Paper within the framework of Tractatus Principio |

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The Relation in Which I Stand

by

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A Relational Essay · Expanded and Refined Working Version · October 2026 · Following Volumes I–VII

$$\Delta := |(|)$$

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Chapter Overview

Chapter I – Light and Habitability. Beginning with the observer’s spatial self-determination, the Sun is developed as a shared distant reference. The planetary scale holds the different life relations together in their shared reference.

Chapter II – Intrinsic Geometry and Appearance. With the addition of 3Δ/4Δ and the epistemic hole, the arrangement of difference in relation to itself is related to appearance. Frozen Frames, light, and energy receive their respective roles as readings within this context.

Chapter III – Consensus Reality and Retroaction. The example of the jointly moved glass makes the mutual involvement clear. The different observer relations are considered as a jointly effective order. Historical changes, the life relations of the biosphere, and the thermodynamic reading give concrete form to the continuing retroaction.

Chapter IV – The False Back-Reference of the Readout. The chapter examines how a measurement determination can become a seemingly independent explanatory ground. The miner example carries the relational consideration of rock and air through to the tree relation and renewed human measurement; the engine example connects this to retrocausal reading back.

Chapter V – Disempowerment at the Dinner Table. The critique is extended to nutrition, metrics, and social judgments. Pizza, salami-and-cheese bread, and fructose serve as examples of how a limited reading can determine judgment about a more encompassing context.

Chapter VI – The Place of Doing Nothing. Daoist Wu Wei and Buddhist mindfulness open up comparative connections to the critique of constant intervention. Rest, attentive contemplation, and the examination of consequences are developed as possibilities for responsible action.

Chapter VII – Conscious Refraining. The conclusion refers the reflections on one's own limited perspective back to the responsibility of action. Consciously not acting, although one could act, receives a positive place in shared life.

Appendices. Appendix A gathers the empirical references and the scope of the reading. Appendix B explains the notations with their primary passages in the Tractatus volumes and adds references to Volumes V and VII. Appendix C brings together the conceptual determinations and their system-immanent grounding. The cross-references in the main text lead to these anchors for deeper reading.

Preliminary Note on the Expanded Version

The essay begins with a seemingly modest question: In which relation do I stand when I measure something? It leads further than the customary opposition between a knowing subject and a world already complete independently of it would suggest. If I can determine myself only within a distinction, then the measurement of an opposite pole cannot be removed from this distinction either. The world does not first appear complete and then acquire an observer. Rather, the observer's position, the distinction, and the opposite pole distinguished all belong to the same enactment.

The expanded reading that follows develops more explicitly a thought already implicit in the Tractatus volumes: time is read from the present. What we call the past appears as a present reading back of a trace; what we call the future, as a space of possible continuations determinable in the present. This does not mean that we could invent arbitrary stories about yesterday. The existing relationships do not sustain every reconstruction. Rather, it means that historical judgment, too, must bring with it its present observer position and its criteria.

We also clarify how the completeness of a Frozen Frame and the incompleteness of an observer's reading relate to one another. The 3Δ orientation of an observer within the complete 4Δ context gives ignorance a determinate position. One direction remains epistemically unread without thereby disappearing from the complete relation. The shifting of this position belongs to the drift of further self-measurement. Not-knowing is thus understood not as a store of unknown things, but as a boundary that participates in the reading.

This gives the examples of Sun, glass, cat, engine, CO_2, temperature, and wind a common ground. We are not speaking of seven separate ontological objects for which seven separate causes would then have to be sought. We examine which different readouts an enactment bound back into a shared context produces under different tasks, apparatuses, and temporal and spatial readings. The concrete readouts remain different. It is precisely this difference that calls for precise investigation.

At the end stands a practical and ethical question: Must we actually differentiate every possible distinction further? Measurement helps, protects, connects, and opens up possibilities. At the same time, it can consolidate actions and interpretations that in turn call for new measurements and interventions. Conscious refraining in this context is neither hostility to knowledge nor an injunction to ignore existing dangers. It is the ability to refer one's own practices of measurement and action back to their presuppositions and retroactions.

This version unfolds the internal argument of the Tractatus Principio. Its claim to proof lies in the logical closure of the determinations developed and their consequences. Here, a consequence is grounded in the premises of the system, not in subsequent approval by an independently presupposed theory of objects. A substantive refutation must therefore begin within this context: it must identify a contradictory determination, a transition that does not hold, or a conclusion that does not follow from the relations established. Merely invoking the separation of observer, measurement, and object that the text itself examines cannot replace this immanent counterargument. Public measurements are not discarded; their place in the order of grounding is determined from the shared enactment.

Terms and Notation

The following reflections are an attempt to read the Tractatus Principio from an ontological perspective. And, as so often, this journey begins not with things, but with the relationships in which they appear to us as things at all. Rock, air, tree, human being, O_2, and CO_2 meet us here as determinate relations of appearance within a shared enactment. Their names designate how relationships become stably readable under a perspective. We therefore do not first presuppose them as relation-independent substances or ready-made bearers, only to connect them with one another afterward. We begin with the relation itself. [N1, N5, N7]

What we call "measurement" here is an effective enactment of distinguishing. The coupling belongs among the conditions under which something appears to us precisely as this phenomenon. Neither registration nor the perception of what has been registered stands outside this relationship. A technical measurement is thus a particular form within a more encompassing context. Other life relations distinguish in their own ways.

A human being may determine a change in connection with a tree as "O_2." This is the human being's designation, arising from their measurement perspective. The tree, by contrast, distinguishes within its own life relation. It neither employs our concepts, nor would this imply a conscious statement by the tree about oxygen. What nevertheless connects the two is the jointly effective order of their different ways of relating. This is what we call consensus here. [N5, N7]

We determine measurement, appearance, and action from the context of the relational system. The grounding follows the system's own determinations; climate, metabolism, and nutrition are not placed before it as independent domains of objects. The source notes and Appendix A situate the public readings to which the examples refer. References [N1–N11] lead to the more detailed explanations of terms in the Tractatus volumes.

The signs we will encounter are condensations of these relationships as developed in language. They are not intended to replace our reflections, but to make their form visible. The corresponding passages in the Tractatus volumes explain terms and connections.

The basic signs are:

- |: enactment of distinction.

- A|B: the relational poles determined within a distinction.

- A|B ↔ B|A: reciprocal readability of the same relation; the roles remain distinguishable.

- Δ := |(|): effective self-referentiality of difference.

- 0|0: position of self-mirroring, which in Volume I can be read as an observer position within the relation.

- ¤: observer or reading position within the relation.

- Σ: present relational trace in the sense of Volume I, Chapter XVIII.

- read(Σ): public reading of a determinate trace under a stipulated perspective.

- |_|: closed relational configuration, the Frozen Frame.

- 3Δ / 4Δ: reading observer orientation with an epistemic hole / complete context. [N9]

- κ_e: designation of a congruence field as a reading of phase-compatible registers; here only as a conceptual indication, with the full definition given in Volume VII. [N10]

These basic forms are developed in Volume I, Chapter XVIII, and Volume II, Chapters XVIII–XIX. [N1, N2, N5] The direction of determination from Volume I is:

Task → Perspective → relational determination → Δ → Trace → Projection → Readout

The arrows describe the order of a determination. One should not be too quick to understand them as a linear chain of production—and certainly not as a signal in physics traveling backward through time. A task determines the perspective from which a reading is made. This by no means allows it to stipulate arbitrarily which result appears.

In considering this, we should keep three kinds of order apart while also thinking them together: the basic determinations operate simultaneously and recursively; their methodological priority orders the grounding; and the sequence of a concrete enactment can nevertheless carry significance. Dispensing with a temporal chain of production thus does not mean that the concrete order is meaningless. The necessary resolution, too, is determined by the task. What depth of relation is possible and what actually becomes effective at present are therefore two different things. [K1]

When we change perspective, we do not lose sight of the enactment. However, we must distinguish between the basic enactment, positions already brought into relation, and a determinate trace Σ. Such a trace can be read from different perspectives. Which determination appears in the process follows from the respective relationships. [K1]

Something similar applies to “back-reference.” The word does not always lead us to the same place. It can designate the self-reference of difference, the co-determination of an earlier context by later closure, a return with a trace that continues to operate, or the backward readability of a determinate relevant class of traces. The context decides which role is meant. And an important boundary remains: mere backward readability does not permit the complete relation to be brought forth anew from an isolated public number. [K1]

Indices such as those in $¤_1$, $¤_2$, R_1, and R_2 distinguish the positions and relationships under consideration. R_1 and R_2 designate relations that are already determined. The indices identify their respective roles in the expression.

