ahead and behind, I thought that two body-sectors might be needed.

This went further when I thought that the body **actually** gives itself the response it implies. For instance:

I am driving the car and I step on the brake. The car has a burst of speed (I have unintentionally stepped on the gas pedal instead. The gas pedal is softer, so I stepped on it hard.) In such a case I notice that I have already sensed the car slowing down, even though it did not do so. When the feedback is not what my body implied, I notice that **there are two different feedbacks**, the one my body gives itself, and the one that comes with the environmental interaction.

This leads me to ask the question: Are there two open cycle sectors just alike, so that either can be the one called ahead, or the one called behind? Then the body can **have** the behavior sequence's next, (although it cannot move the body to that next without the cooperation of the actual en (b-en). If that lacks, the behavior sequence stops.) The carrying forward would happen staggeredly in both.

This seemed a theoretically uncomfortable duplication. I don't like duplications of terms; usually they indicate an error. Moreover, behavior would **not** be going on between the two open cycles; it

would have to happen between each and the whole body in its actual en. **There would be no direct connection between the two sectors.**

I told my results to my colleague Ward Halstead, and he said "Oh yes, stereo." This was a way of saying that a whole space can be had, felt and sensed, if there are two. It isn't exactly the same point, but it is related.

I realized that the model had **derived the bi-lateral symmetry of the bodies** of most animals. This includes the two brain halves, but it is an error to deal with the brain as if it functioned alone, rather than as a part of whole-body functions.

Our model also seems to derive and explain the puzzling fact that the brain-halves need not be directly connected. Their function goes through both sides of the whole body, and only so can it move the body.

In humans one side is differentiated by language, but according to recent split-brain research (Levi) the difference between the two sides is more complicated than in the popular understanding. Let us postpone the development of language until VII.

4. Pyramiding

We have already said that when a sequence would be focally implied, something new might happen as the actual en happens into the evening. Then the new sequence is and remains part of the evening, and part of the behavior space. If the same circumstances recur, the new sequence will form freshly again, and the old sequence might never form. But if there is a small change in the body or the environment so that the new sequence cannot form, then the old sequence will, if it can.

If a still newer sequence develops, it is the new-new one, and the previous "new" sequence becomes the old-new one. When many sequences form in this way, I say that the new ones are **"pyramided"** over the old ones.

Most current sequences of a person's behavior space are pyramided. The old sequence always remains implicit. Of course "it" ("the old sequence") is not quite the same as before the new formation, since the new sequence (and much else that happened meanwhile) is now implicit in the contexts that "the old sequence" is now a string of. In dreams and with hypnosis and drugs the usual

behavior-space is narrowed so that it does not implicitly contain as much as it would in the waking state. We find that very old ("primitive") sequences form then, and implicitly contain some (a variable amount) of the usual context of implicit sequences. In those states we can observe the familiar experiences still forming, and we can notice how many are implicit and focused in ordinary experiences. (See the theory section in *Let your Body Interpret Your Dreams*.)

The occurring of a sequence is always a fresh formation; in that sense any sequence is new, and implicitly contains much of what has happened since the last time the observer saw it.

A great many sequences are pyramided under the usual repertoire of every animal. They might not have formed in a great many generations. (A certain bird from the Atlantic Ocean has no mating dance. A similar specie from the Pacific still does it. If a Pacific bird is presented to an Atlantic one, it will do a mating dance that specie hasn't done in thousands of years.)

The behavior space is inherited along with the body-structure. (I say more about inherited behavior in 11. below.) The individual organism never actually sequences most of the implicit behaviors that are pyramided over. But the common behaviors are also formed in a pyramided way, over each other.

5. Object Formation: Objects Fall Out

Objects form pyramidedly. Let me first discuss object formation and then show the pyramided aspect.

Let us say the cat is running after a bird, tracking the bird. **By running** the cat keeps the bird steady in front. The steady bird is kept "the same" **by** the tracking behavior. The object is kept "the same" by **the changes** of the behavior sequence. I say that the steady object **"falls out"** as "the same object" which the sequence makes.