Volume III uses Σ in the context of the shadow network; Volume II, Chapter XIV, uses $|\Sigma$ for the stringency relation of Frames. Here these roles are distinguished both from the trace reading in Volume I and from one another. The forms R_+, R_-, and ¤ adopted below are explained at their respective places in Volume III. [N6, N8]

The Now as the Place of All Temporal Readings

We can remember yesterday. But where does this remembering occur? In the present position of the one remembering. We can plan for the day after tomorrow. But where is this planning enacted? Again, in a present position. Even a historical document or an astronomical observation referring to very distant times encounters us in a present relation of measurement and interpretation. We do not leap out of our now to obtain a second present alongside it. From within the now, we determine which traces are readable as past and which continuations as future.

This does not mean that the past is freely invented. A present reading back is bound to its trace, its conditions of comparison, and its stringency. An image, a rock, a cat’s memory of a familiar place, and a recorded temperature curve have different modes of determination. Yet each of them is read now. Whether the different readings are compatible is in turn a question of their shared binding back. The present does not erase the trace; it is the position in which the trace’s continuing efficacy becomes determinable. [N1, N8]

What we call “before” and “after” is thus, in the first instance, an order of relations. The individual Frozen Frame $|_|$ is closed. It does not already contain within itself a clockwork that runs beyond it into a next moment that is still missing. Temporal difference appears when the observer relates complete relational configurations to one another. Only through this back-reference does the observer read a course of events. The present is therefore not merely the tiny interval between a completed past and a still incomplete future. It is the position from which such a division is read at all.

The formulation “There is only now” thus acquires a precise meaning. It is not meant to say that the complete possible Frame configurations are produced only by our thinking. It says that our experience and every actual determination of such a configuration depend on the observer’s self-measurement in the respective present. A complete context can contain more than is presently readable. The now is the concrete reading position within this completeness, not its production.

The retrocausal perspective thereby becomes clearer. A present state helps determine which preceding relations belong to it as a stringent prior history. The direction of this determination is not a claim that a force occurring later in calendar time travels backward through a hidden temporal channel. It designates the binding back of a complete reading of the present to the history that can be consistently determined under precisely this reading. In its efficacy, the trace remains present; as “back then,” it appears under a particular temporal perspective.

In this respect, the future is the mirror image. It is not simply an empty container into which events later fall, but a set of connections not yet enacted that are determinable as possibilities from the present relational configuration. Their stringency depends on the order already effective, but also on the distinctions made in the present enactment. There is therefore a difference between saying that all complete Frames are possible as relational configurations and saying that an observer can read any arbitrary Frame as the next one from any position. The completeness of the context does not guarantee the arbitrariness of the connection.

The customary formula “Time passes” thus becomes a description of the readout. The observer reads themselves again within a sequence and thereby gains the impression of their own persistence. Other observers can perceive other differences and nevertheless stand within a jointly congruent continuation. The experience of shared time arises through this interplay. [N8, N9]

Chapter I – Light and Habitability as a Relational Reading

Let us begin with the one who plays a particular role in these reflections: the observer. The term here extends beyond us human beings. It encompasses all living beings on Earth, from microorganisms through insects and reptiles to small and large mammals, as well as plants and fungi. Observer here designates a life relation that takes up differences and responds to them. Volume II, Chapter XV, already explicitly includes single-celled organism, pet, and human being within a shared context of their observer relations. Their ways of distinguishing remain different, of course. By using a shared name, we assert neither a uniform perception nor, still less, the same form of consciousness. [N7]

Spatial self-determination becomes tangible in our own position. To determine it in space, we must enter into a relationship with it. A here can be determined only in its reference to a there. In the relational reading we are pursuing here, this opposite pole appears as a distant reference: the Sun. It becomes that distant point of reference in relation to which the observer relates their own position and develops it as three-dimensional perception.

We can express this relationship between observer and Sun in the already familiar form A|B:

¤|Sun

The “Sun” here is the determinate distant reference; ¤ designates the observer position related to it. The two signs record the different roles in our consideration. Spatial self-determination is consequently bound to that reference under which both poles become determinable at all. [N1, N5]

In projection, the Sun becomes readable as an opposite pole within a relation in which the observer position itself participates. Distance is the spatial reading of this context. If we change its scale, what previously appeared as a closed side can be opened further. A distance thus belongs to a depth of relation whose individual relationships are read together at the level under consideration.

But we are not alone. Alongside a human being there are their cats, the dog from the neighborhood, and, of course, the neighbors themselves. And beyond this fairly manageable company are insects, microorganisms, and all the other life forms on Earth. Each of these observers distinguishes from its own position. At the planetary scale, we take their different observer relations together. The Sun then appears as the shared distant reference of the entire context. This by no means implies that every living being would have to see the Sun consciously or directly. Its relational role and seeing the Sun are not the same thing.

In this sense, we call the Sun a relational constant. What is meant is the constancy of its shared reference within the scale under consideration. The individual observer positions remain different—and it is precisely in these different relationships that the shared reference sustains itself. What appears to us at one level as a connected whole can, at a finer level, again be opened into its effective relationships.

Two different observer positions remain related to the shared distant reference:

$$(¤_1|\mathrm{Sun})|(¤_2|\mathrm{Sun})$$

The outer stroke connects two already determined distant readings into a further relation. Because reference to the Sun recurs in both, we can consider the different observer positions together. Their relations remain different, while the Sun becomes readable as the same distant reference. At the planetary scale, this consideration encompasses the life relations of the biosphere described above. [N1, N2]

The distant reference thus connects the different observer positions without canceling their distinctive character. Their traces remain determined by the respective relationships; what can be read together is the reference under which they act upon one another. [K1]

Now, with further observers, the relating within this context also increases. However, it would be somewhat premature simply to count observers and derive the effect from that. What matters are the distinctions that are actually enacted. A complex observer develops further relationships, relates differences to one another, and makes what has already been distinguished distinguishable again. Considering many observers together therefore means more than adding up their number: we read how their distinctions become effective within the same distant relation.

A new distinction never encounters a wholly untouched trace. It encounters a form already brought into relation, changes it, and thereby acts back upon how further distinctions can be made in the future. The following shorthand suggests itself for this self-referentiality:

$$\Delta|\Delta$$

The trace acts back upon itself. Its previous relating remains present in the further enactment. And what we newly distinguish simultaneously changes the context from which further distinctions emerge.

Here Δ|Δ designates the relating of readings that are already self-referential. Volume II, Chapter XIX, also writes the reference to the order already determined by Δ as Δ(Δ). We consequently remain with Δ := |(|). Self-reference deepens; the basic enactment remains the same. We have neither introduced two delta objects nor created an additional order of difference. The movement determined in each case follows from the relationships involved. [N1, N2]

From a more encompassing observer position, this cumulative relating can appear as an increase in light. What is meant is the increasing differentiation of the relation in which light is perceived at all. It does not follow that a million or even a billion observers would produce a supply of light increased by the same factor. The numbers describe the extent of the observer relations considered together. What is effective, by contrast, are those distinctions that are enacted within this context and related to one another again.

In our account, light is the visible appearance of the relation. With each further relating, the overall form within which we perceive the shared distant reference and determine our own position changes. The Sun remains readable as a shared reference while the context of its observation continues to differentiate.

This is where the relational determination of the habitable zone begins. At the planetary scale, we take observers together in their shared here and relate them to the Sun as a distant reference. The stabilization of this relation appears spatially as that region in which observer relations can persist and develop further. Distance from the Sun is one reading of this stability; the conditions of one's own existence are another.