A behavior-object (it is always also a perceptual object) is made by the behavior sequence.

A behavior-object falls out against the background of the changing behavior spaces. The cat keeps the bird steady by rapidly changing the rest of the scene. Everything else swiftly buzzes by, as the cat runs.

But the cat feels the space standing still! If the earth moved, the cat would stop. Although the space is going by and bobbing up and down, the running sequence keeps the behavior space "the same" by

carrying it forward. The "same space" is the behavior space of the bird and the ground moving-by. If the cat stops, the bird escapes and the behavior-space has changed. So the running keeps not only the cat and bird steady; the rapid changes of the running also maintain the "same" behavior-space, the food-chasing space.

In a behavior sequence each bit is a changed **version** of "the same" behavior context. I also say that each bit of the sequence **"reconstitutes"** the context. The whole behavior space is needed for the object to fall out.

In III the body never **has** an object present to it. It is implied only when missing. If it recurs, the process resumes and the object is no longer implied. Now we have derived an object that remains. It is kept steady by the sequence, and it falls out from the sequence.

Since the body implies the sequences and they keep objects steady, it follows that **the bodily evening now implies the objects** by implying the sequences.

So behavior space consists of objects, but only in so far as it consists of implicit behavior sequences. If many other sequences and their objects were not implicit in any behavior-context, the cat would not avoid the boulders while chasing the bird.²⁴

Our III object could only be absent, but the VI object can be present, and it can also be absent. This is because the open cycle may include the implicit sequence even when its focal object is absent. **The "slot" of an object may exist in behavior space even when the object is absent. Then it can be perceived as absent.**

Let us go another step: Since the "slot" of an object may remain, the object is perceived as present in the slot in which it could be absent. The food can now be perceived as present, absent, present again, or half eaten.

A behavior space in which many objects have fallen out is an advanced stage found only in higher animals. Behavior space does not first consist of objects.

Can we say **both** that an object "falls out **from** a sequence" and also that it carries the sequence forward? Yes, but more precisely it is the open cycle that does the carrying forward. But since the open cycle consists of implicit sequences and their objects, the objects do carry the sequences forward. But we need to remember that an object comes only along with the whole sequence of contexts, i.e., the steady scene. What carries forward is not just one aspect, but the whole scene, the series of open cycles. (Open cycle = scene =

behavior space = context of implicit sequences.) An object is always implicitly the whole scene, the whole context, the whole mesh of other sequences.

For example, the bird seems separate from the power wire on which it sits, and from everything else in the scene. But the scene and the other objects are implicit in the separate bird. A bird that would stick to the power line would be a different object, not a real bird. Every object, that seems at first quite self-contained, **is** really the mesh of **how it falls out**, and only because those remain implicit, does it stay "the same" in different scenes. So it always implies the many sequences from which it has its itness.

Take something that usually moves, but does not move right now. Suppose the bird perches. The cat also stops, lays in wait. The observer sees nothing happening, but the cat's muscles are tight; it is readying to jump, gauging the distance and the moment. The cat is doing a lot. **Jump-readying is a complex behavior.**²⁵

The cat's readying and the not-changing of the perched bird are further sequences that form in the context that implies the moving bird.

A further example: Suppose we have a photograph of a bull. That bull stands still. Now, let's make a motion picture, many photographs of the bull in slightly different stills. The bull moves. Now suppose we want the bull to stand still **in the motion picture**. Then picture after picture must go by with the bull in the same position. To have the bull stand still you don't stop the film. Many almost unchanged slides make it stand still. For us the perched bird falls out from a sequence of versions of the behavior context in which its motions are implicit.

As the cat quietly crouches, consider the complexity of its behavior. Each bird movement is followed with pupils, with muscle-tightening, with directioning. The non-flying bird falls out from a sequence in which its slightest move feeds back to precision the cat's jump-readying. The perched bird sequence and its scene implicitly focals a great many not-occurring leaps of the cat.

Objects involve other implicit sequences in their very formation.

APPENDIX TO CHAPTER VI

The following sections of VI contain indispensable concepts of behavior. I place them in an appendix because the reader can go on to VII, and look these concepts up later when they are cited and employed.

It can be wearying to read about one new concept after another without seeing them used. Therefore I send the reader ahead.

6. Resting Perception, Impact Perception, and Perceiving Behind One's Back

a) Resting Perception

Once the open cycle is eveded as part of the body-process, the body can **feel** itself at rest in the mesh of the sequences which are reiteratingly implied. I call this kind of sequence "**resting perception.**"

b) Impact Perception

Therefore a change in the environment may be perceived and felt even without behavior. I call this kind of sequence "**impact perception.**"

Like the cat's jump-readying, these kinds of perception and feeling are special kinds of behavior sequences.

c) Perception Behind One's Back

Merleau-Ponty pointed out that we perceive and feel the space behind us even without hearing or seeing anything directly. You can check this directly. With our concepts we can now derive this fact:

Say the animal saw or smelled a predator a while ago, and is now running away. It has not yet run far enough so that it can relax. The predator is now being perceived -- not in the usual sense but certainly in our sense. The predator is part of each bit of the open cycle as the animal runs. The animal is putting distance between itself and the predator who is behind it somewhere. The motivation to get away is being carried forward by each tree going by. What is perceived is not just the trees, but the behavior context being carried

forward by the moving trees.

They are perceived as putting distance between the animal and the predator behind it.

Obviously the felt and perceived behavior space includes much that is not the "perception" of the five senses. Rather, the body perceives and feels the behavior space -- one sequence that carries the mutually implicit sequences forward. Implicit are, for example, behaviors of turning back, of stopping and resting, and of going sideways. These would bring the predator. The animal runs forward in a space consisting of the many sequences that are implicitly part of forming (eveving) this behavior. The ongoing behavior consists of versions of the perceived and felt behavior space, of course behind it as well as in front.

I discuss this further in section 13. below.

We have derived the wider perception which is part of carrying forward the behavior space that is implied by the body.

7. Relevanting

Can an object bring about a sequence that was not already focally implied? For example, must the cat have focally implied tree-climbing before it found the tree? Or can the climbing sequence occur because the cat encounters a tree?

We can say that if the tree-climbing sequence forms, the tree "was relevant," but we can also say that the tree helped to make its relevance. "Relevance" is, in a way, another word for eveving. The en happens into the eveving. So, yes. By occurring, the tree enters the eveving so that climbing it may become focally implied.

Let us make a verb of it: The tree can actively "**relevant**" the sequence. (This was already evident in IV.) If the behavior sequence ensues, the relevanting was itself the first bit of the behavior.

An object may relevant a sequence with another object. The cat sees an open door and runs through it after a bird, paying the door no heed. But the door is part of the behavior space of the bird, like the bolder that the cat runs around.

8. Juncturing

Each bit of a behavior sequence relevant to the next bit. Therefore it can be difficult for another behavior sequence to become relevant while this one is going on. Some environment aspect might relevant to a sequence if it occurs before another sequence relevant. If it occurs during the other sequence, it might not. Also, if the sequence goes to a consummation, this may change the body so much that the other environment aspect would no longer relevant to its sequence.

This gives behavior a certain stability, and organization. An object may be able to relevant to a sequence at one juncture, but not at another. Behavior is organized by "**uncturing**."

By behaving, the animal changes its behavior space. Other behaviors become implicit and can be relevant. This is not only a change from external. The behavior space is constituted by the body in interaction with environment. By behaving, the animal changes its body and its behavior space.

9. Compression

"Compression" is a concept we will need later when we come to language and human action. The concept develops first from animal behavior.