In this reading, then, the habitable zone is the spatial form of a jointly stabilized context. In it, self-determination, distant reference, and the continuation of observer relations become readable together. We relate what appears to us as distance from the Sun and what we experience as a condition of life to the same relational context under consideration. When we change perspective, the relationships under which the respective determination appears must be read along with it. [K1]

Chapter II – Intrinsic Geometry of Difference and Appearance

Our point of departure remains difference—more precisely, its relationship to itself. We designate this self-referentiality as Δ. But what happens when we consider not only difference, but also the arrangement in which relationships already distinguished are related again to one another and to their own order? It is precisely this determinate arrangement that we call intrinsic geometry. Geometrical form is the readability of this enactment.

Volume II introduces us to this context in Chapter VII, "The Rule of Increasing Complexity." There, space is determined from the relation of differences to one another. If we relate a distinction to an order already distinguished, its depth of relation increases. Further degrees of

freedom and shells become readable. Intrinsic geometry is thus the determinate form of this relating, including its back-references to what is already effective. [1]

Opening and binding back belong together here. Chapter XIX distinguishes the opening reading $0|_{+}\Delta$ from the folding-back reading $0|_{-}\Delta$. We should not suppose these to be two separate processes. They are two directions of the same enactment. The shell is its geometrical reading: opening and folding back jointly determine how the relation shows itself as closed. Its intrinsic geometry thus follows from the relationship between these directions. [2]

The Frozen Frame designates such a closed relational configuration:

$$|_| \equiv 0|_{=}\Delta$$

This closure emphatically does not mean that Δ ceases to operate. Chapter XIX explicitly states that further self-distinction under a stipulated reading remains closed within the same relational configuration. What we encounter as persistent appearance can thus be read as continuing self-relating. The same beat remains effective while its determinate depth of relation and readability change. [2]

For light, this becomes more concrete in Chapter XVI. An appearance must be capable of being bound back to the observer position. The same Frame difference can be read spatially and temporally; and these two readings, too, are in turn related:

$$(¤|\Delta_R)|(¤|\Delta_T)$$

¤ stands for the observer position, Δ_R for the spatial reading of the Frame difference, and Δ_T for its temporal reading. With this notation, we record the different roles within one and the same context. Volume II formulates this as follows:

“The phenomenon of light is the visible form of this closed self-referentiality.”

When we designate the phenomenon as a Readout, this determination has thereby acquired a concrete reference. The appearance of light follows from the coupled self-reading of a relation to which its observer position inseparably belongs. [3]

Even the number of light leads us back to this relation. In the section of the same name in Chapter XVI, the Readout arises from measuring tape, stopwatch, observer, and shared relational configuration. The number appears as the visible numerical form of this measurement relation. Number and geometry are different perspectives on the same distinction there. Thus the phenomenal appearance and its quantitative determination remain related to the concrete context of their reading. [4]

Do we need a prior original particle for this? Chapter XVIII opens up a different reading. Under “Particle as Stabilized Relation,” it states:

“Particle is the name of a stabilized relation.”

Under a coupling, a determinate opposite pole can remain readable in such a way that we recognize it again across different Frozen Frames. If we differentiate further, the previously bipolar relation can itself become the pole of a more encompassing relationship. What appears

to us as emergence, duration, or decay is determined through the stringency of these readings. Chapter XV prepares this thought as continued differentiation: investigation opens up further surfaces and relational orders. [5]

What remains as a trace in this process? It is the present form of the enactment that continues to operate. A public reading may condense its determination; the internal relationships nevertheless remain readable anew under further relating. The observed phenomenon, too, is a determinate appearance of this context.

Accordingly, we must also develop energy through the relation of complete Frame configurations. Chapters VIII and IX describe it as change in difference in its time relation. Chapter XIX reminds us that energy is read as the relation of two standstills. If the order of appearance changes, we must therefore ask under which relationships precisely this change appears to us as energy. [6]

The Frame notation used in Volume II, Chapter XIX, is:

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¤ : |1_|2 → |1_Δ2
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The numerals distinguish the respective Frame positions. Already closed relational configurations become readable as change through their relationship to the observer position. For the energetic reading, Chapter VIII uses:

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0|E ≡ 0|(Δ |÷ Δt)
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E is the energetic determination, Δt the stipulated time relation; |÷ belongs to the chapter's ratio reading. What matters is that the energetic determination remains bound to the relation of complete Frames. The number of observers must not take the place of Δ. The invariant basic enactment is not an energy value that rises with the population. [N2, N4]

A further connection opens up for us with heat. Chapter XVIII, "The Skin as the Boundary of Perception," reads the change of a boundary relation as heat, cold, or another perceptual determination and relates it to an external pole. Heat, too, consequently belongs within a determinate observer relation. Yet we should not simply equate the heat reading and the light reading. Their shared binding back to difference does not cancel their different roles. [7]

For Sun and observer, the following results: we read the Sun's appearance from the arrangement of difference in relation to itself. Intrinsic geometry, light, thermal determination, and quantitative measurement find their reference in this enactment. The trace keeps the determinate relation present; the phenomenon makes it readable under an observer position.

Textual References in Volume II

[1] Chapter VII, "The Rule of Increasing Complexity": space as the relation of differences, depth of relation, degrees of freedom, and shells.

[2] Chapter XIX, "The Uniformity of the Beat," especially "Frame and Delta" and "Gravitation as Folding Back into the Frame": Δ continuing to operate within closure, as well as opening and folding-back directions of reading.

[3] Chapter XVI, “Why Do We See Light?”, especially “The Frozen Frame,” “Why Light Appears Invariant,” and “Why We See Light”: spatial and temporal reading of the same Frame difference and their binding back to ¤.

[4] Chapter XVI, section “The Number of Light”: Readout of the measurement relation, as well as number and geometry as perspectives on the same distinction.

[5] Chapter XVIII, “Measurement – How Difference Becomes Reality,” section “Particle as Stabilized Relation”; additionally Chapter XV, “The Content of the World”: stable appearance and further differentiation of the relational order.

[6] Chapter VIII, “This Is Energy,” and Chapter IX, “Energy, Mass, and Gravitation”; more precisely Chapter XIX, “Frame and Delta”: change in difference in its time relation and energy as the relation of complete Frame configurations.

[7] Chapter XVIII, section “The Skin as the Boundary of Perception”: heat and cold as readings of a changed boundary relation.

The Threefold Context within the Fourth: Knowledge, Not-Knowing, and Drift

Volume V, the book on the minimal relatedness of Δ, allows a clarification crucial to the reflections that follow. Four possible directions around a Frame are determined as a complete 4Δ context. A 3Δ state has three determinate positions among these and one unread position. The volume calls this missing reading position the epistemic hole. Its role is not that a genuinely existing part of the universe has been cut out. It characterizes the orientation of an embedded observer whose reading precisely does not coincide with the entire context. [N9]

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3Δ = observer orientation with one unread direction
4Δ = complete context containing all four directions
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From the perspective of the 3Δ observer, not-knowing has a form. It is not simply the abstract remainder of an encyclopedia not yet filled in. The three determinate relationships establish where a fourth direction remains open for this reading. A different orientation shifts this opening without requiring a second underlying universe. The 4Δ context remains the same. What changes is the position from which its relationships become readable.

This has consequences for the concept of knowledge. When we ask a new question, we change our perspective on the same relational basis. An additional measurement can make a previously unread relationship determinable. Yet this does not mean that all knowledge has simply become complete. The new determinations form a different observer orientation under which other back-references must be made. What we experience is not the annihilation of not-knowing, but a change in its position within a more complete context.

Four possible basic 3Δ orientations, each with three other orientations to connect to, yield twelve elementary transitions. Volume V develops them as the 12-path. They are not a dozen prefabricated roads that the observer traverses from an already existing point. They designate the distinguishable connections of the observer’s orientation. The observer reads their

continuation in the choice and stringency of these connections. At higher fractal levels, sequences of such transitions can in turn become a new unit of reading. The basis remains Δ; the depth of its relating increases. [N9]

Here lies the connection between ignorance and drift. An unread direction is not simply nothing for the continuation. As a boundary of the current orientation, it helps determine how the next transition becomes distinguishable at all. The unknown does not stand opposite the known as a substance of its own, but is carried along in the enactment that also determines the known. When an observer changes their orientation, they thereby also change the relationship between what they can presently read and what remains unread for them.