Studies of animals show that behavior has a tendency to become simplified, ritualized, more compressed higher up on the scale of evolution. For example, in an earlier species there is a complex mating ceremony. The female swims away from her prospective mate, and toward the other males, then she turns and swims back to him, then out again toward the others. She does this six or seven times. In a later species the female keeps her neck turned toward her mate and she swims out toward the others -- just once! What was an elaborate sequence earlier is now performed by a single short "ritualized" behavior. Our model will enable us to derive the first theory with which one can think about this:

As more and more sequences develop, there is a greater change when a sequence becomes focally implied. When behavior first formed, the first bit brought only a small change. Now it is a great change when the first bit focally relevant to the sequence. Of course the whole sequence still makes more change, but the first bit -- the mere relevanting -- may now be a great change, certainly much more than the first bit brought at the stage when the sequence first formed.

At this developed stage it might seem that the sequence has already happened as soon as it becomes focally implied, but that is not so. For example, I am not at the door just by moving toward it. Nevertheless the whole situation may be drastically changed if I just begin to move to the door.

It need not be the first bit. In our example with the ducks, the great change is made at the moment when she swims out and turns back. That moment soon brings the change which required many sequences when the behavior first formed.

Or the compressed bit might be the last, so that consummation is reached more quickly. For example, a fight between male monkeys ends when one of them turns his back at last. But in some social species, each monkey turns his back whenever he sees one who is higher in the hierarchy. Then there is no fight. The consummation is reached directly. The turn is a compression of the whole sequence. But the fight is still implicit, and occurs if a monkey does not turn in hierarchical order.

Whenever a bit of behavior changes the evening very greatly, the change may be sufficient so that something else can be relevant. Then the rest of the sequence may no longer occur.²⁶

In elaborate behavior space compression makes for rapid carrying forward with swift transitions across. After a few bits of a sequence another sequence may become focally implied.

Compression is a kind of pyramiding. The whole sequence is still implicit, but the new compressed one occurs instead.

Lorenz tells about a duck whom he led up several flights of stairs every day after some experiments. Once there was a loud noise in the street while they were on the second floor landing. The duck ran into a room there and looked out the window, then quieted down and went on up the rest of the stairs. From then on each day when they reached the landing, the duck made a little loop toward the room and then went on up. But one day many months later, the duck failed to make the loop. After a few steps up, she turned, went back down and all the way into the room to the window. Then she went on up the stairs.

The example shows that the whole sequence remained implicit in the little compressed loop. When the "new" loop sequence did not occur, the whole old sequence became focally implied and occurred.

10. "Breaking Back" to a More Primitive Level

This is another term that we will need in VII.

Higher animals develop more and more behavior and more and more objects that can relevant behavior. If the cat is not hungry, not sexually engaged, not tracking something or escaping, she may go about, sniffing something here, turning to listen to a noise, meandering over there, looking into a hole, sitting a while. Various objects relevant sequences that are interrupted by other objects which relevant other sequences.

Suddenly a mouse appears and the cat is on the other side of the room before we know what happened. Nor is she easily interrupted in this pursuit until it is over. Animal psychologists call this sudden behavior a "fixed action pattern" (FAP) because it goes off in a very regular and uninterruptible way.

A FAP seems to be a throw-back to a more primitive level of development. The behavior space seems not to include all those sequences with passably interesting objects. Actually they are still there, as we can see from the fact that the cat skillfully avoids those objects despite her speed and the uninterruptible quality of her tracking. So the FAP is not simply primitive. Some of the later objects are implicit in the behavior context which the FAP carries forward, but most of them are not. In midst of a FAP most later-developed objects will not relevant a different sequence. During a FAP the eveving and focusing omits a great deal which it otherwise includes.

I call the narrowed eveving of a FAP "**breaking back,**" **a return to an earlier manner with fewer objects and a more whole-bodied formation.** We will need the concept to understand how human emotions differ from the holistic bodily feeling of eveving the whole context.

11. Behavioral Body-Development

We saw earlier that changes in body structure continue and are speeded up by the development of behavior. I call such change "VI-into-V." These are often large and rapid changes. (For example, in one generation bees in a hive may be born with a changed body structure in response to changed behavioral circumstances.) Earlier stages do not remain the same. Later stages develop the earlier ones further.

Some behaviors develop new consummations and thereby also new stoppages in the body-process. Animals develop many bodily motivations that did not exist before behavior formed. Behavior is a detour, a string of **versions** of a stoppage of a body-process, but it may create and carry forward new or changed stoppages.

The current gap between physiology and psychology is not a gap between the body and behavior. It is rather the gap between the current **vocabularies and concepts** of the two fields. If one doesn't develop concepts for the bodily development of sentience, both sides become mysterious. Then the body seems to be a machine, and the behavioral terms have to come from a new and false beginning that floats without the body. Then our concepts of body and behavior never acquire the inherent internal connections.²⁷

If we have succeeded in thinking of body-process and behavior within one paradigm, we can show how the bodily structure of each species is just what is needed for its behavior. This is not quite so mysterious if behavior **is** a certain kind of carrying forward and change of the body.

The other side of the same relationship is the current puzzle of inherited behavior. If the body is inherited, so is its implicit behavior, of course.

In evolution the body and behavior develops together. This seems mysterious only if one splits between matter and process, between body and functioning.

Would you think the lungs inherited, but breathing learned? Would you think the heart inherited but the pumping not? And why would legs be inherited but not walking? I ask students: "How do tiny children learn to walk? They answer "From watching the adults." Then I ask: How do they learn to crawl?

For a long time the behaviorists insisted that the animals must learn their complex behaviors. When animals were raised in a cage in a lab, they thought the animals must have learned while they were carried in the womb. But what is learning? Without some equipment, no thing can learn. Something is always inherited when there is learning. You can't teach a tree to catch mice.

There is a continuum from innate to learned in various combinations. A kitten must "learn" the complex way of jumping on a mouse. The mother demonstrates -- once -- and it is learned. It is inherited but requires a bit of learning. Stimulating certain brain cells elicits the behavior also without mother. But don't say it is the brain. A brain cannot jump on mice. The whole body is restructured as

behavior develops; the whole body is inherited along with its behaviors.

12. Habit

It has long been a puzzle why repetition seems to build habits. Mere repetition does not explain it. The answer is that the development of habit is a certain kind of **bodily** change.

The "repetition" occurs in different circumstances. Each time it carries forward a somewhat different behavior context. Each time the behavior becomes implicit in many different sequences in which it was not implicit before.

We have seen that the visible form of two behaviors may seem the same, yet many different behaviors may be implicit in it. A behavior becomes a habit when it has become implicit in a great many other behavior sequences, and they in it (in the context of which it is a string). The more sequences involve it implicitly, the more difficult it is for a new sequence to pyramid over it and occur instead. When it is implicit in many sequences, it never disappears completely.

A new behavior can become a habit if it leads to a new consummation, or to an old one more quickly. This is why a "reward" can build a habit. Sometimes one time is enough to build a habit. On the other hand, without a "reward" (some kind of consummation) no habit may form even with a great many repetitions in various contexts.

Does habit-formation contradict my assertion that occurrence is always a fresh formation? Our new concepts show that it does not. A habit **forms freshly** each time as any other sequence. It is freshly relevant and focused.

When the same thing happens again under the same conditions, we can call it "recurrent causation": The same thing forms again in the same way it formed in the first place.

13. Kination (imagination and felt sense)

In the old model one begins with experience already broken up into different kinds. One assumes that "basic" reality consists of just one way in which we have already diagrammed, distinguished and remade anything. (In VII we will understand ourselves in such remaking.)

If one could not trace how something was received (for example by light waves or sound waves impinging on a sense organ from the object), then it had to be called "imagination." Imagination was always mysterious, the experience of objects -- without objects.

It seemed that imagination must be something like a memory of what was once present, old experiences, perhaps creatively re-arranged.