The 12 transitions are structurally determined; the stringency of a concrete sequence follows from the respective relating. The epistemic hole keeps the determinate partial perspective readable within the complete context. Orientation, trace, measurement task, and projection designate different roles within the same context. The necessary continuation of the relation and the determinate number under which it is publicly read are therefore not two independent events. The numerical explication of a reading perspective unfolds these roles; it does not suspend the system-immanent necessity of continuation pending confirmation from outside.

Chapter III – Consensus Reality and the Feedback of the Shared Solar Reference

The observer is itself a relation of relations. The human being can illustrate this: a person stands in relation to their parents, who in turn have emerged from further relations. If they live in a house, their neighbours, the arrangement of the rooms and the relations of their everyday life also help determine their own position. All of this acts together in what they experience as themselves. On other scales of life, the respective relations of reproduction, environment, other organisms and one's own response must be unfolded.

Our own position is thus not a relationless starting marker, but a particular form of relations that continue to act. Every new distinction emerges from this and at the same time acts back upon it. The trace remains present precisely because its relational form is effective in further relating.

The beat of this enactment is the same for every observer:

$$\Delta := |(|)$$

What differs is not this beat, but the respective relating. One's own timeline designates the stringency in which we experience complete relational configurations as our life. The same beat can thus be read from different observer positions.

When we speak of consensus reality, we mean this shared readability of different forms of relating. And the society at issue here is larger than human society. It extends beyond our community and encompasses the biosphere. Human beings encounter one another in comparable forms of perception and self-determination; other life forms contribute their own

respective modes of distinction. Their life courses and responses remain different, and yet their relations are intertwined. This interconnectedness is the consensus – by no means a conscious agreement among all living beings.

The basic form of a relation of relations is written in Volume II, Chapter XIX, as $R_1 | R_2$. For the relations of different observers, this yields:

$$(¤_1 | world) | (¤_2 | world)$$

Both observer positions refer to the same lifeworld. “Consensus” describes the intertwined readability of their relations within a wider context. How this readability stabilises is a question of the relations under which the observers act upon one another. [N1, N2]

When further observer positions related to one another are added, the shared readability of a relation can become consolidated. Each position reads from its own relations and acts back into the shared context. If these relations sustain one another in recurring stringency, a consensual reading stabilises. What is decisive, then, is their intertwining, not merely counting the participants. Neither the content nor the strength of stabilisation can be determined from their number alone.

What we call “consolidation” is the recurring determinability of a relation. Even a stable appearance remains an ongoing enactment. Different perspectives become readable in relation to one another under a shared determination. A number can express this publicly; it does not replace the relations. And even without a presupposed temporal sequence, observer position, action and measurement reading receive their determination together – while their roles remain different.

Measurement and Consensus as a Shared Enactment

Volume II, Chapter XV, “The Content of the World”, traces shared experience to the similarity of observers in the structure of their unfolding and to the proximity of their Δ-relating. The shared time axis described there explicitly encompasses unicellular organism, pet and human being. Consensus reality designates precisely this shared experience: different observer positions that remain related within a jointly readable reality. [N7]

And measurement? It too belongs within this context. Chapter XV describes apparatuses that open up relational contexts in which particles appear, and whose determination orders the past stringently. Chapter XVIII unfolds coupling as a change in the measurement relation itself. A new measurement coupling differentiates the enactment, and the appearance arising in the process belongs to this changed relation. As an externalised boundary of the observer, the apparatus remains embedded in the shared relational configuration. [N5, N7]

Chapter XVI records this mutual embeddedness in the following form:

$$(¤ \mid apparatus) \mid (apparatus \mid relation)$$

Here, two partial relations are related to one another anew. Observer, apparatus and the relation under consideration belong to the same shared reality. The measurement coupling differentiates this context; registration and later perception, for their part, do not stand outside the shared relating. [N3, N5]

Chapter XIX makes clear why increasing relating and shared stability do not exclude one another. Further relations reorder the existing structure. Many local closures can close together under a more encompassing reading. Their internal multiplicity continues to act, while the possibility of determining them independently of one another diminishes. Consensus here names this jointly stabilised readability. How it becomes consolidated depends on the nature of their shared closure. [N2]

The temporal reading of this context is itself relational. Chapter XIV writes the connection between complete frames as:

$$(|_|_1) \ ¤ \ (|_|_2)$$

The observer position connects complete relational configurations. And Chapter XVIII specifies: the subsequent frames are not first produced in linear succession. Rather, choice orients the position within their possible stringency. Determining an appearance arising from a measurement coupling and relating complete frame configurations to one another must therefore be considered together. In this reading, measurement generates a particular appearance relation, not, at will, a previously unfinished world. [N5, N8]

Further observer relations and measurement couplings enter this shared context. They can further differentiate its readability and participate in its stabilisation. What appears to us as substance and as a quantitatively determined amount of that substance is also read within it. The determination “CO_2” is no exception.

This feedback is already evident in an action. It changes relations. The changed relations in turn become part of further actions and experiences. Even an utterance or attribution can act back upon others and upon the speaker. The consequences belong to the continued relating of the same context.

If, by contrast, we treat an action as a completed thing, we obscure this continuing effect. What is designated as a single event remains connected to the relations in which it has become effective. Our description can place a full stop somewhere. The consequences do not necessarily abide by it. They continue to act in the present form of further relations. Volume III, Chapter IX, “Self-Organisation”, connects to this: experience changes the observer position and with it the conditions of further perception.

A Frozen Frame must therefore also be understood as a particular closed reading, not as a separation from all further happenings. Its completeness and the continuing effect of its relations belong together.

The Frozen Frames of shared reality are complete relational configurations. Which of them become readable as a continuation of the same world is partly determined by present relations and their links back. The image of a shared “stack” designates this context of consensually possible frame-relatings. Their stringency gives it its order.

In human beings, feedback manifests as experienced reality and directed choice: a person helps orient which relational configuration appears to them as the next in their experience. But what happens if they simply remain seated? By no means does everything thereby come to a standstill. Other people act, animals perceive, microorganisms respond, and the shared contexts of life continue to change. The seated person too remains related to this. “Consensus turns the frame onward” designates this ongoing relating. For other life forms, we relate it to their particular modes of distinction, without uncritically attributing the human form of choice to them.

Within this web, the Sun takes on a particular role. The different observers determine their here in reference to the same distant reference. This shared orientation lies in the structure of their relating. No one has to agree consciously to make the Sun a shared point of reference.

The Sun thus appears as the persistent distant reference of many intertwined life relations. For sighted observers, its shining becomes the visible appearance of the jointly stabilised reference. Other life forms must be considered in their respective responses and relations to the whole. The shared reference thus does not presuppose identical sensory perception.

Nevertheless, the Sun does not appear in the same way to every observer. Each relates the distant reference from their own situation. The same distant reference remains recognisable, but its readings differ. The indeterminacy at issue concerns that relationship between the different distant readings which can be determined further. When these readings are related together, an already related order refers anew to its own form.

This feedback can consequently also be read between complete frame configurations. Using the flickering star, Volume II describes how the relative projection of a closed light relation can change from frame to frame. The invariant beat and the changed concrete reading remain distinguishable. Chapters VIII and IX relate energy to the change in difference in its temporal relation. Under a comparable temporal relation, greater relational changes would accordingly be readable as greater energy. How strong the respective change is must be determined from the concrete relations of the changing readings. The mere number of observers does not tell us.

With further observers, the relating of this structure grows. When a child is born, relations change at the same time: people become parents, others grandparents; existing relationships receive new determinations. At their respective scales, the reproduction of microorganisms, the development of insects and the relations of further life forms must likewise be included. Viewed on a planetary scale, we read the entirety of these intertwined life relations together. The form and depth of their distinctions remain different in the process. They are not levelled into units of the same kind.

What expands, then, is the overall form of observer relations. Every further observer position introduces distinctions into an already effective order. And the changed order in turn helps determine how we perceive, distinguish and act:

$$\Delta \mid \Delta$$

The Glass and the Cat: a Shared Frame without Identical Perception

Let us place a glass on a table. In one complete relational configuration, it is read at a particular position. In another complete relational configuration, its position appears changed. We call this sequence a movement. Yet we need neither transport a small, unchanging glass through an independent time nor hide energy between two frozen images. We read the difference between two closed relations within an observer continuation. In this consideration, the glass is a recognizable, stringent glass relation.