Freud and Jung discovered that imagination and dreams are much wider than individual experience. They discovered the "unconscious" of the human race, the "collective unconscious" which can create images from primitive times when culture was first created. These seem similar the world over and can be elicited from most anyone by certain chemicals, hypnosis, or sleep.

With the old model everything is explained by tracing some units back to an earlier time, to show that what seems new is only a rearrangement. It seemed easy to explain dreams and imagination as a **replay** or **re-arrangement** of old experiences. The real problem is to understand how experience happens in the first place.

It has long been recognized that even when something does impinge, the body must still also **produce** the experience. The object may be next to a stone, but that is not sufficient to let the stone experience it. Some equipment is necessary to produce experience -- whatever "experience" is. Most of what happens in imagining and reproducing an experience has to happen also when we first experience anything.

Kant said that imagination is involved not only in re-play but just as much in first experiencing. He spoke of the "productive imagination" which comes before the "re-productive" one. He said that this capacity lies "deeply hidden" in us, and that we would scarcely ever observe it. But he saw that actually ongoing experience happens **in** (with the participation of) the imagination.

In building our model we have now arrived at a similar place. The animal moves in its own home-grown environment, the open cycle which has become behavior space, the mutually implicit sequences.

One big difference is that the open cycle is implied by the whole body. The whole body **is** an interaction with the environment. In traditional Western philosophy the whole body was ignored. Experience had to be built out of receptions by the five sense-organs. In order to think of those as the source of experience, one had to jump from colors and smells to the experience of objects, things and

situations. One was not supposed to notice that even the simplest situation cannot be thought of as bits of color and smell.

In 6. above we took up how a situation (a behavior context) includes objects perceived and felt behind the body as much as in front. Behavior space includes the predator behind the escaping animal. Behavior space does not consist of bits of color and smell, but of the bodily-implied behaviors and their objects.

In the earlier example, we said that the animal's running carries forward a felt and perceived space of many possible behaviors. The running and the passing trees carry forward its bodily escape-motivation. Of course it feels and perceives the trees behind it. The animal feels that if it were to back up at a slant, it would hit the tree, and it feels this quite without first looking. If the animal were to back up, it would reverse their passing. If it were to take a rest, the trees would stop passing, but the pursuing predator would come closer. If the animal were to hide behind one of those trees, the predator might pass by, but might not. Its body (the "collective unconscious" of pyramided-over sequences of its species) "knows" whether this kind of predator will smell it if it hides, and whether the predator can climb trees better than it can. That is all already part of the context from which the passing trees fall out as objects in the behavior space in which it runs.

If we now say that behavior space is "imagination," the word would come to mean what is actually present in body-environment interaction. I think this is true in some sense of human imagination as well, but only in VII can we examine the whole question. Here we can be sure that "imagination" is not off from body-en interaction, as if it could be simply false. With animals we have derived this **interactionally real** imagination. When we come to humans it will be **this** imagination which we will want to develop further.

"Imagination" might be misleading if "images" are thought of only as visual, or only of the five senses. The word kinesthetic (from kinesis, motion) is still too poor if one thinks of motion as just a change of location in empty space. Later we will see that pure motion involves a prior behavior space and, of course, the whole body. I coin the word "kination" to use where "imagination" usually comes.

"Kination" is the doubled, bodily-implied behavior space. For example, the cat meows before the door; she "imagines" running outside. The door is in behavior space along with what is on both sides of the door. The behavior space consists of many behaviors the cat does out there and what it does now in here. There is no great

division between the door it sees, and the outdoors it does not see. The bodily-implied kination is always vastly wider than what can be photographed at the moment.

There is no break between physicalist sensing and kination.

Kination = behavior eveving = open cycle carrying forward = feeling (the evev-evev changes) = perception (the open cycle versioning).

We can say that behavior happens in kination if we remember that kination is doubled ongoing body-en interaction. Kination is not an autistic inner space.

These concepts are the first of their kind; they are not likely to be perfect or the best. By using them, better ones will develop.