Now the cat pushes the glass farther with its paw. Perhaps the human is looking at the table while the cat perceives a movement and turns to another stimulus. Each distinguishes differently. Nevertheless, their readings are not isolated from one another: when the cat moves the glass, this can also be taken up from the human observer position as a change in the same shared glass relation. The human could bring about the same process themselves. Two private glasses are not subsequently coordinated with one another; different observers are embedded in a shared complete relational configuration.

Here we see why consensus reality does not mean agreement. The cat need not understand the expression “glass,” an energy equation, or the human measure of time. It need not even attend to the same movement. Its own relation and the human reading can nevertheless be coupled in such a way that both persist within a jointly stringent sequence. Consensus is the congruence of their relations, not agreement between their concepts. [N7, N10]

The expression “the same Frozen Frame” requires care here. Not every observer has the same perspective, and not every readout is identical. But the complete relational configuration in which both participate must not fall apart into two worlds unfolding ontologically independently of one another. Even a difference in perception belongs to their shared relation. If one of the observers identifies a contradiction, the very identification of the contradiction is already a shared distinction to be determined further. The binding back remains in place.

This yields a more nuanced conception of a shared temporal tact. It need not mean that human and cat experience their time in the same psychological way or that all their clocks show the same value. What is meant is the stringent mutual relatedness of their respective continuations. Both continue to read themselves within a shared order, although they posit different differences. Their own perspectives are congruent within a more encompassing consensus reading.

The energetic reading connects precisely here. Volume II explicitly explains that a single Frozen Frame has no energy value defined in isolation. Only the relation of complete Frame configurations permits the corresponding ratio reading. We can therefore speak of the invariant closedness of the Frame without attributing to it a measurable container of energy. The question of conservation concerns the structure of their closure; the energetic quantities appear from the determinate transition relations. The Noether theorem invoked in Volume II is a mathematical reference concerning symmetry and conservation, not an independent proof of the Frozen-Frame ontology developed here. [N2, N11]

The Turn into the Sun–Earth Relation

Yet the shared reading of observers itself stands within a more encompassing relation: that between Sun and Earth. What is distinguished and consensually stabilised on Earth belongs to it. The planetary observer relation is itself, in turn, a relation of relations. Its differentiation consequently also concerns the perspective under which the Sun becomes readable as a shared distant reference.

We thus move from individual observer positions to shared relating – and return from there to the solar reference. We read the changed Earth relation within its relationship to the Sun. The same recognisable reference pole receives additional determinations under further differentiated relations. Shared readability and the difference of perspectives do not stand opposed to one another here; both belong within the same overall reading.

The reciprocal readability from Volume I holds both directions of view together:

Earth | Sun ↔ Sun | Earth

The change in reading direction does not make the two poles identical. Nor does it thereby fully determine a physical interaction. Rather, the differentiation within Earth must be read along with the respective Earth relation. It is not added to the solar pole as an independent quantity. [N1]

We have thus initially determined the interconnectedness of the readings. But what concrete change would thereby be measurable as light, heat, atmospheric composition or a change in the Sun itself must be unfolded from the respective relations. The shared Sun–Earth relation allows these determinations to be considered together. Neither the direction nor the strength of their changes has thereby already been decided.

Perspectival Reading of Complexity

From our human perspective, different forms and depths of relating can be compared. At a particular resolution, a microorganism appears less complex than the human web of perception, language, technology and continued shared knowledge. We should simply not forget one thing: this comparison too is a human reading. A hierarchy of living beings can no more be justified from it than a subordination of the animal to the human being.

What we compare are particular forms of relating the fundamental difference. The complexities described are perspectival readings of the difference of the third order: the distinction of distinction, |(|), whose effective self-reference is called Δ. No ranking of living beings is meant by this. Our own human perspective, from which we consider all this, is also part of this enactment.

In doing so, we must not confuse the individual enactment with the multiplicity of its participants. “Mass” here initially designates this multiplicity. An observer whose individual enactment appears less complex to us in the chosen comparison can, through its intertwining with very many others, form an encompassing shared context. How this acts back follows from the relations. The structural complexity of the individual and the strength of a particular effect are thus two different determinations. Neither can be derived wholesale from the other.

Change too has its own complexity. What is decisive is which relations an action takes up again in the already related order, which it changes and which further distinctions thereby become possible. The frequency, diversity and depth of such restructuring must be kept apart. What becomes newly distinguishable within a way of life follows from its particular relations and demands.

In human beings, this is evident, for example, in tools and techniques that are developed, changed and passed on. New work tasks, procedures or social relations act back upon the conditions of subsequent actions. A cat, by contrast, may appear to us in a particular everyday example as relating in a comparatively stable way when its activities repeat. “The same changes” here means the recurring readability of concrete enactments that are different in each case. We humans too maintain such routines. The example consequently describes a perspective on change, not an unchangeable property of an animal species.

Volume III, Chapter III, describes the recurrence of a relation in changed form. Volume II, Chapter XIX, determines persistence through a closure recurring under particular observation relations. Δ remains the same beat. What changes are the particular relating and the movement readable from its perspective.

A cut diamond offers an image of this. Its facets may stand for the different positions from which a relation becomes readable. A cut with few facets and a more diversely articulated arrangement allow us to envisage different patterns of refraction and renewed intertwining. What is decisive here is not the number of facets alone, but their arrangement relative to one another. Only from this can further relations and recombinations emerge in the reading.

When we speak of refragmentation in this image, we mean the renewed distinction of already related readings. Poles are related to one another anew and recombined under further relations. Volume I, Chapter XVIII, describes this under “Recombination of Different Perspectives” as a relation of relations. Different readings of the same basic relation can together make contexts visible that remained hidden to us from a single perspective. The facet image thus illustrates different intrinsic geometries of reading the difference of the third order. Of course, we too choose and interpret this image from our human perspective.

$R_1|R_2$ relates the facet readings anew. In the image, R_1 and R_2 designate two already related facet readings; their further relating unfolds $|(|)$. The number of facets is therefore neither a number of delta enactments nor a rank number of living beings. [N1, N2]

In the planetary context, humans, other animals, plants, fungi and microorganisms are intertwined. Their perceptions and responses differ, yet from a human perspective we read their relations as a shared lifeworld. Differences in complexity designate different relations within this reading. They place no living being above or below another.

Historical Feedback and Growing Relating

Human beings have the remarkable possibility of passing distinctions on across generations and allowing them to become effective in ever more complex practices, techniques and orders of knowledge. This is not without consequences. These distinctions change the conditions under which people live and produce further differences. Their effect thus returns into the context from which later actions and insights arise.

The development of vaccinations illustrates this feedback. Knowledge about diseases and possibilities of protection becomes effective through research, production, provision and concrete acts of vaccination. Such a distinction does not stop at knowledge. It changes the practical conditions of illness and survival. Vaccination programmes have contributed substantially to reducing infant and child mortality. [H1]

Of course, vaccinations do not stand alone. Medicine, hygiene, nutrition and provision have also changed. Together, such developments have lowered mortality and increased life expectancy. If the number of births remains high at the same time, the population can grow strongly. If we consider this development relationally, we must therefore read survival, lifespan and reproduction together. [H2]

A recursive movement becomes evident here: more complex distinctions permit changed practices. These act back upon living conditions. More people can survive and continue their relations for longer; further generations join them. And the social, technical and knowledge-related order thus changed in turn opens up possibilities of further distinctions.

For the feedback of human experience, Volume III, Chapter IX, provides the form:

$$0 \mid R_{+} \mid R_{-} \mid ¤ \mid 0$$

R_{+} designates the posited appearance relation, R_{-} the associated shadow field and ¤ the observer position changed within it. Returning to the reference position here does not mean returning to an unchanged experience. What we have experienced acts into our further perception and practice. Historically, these consequences manifest in changed living conditions. [N6]

We can consequently trace the increase in observer relations through their historical feedback effects. A new human being is already a relation of relations and changes the relations they enter. The knowledge and practices that help make their life possible also belong to the present trace. The larger number of human observers and the increasing depth of their relating are connected. They are not identical.

All this takes place within the biosphere. Human relations remain intertwined with those of other organisms. In this way, the shared measurement context introduced earlier also receives its historical link back: its present form carries the consequences of those distinctions and actions that have changed living conditions, observer positions and further possibilities of action.

Interestingly, development also acts back upon human reproduction itself. It by no means leads consistently to a rising number of offspring. The United Nations' “World Fertility 2024” describes the long-term decline in the average number of children per woman. Here we must not lump fertility, the absolute number of births and population size together. They are different determinations. [H3]

Changed living conditions in turn influence decisions and possibilities of starting a family. Education and family planning play a role here, as do economic security, housing, childcare, social expectations and personal life plans. People cannot always realise the number of children they wish for. The UNFPA report of 2025 describes the economic and social obstacles in particular. [H4]

In this account, we understand self-regulation as a perspective on the order of distinction itself. Volume I, Chapter V, “A New Foundation”, provides the conceptual connection for this: the poles receive their determination within a relation. Number too is read from the order of distinctions already enacted. The origin remains present in further differentiation. The chapter considers both the unfolding of richer networks of relations and their tracing back to the shared difference. Our determination of self-regulation connects to this.

Growth, limitation and feedback must accordingly be unfolded as particular readings of this order. The consequences of human distinctions change the conditions of further human and other life relations. For this we require no regulator separate from this enactment. How a limitation appears from a human perspective remains to be determined in the concrete relationship. The basic determination alone provides neither a fixed planetary target number nor a necessary numerical balance between different species.

Historical evidence for the example:

[H1] Shattock et al. (2024), “Contribution of vaccination to improved survival and health: modelling 50 years of the Expanded Programme on Immunization”, The Lancet. Study record and summary (https://pubmed.ncbi.nlm.nih.gov/38705159/).

[H2] UN DESA, Population Division (2022), “Why population growth matters for sustainable development”, Policy Brief No. 130, introduction: improvements in health, nutrition, hygiene and medicine, and the relationship between mortality and births. Original text (https://desapublications.un.org/policy-briefs/un-desa-policy-brief-no-130-why-population-growth-matters-sustainable-development).

[H3] UN DESA, Population Division (2025), “World Fertility 2024”: long-term fertility trends and differing regional trajectories. Report (https://www.un.org/development/desa/pd/content/world-fertility-report-2024).

[H4] UNFPA (2025), “The real fertility crisis: The pursuit of reproductive agency in a changing world”: wishes for a family and conditions for realising them. Report (https://www.unfpa.org/swp2025).

Asymmetry, Retroaction, and the Shared Direction of Reading

A closed Frame does not become incomplete because another observer has a different perspective within it. When two complete Frame configurations are related to one another, the difference can nevertheless appear asymmetrical. The glass is read farther to the right in one sequence, farther to the left in another. The structural possibility of change lies in the same enactment of difference; the concrete direction follows from the determinate connection. An invariant basic order and a directed readout therefore do not exclude one another.

This also holds for a multiplicity of observers. A human distinguishes their surroundings under particular tasks, their cat under others, and plants and microorganisms differently again. Their contributions do not become uniform because we give them the same name, “observer.” The shared relational order sustains different orientations, different depths of relation, and manifold retroactions. A new distinction does not start from scratch; it encounters traces already effective in the present configuration.

If we speak figuratively of the “mean” of these asymmetries, we must therefore be clear about what is meant. Consensus is not the ordinary arithmetic average of the opinions of all organisms. Only once a measurement task, a shared standard of comparison, and the relevant couplings have been stipulated can a quantitative aggregation be formed at all. Prior to this, consensus reality itself designates the shared readability stabilized across the different kinds of observer positions.

How can a directed trend appear from this? For this to happen, the sequence of couplings must itself possess an asymmetrical stringency. A human measurement leads, for example, to a technical application; this application changes the lifeworld, new observers grow into the changed conditions, further measurement procedures are developed, and past measurements receive their meaning anew within the present order. Such a sequence is not an accumulation of isolated decisions. Later distinctions take earlier ones into their own closure and thereby change the conditions of future connecting readings.

A direction can thus become consolidated without our treating it as an ontologically additional thing. Under a quantitative reading, such a directed continuation is a trend. Under a historical reading, it can appear as technological development, ecological change, or social habit. What is called energy under one perspective, temperature under another, and concentration under a third belongs to the same jointly related context. But this does not automatically make them the same numbers. Each projection has its own conditions of comparison.

The direction of continuation is determined by the coupled transitions of the respective trace. It is not obtained from the isolated word “asymmetry,” but from the concrete order of its self-referentiality. The argument therefore does not return to an independently presupposed physics, but follows the stringency of its own relational determinations. A counterargument would have to show, through these determinations, why the inferred transition does not hold. [N9, N10]

Measurement Relations of the Biosphere and Thermodynamic Reading

When we speak of heat, it is worth starting once more with measurement. Volume II describes perception as self-measurement at a boundary. A change in the observer relation can appear as heat or cold and is referred to an external pole. By contrast, the numerical degree reading is the quantitative reading of a particular measurement relation. Feeling heat and reading a number on a thermometer are thus different determinations of the same more encompassing context.

Volume II, Chapter XVIII, unfolds the bodily boundary relation as:

inside | skin | outside

For the technical externalisation of the same measurement question, the chapter uses:

¤ | apparatus | phenomenon

The second form describes a technical measurement coupling. The response of a living being, the registration by a thermometer and the later reading by a human being have different roles within it. [N5]

Once we have extended the concept of the observer to all living beings, we must also understand measurement correspondingly more broadly. Here it designates the particular distinction in which a life relation responds to changes in its context and thereby relates itself further. All living beings on Earth are thus included. Human temperature measurement is a particular quantitative reading within this more encompassing enactment.

This includes the response of a microorganism, the distinction of an insect, the thermal response of a plant and the sensation of heat in a mammal. Each of these life relations has its own form and enters the shared context as such. “Measurement” here requires neither a conscious decision nor a read-off degree value. Difference is preserved even within what is shared.

No individual measurement position stands outside this structure. What it distinguishes enters the context, and the changed form of that context acts back upon its further distinctions. When we speak of the “measurement of all observers”, then, we mean the intertwining of their measurement enactments, not some additional overall observer that collects all the results. On a planetary scale, we read these relations as a shared order. A technical temperature specification makes a particular quantitative perspective public within it. Even identical numbers do not eliminate the differences between complete measurement relations.

Added to this is the Earth's intrinsic geometry. The observer positions are distributed over a sphere, and their relationship to the shared solar reference differs according to location, distance and the orientation of the local surface. The same Sun thus by no means means the same geometrical observer relation. The shared reference is experienced within a spatially articulated order.

For thermal determination, orientation towards incoming solar radiation plays a particular role. Depending on the angle, the incoming radiation is distributed over areas of different sizes; with the Earth's rotation, illuminated and unilluminated configurations alternate. Surface characteristics and the atmosphere also belong within this context. The spatial temperature order thus follows from the interplay of these relations. It cannot simply be reduced to a greater distance from the Sun.

Here we read heat distribution as the spatial form of interrelated thermal measurement relations. It encompasses the life relations of the biosphere. A determination here receives its position relative to a determination there; further measurement positions differentiate the context. When we consider their changes and feedback effects, the movement of thermal distinction becomes readable. In this account, thermodynamics designates the readout of this enactment: a perspective on the movement of jointly related thermal distinctions of all observers.

Thermal gradients thus belong to the spatial articulation of the shared solar relation. Warmer and colder regions are determined in their relationship to one another. The shared reading must preserve both sides and their interactions. Additional observer relations enter this already articulated structure; their feedback effects can be traced only by reference to the particular relations.

What, then, does the thermodynamic perspective show us? It reads how the differences change and act back upon one another. We determine the movement of the shared measurement relations from the relation of complete Frozen Frames. A single closed relational configuration makes the thermal order readable; only its relationship to other configurations makes change, displacement and equilibration determinable. The beat remains the same Δ-enactment. Human thermodynamics too is a particular reading of this encompassing relating. It designates its thermal movement, not an additional cause alongside difference.

Closed relational configuration and change remain related to one another:

$$|_| \equiv 0|_{=\Delta}$$

$$¤ : |1_|2 \to |1_\Delta 2$$

The first form records the closed relational configuration, the second its observer-related reading of change. Thermal determination takes place within this concrete reading. Neither the arrow nor the delta sign tells us, on its own, that it must become warmer. A thermodynamic law or a directed temperature change requires the determination of the respective relations. [N2, N4]

Further effective measurement relations can grade the order more finely. But an additional observer position is not a fixed unit of heat. What remains decisive is how the distinctions relate to one another. And we should keep two things apart: the fineness with which we read the order, and the level of a temperature. The one is not the other.

What would a law of physics be within this account? An invariance of such relations: what remains determinable under changing measurement positions, scalings and changes in the thermal order? The number of observers alone does not yet establish a law. Its concrete form must emerge from the measurement relations and their feedback effects.

Climate change too can thus be situated within this consideration. We read the change in the spatially articulated thermal order between different frame configurations. The spherical shape of the Earth and the different solar references give concrete form to the coexistence of warmer and colder regions. Global warming designates the increase in global mean temperature in a temporal comparison. Our interpretation considers it from the perspective of the feedback of intertwined observer relations. The spatial temperature gradients and the temporal change in the shared temperature reading retain their different roles here. [E1]

Sun, observers and lifeworld thus stand in a self-referential context. The beat remains the same while its relational depth changes. The shared reference persists. What differentiates further and acts back upon itself in changed form is the trace related to it.

Wind: the Temporal Reading of a Spatial Asymmetry

Suppose one observer reads 18,1 degrees Celsius in their apartment, while another registers 9 degrees Celsius outside. Both determine their respective thermal relationships under a shared standard of comparison. In the difference between the numbers, a temperature difference of 9,1

kelvin appears. This expression is a readout. The number does not itself carry the entire spatial, atmospheric, and observer-related relation from which it was obtained.

Now the jointly considered relational configuration changes across further Frozen Frames. The thermal relationships determined unequally across space are related to one another anew in their continuation. Under a particular reading of movement, this course can appear as wind. What matters is not that an independent temperature object first produces a second thing called wind. What matters is that we connect different projections of an overall order differentiated in space and time.

The example also makes a methodological limit clear. A temperature difference between apartment and street is not sufficient to derive a particular wind direction or wind speed from it. The readout “wind” requires the appropriate relationships under which a directed course of the air relation becomes stably readable. Comparing pressure, location, orientation, and time is also a further differentiation of the same context. The fact that these quantities are readings does not make them interchangeable. Rather, it requires us to reconstruct their relationship within the shared trace.

At the planetary scale, this example acquires its particular significance. Different observers are oriented on different parts of the Earth, their thermal readings differ, and yet they refer to the same shared solar reference. In the temporal relationship of their complete relational configurations, changes become readable as weather, wind, heat distribution, and further dynamic determinations. Wind is thus not an additional ontological object alongside the relation, but a particular perceived movement of the relation under a temporal perspective.

Here we return to the Sun. Shining, heat, atmospheric composition, and spatial movement are different tasks addressed to the shared context of Earth, Sun, and observer positions. A single task brings forth a single determination; binding back from multiple perspectives preserves their interconnectedness. Only when we turn the number into an independent bearer does it seem as though we must seek, behind each of these readings, a hidden reality independent of it.

Chapter IV – The systemic error: the readout's mistaken back-reference

We act. We perceive changes. We measure them. And finally we try to trace the values we have read back to those objects and causes we previously determined. At first, this sounds entirely consistent. Yet a difficulty lies precisely in this back-reference. We read a particular relation and then explain it in terms of things whose independence we have already presupposed through this reading. The very relationship on which everything rests slips from view.

Volume I describes this systemic error where a distinction is solidified into a self-contained counterpart. The boundary at which something first became determinable disappears from the explanation. What remain are apparently independent sides to which we subsequently ascribe properties and effects. Measurement repeats this procedure: we distinguish a phenomenon, give its quantitative reading a name, and finally treat this determination as though it already explained the enactment of its own emergence.

A temperature display makes a particular thermal relation readable. But the displayed number contains neither the complete observer relation nor all the relationships from which its change could be determined. Volume I therefore maintains that the public readout contracts the relation while its present trace is preserved. If we detach the number from this trace, the context of which it was a reading eludes our explanation. We are, as it were, trying to recover the whole from its abbreviated expression.

Volume I designates the public reading of a trace as read(Σ). Chapter XVIII illustrates this with read(Σ) → 9. However finished and unambiguous the nine may appear to us, its internal relation cannot be reconstructed from it once Σ has been discarded. Likewise, a measured value remains bound to its particular measurement relation. The relevant trace holds present that enactment of which the number is the public reading. An explanation that fits after the fact must not be equated with the relation that continues to operate. [N1; K1]

The error thus does not necessarily lie in the display, but in the meaning we give to what we have read from it. A number can be reliable within its measurement relation, yet our explanation can still miss its context. We read precisely—and refer what we have read back incorrectly. Even finer resolution does not eliminate this problem, for even the sharpest reading remains bound to its perspective.

Our own perspective and the feedback we do not fully survey

Human beings determine their experienced actuality from a position that is itself part of the relation. What we call “measuring one's reality into existence” means determining what becomes readable as actuality and effective in action from that position. Yet our own perspective can easily seem to us like immediate access to the whole. The conditions and limits of our reading recede behind what we have read.

Here lies the illusion: we confuse a particular perspective with a complete actuality independent of it. And with this arises the image of an independent human being confronting an equally self-contained external world. Yet experience, measurement, and action remain relations within the same context. The fact that our perspective is limited does not make experience worthless. It merely keeps its position within the enactment open.

Volume II, Chapter XVIII, writes the back-reference to one's own observer position as:

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(¤ | world) | ¤
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We refer the already determined world relation back to that position which is itself involved in it. The second ¤ is not an observer we have secretly stationed outside the world. It makes our own perspective distinguishable once again within its context. It is precisely in this role that the connection to Δ := |(|) consists. [N5]

If we overlook this involvement, we may act as though the intended effect were a self-contained process. Yet the distinction introduced remains interwoven with further relations. Its consequences may extend beyond what the person acting grasps from their perspective. Volume

III, Chapter IX, describes this continuing operation as self-organization: experiences change the observer position and thus the conditions of further perception. The consequences of one's own operations also return into the context.

We thus face a peculiar conjunction: we are effectively involved, yet survey only a part. Human beings can introduce distinctions without being able to determine their feedback on the whole completely. Insight into their relational involvement does not suddenly make them omniscient. Rather, it requires them to read the limit of their own explanation along with it, and not immediately infer mastery of the overall relation from a locally successful action.

Acting within the measured relation

Our actions take place within the context whose changes we subsequently read. Bodies, technical means, other living beings, and their shared lifeworld are already related to one another. The apparatus belongs to this too. Volume II describes it as an externalized boundary of the observer and distinguishes coupling, registration, and perception. A measured value must therefore be understood from within these relationships, not as something standing apart from them, uninvolved.

The chapter holds the different roles together in the form:

coupling Δ registration Δ perception

This includes tracing registration back to the observer position:

¤ | registration

The notation distinguishes the change in the experimental relation, its registration, and the perception of what has been registered. Coupling does not itself turn an apparatus into a human observer. And a registration is far from being a complete explanation of what was measured. [N5]

If we refer the measured value back exclusively to an isolated external object, our involvement disappears once again. The action appears as one self-contained process, the measured phenomenon as a second. We seek their connection afterward. The relational view, by contrast, requires us to read along with them how the action changes the shared relational configuration and how the altered reading in turn feeds back into our actions. What feedback a particular action has must be developed through its concrete relationships. Neither the phenomenon's name nor its number does this work for us.

Nor is a readout without effects in this process. The relation read can become effective in further relations. We must therefore also determine cause and consequence from the respective relationships. The name “readout” alone decides nothing about this. Otherwise we would have managed to commit the same error a second time—this time making the reading itself into a self-contained explanatory ground.

Referring the reading back to its enactment

The image of the cut diamond makes this shift clear. If we merely count the visible points of a pattern, we have undoubtedly obtained a reading. We do not yet understand the pattern's articulation, however. For that, we must also read the arrangement and interlocking of the facets, as well as our own viewing position. Applied to our subject, this means: intrinsic geometry designates the arrangement of difference in relation to itself. The visible readout remains bound to this arrangement and to the perspective of its reading.

The appropriate back-reference therefore leads us to the distinction of our own distinction. Under what relationships does something appear to us as this phenomenon? What boundary, what comparison, and what observer position make the value readable at all? Where do our actions stand within this, and how does what we have read feed back into further actions? It is precisely here that |(|), difference of the third order, is carried along as the self-reference of the reading.

Of course, we also formulate this turn back from a human perspective. It makes our own position within the shared reading determinable once again. The systemic error begins where this position disappears from the back-reference and an expression that has been read takes the place of the context that continues to operate. Working through it therefore means considering measurement, explanation, and action together in their particular relationships. The trace remains the present form of this enactment. [K1]

CO_2 and energy as interrelated readings

The starting point is the change in the relational configuration between Frozen Frames. Volume II, Chapter VIII, describes energy as the reading of a change under a time relation. In this conceptual usage, “more energy” means a correspondingly greater change under a fixed comparison relation. The energy figure thus follows from the difference read. Anyone who subsequently treats it as an additional cause that would first have to enter the context reverses the direction of determination.

From this perspective, what initially encounters us as air is a jointly read surface. Through a measurement coupling, this context is further differentiated and becomes readable as a material appearance. “CO_2” and “O_2” are designations of such appearance relations. Measurement participates in their determination; in this reading, it does not name a composition already independent of all relations. The supposedly uniform surface of air also belongs to the shared reading. [N5, N7]

The measurement form from Volume II, Chapter XVIII, can be related to the determination of CO_2:

relational possibility | CO_2 apparatus Δ CO_2-specific registration

¤ | CO_2-specific registration Δ “CO_2”

The measurement form is developed in Volume II, Chapter XVIII, through the electron example. For CO_2, “generating” designates the constitution of a particular appearance relation through coupling, registration, and perception. “Refraction” here serves as an image for the perspectival

appearance of the differentiated context. Calibrations and comparisons of different measurement procedures also enter as further couplings. [N5]

The coupling nevertheless remains bound to its concrete order. Chapter XVIII expressly emphasizes that an apparatus does not invent results at will. What can appear stable is what holds within the particular relation. The connection to consensus designates this shared determinability and anchoring. This by no means already decides in which direction a concentration reading changes under further relating.

Measurement itself also stands within the relating of complete Frozen Frames. Coupling, registration, and perception belong to the relationships whose change we read. The energy figure must be referred back to the trace of this particular reading of change. It summarizes the reading, whereas only the concrete measurement relation determines what the change consists in from its perspective. Without a relevant preserved trace, we may not reconstruct any arbitrary phenomenal determination from the number. The energetic reading and the concentration reading are different perspectives on the same context under consideration; their roles remain different. [K1]

The energetic reading and the CO_2 measurement are related to one another:

$$(¤ \mid \text{energetic reading}) \mid (¤ \mid CO_2 \text{ measurement})$$

The outer stroke places the energetic reading and the CO_2 measurement in relation to one another. Both remain related, from their respective perspectives, to the same enactment. The energy figure and the concentration value determine different relationships in the process. [N1, N4, N5]

The notation thus brings together two perspectives on a jointly considered enactment. Their connection lies in anchoring both readings in this context, not in the disappearance of their different determinations. [K1]

If a rising CO_2 measurement is interpreted as an expression of increasing observer-relating, then this value is referred back to the changed overall order. The concentration value, too, is determined within its measurement coupling. Shared anchoring and the direction of its change are, however, different determinations. [E1]

The miners example: rock, air, and tree as readings

Let us imagine some miners trapped in a cave after a collapse. In this thought experiment, their being trapped designates an effective relational limitation under which their further relationships unfold. Even the terms “humans,” “cave,” “rock,” and “air” are phenomenal determinations within our ontological reading. The enclosed place is determined in their shared relating. We are therefore not first setting up a finished container into which distinguishing subsequently moves.

Time also plays a role in these appearances—though as a reading. Relative to the human observer position, the rock relation remains comparatively constant across many interconnected frames. The air relation between humans and rock, by contrast, appears more

changeable. “Stone is patient,” as the saying goes. In our case, this expression designates the differing temporal readability. Δ therefore does not beat more slowly in the rock or more quickly in the air. What differ are the particular closures and their readings of change. [N2, N8]

Now the miners do not simply stop distinguishing because they are trapped. Perception, reaction, and continued life remain effective within the shared context. The persistence of the rock boundary and the changes in the life relations are related to one another in the process. “Trapped” designates a particular order of possible connections: further relating takes place under the relationships effective in this situation. The closedness of a complete Frozen Frame must not, however, be equated with the cave's spatial limitation.

When we say that complexity cannot escape, we mean the restricted connections available to continued relating. Complexity does not become a kind of content stored somewhere behind the rock surface. Rather, the already distinguished order is related further. Its changed shared form determines the conditions under which further appearances and measured values become readable.

Here we encounter the increase in complexity from Volume II, Chapter VII. Continued distinction relates to an already distinguished order and deepens its relating. In the cave, this happens under the restricted possibilities of connection described above. The question is thus: how does this further relating feed back into the conditions under which the life relations involved can persist? Neither the distinctions nor complexity are to be understood as a separate stockpile in this process.

In our thought experiment, “O_2” and “CO_2” belong to the human measurement perspective. They designate appearance relations and their quantitative readability. When we say “O_2 becomes CO_2,” we arrange different measurement determinations into a sequence readable to humans. In the work-immanent view, we do not presuppose behind these names a stock of material carriers already determined independently of all relations. Our subject remains the changed order of measurement relations. The physiological scope of the example is treated separately. [N5; E3]

Let us leave the cave in thought and consider the wider context. There we encounter, for example, a tree. Its life relation, too, belongs to the relationships within which human distinguishing can be related further. When we say “the tree measures,” we mean its own way of engaging in a distinguishing life relation. It uses no human categories and passes no judgment on CO_2 or O_2. Its relating enters into the shared context, which a human in turn reads through a further measurement coupling.

With $R_1 \mid R_2$, we place both life relations in relation to one another. R_1 designates the human measurement relation, R_2 the tree relation connected with it. Both roles are determined by the jointly considered context. Their further relating can appear again from a human measurement perspective. “The tree produces O_2” is then a human description of this reading. And within our argument, even the production thus described must be referred back to its relational conditions. [N1, N5, N7]

We thus arrive again at back-reference. What is determined under one life relation can receive a further determination within other life relations and finally be related back to the first reading perspective. This return, too, is relating. It does not erase the preceding enactment and

does not signify a necessary return to unchanged initial content. [K1]

The relations involved participate in determining which readings become jointly stable. “All determine the consensus” designates precisely this shared effectiveness. No individual observer can establish an appearance at will. Human and other life relations, together with their respective couplings, belong to shared determinability. In our thought experiment, consensus is thus both an anchoring and a condition of further readings. [N5, N7]

The cave thus leads us back to the Sun and to warmth. There, too, we read different determinations of a jointly effective order. The feedback concerns the context in which humans, the lifeworld, and the relation to the Sun receive their respective determinations. The concrete chemical and thermal readings nevertheless retain different roles. It was precisely this interconnection of perspectives that the cave image was intended to illustrate. [N3–N5; E1]

Engine, air measurement, and retrocausal back-reading

The back-reference can be developed further through the engine. Its motion is determined from the relation of different Frozen Frames, the energy figure from a change under its comparison relation. What is figuratively called the “distance between the frames” designates precisely this relational determination. We should not imagine an intervening space in which complete frames lie one behind another like images separated by measurable distances.

Retrocausality is decisive for the relationship to air measurement. Volume II, Chapter XVIII, “The Observer's Self-Measurement,” understands this as an ordering of the prior history from the present relational configuration. The present reading participates in determining which complete relational configurations can be read as its consistent prerequisites. Beginning and result receive their determination within the shared context. An earlier air measurement would thus have to be read anew within that relationship under which the later operation of the engine also becomes intelligible.

To distinguish the action enacted from its justification, the same chapter uses:

action | justification

The form distinguishes the roles that we read retrospectively in shared consistency. ¤ : |1_|2 → |1_Δ2 refers to the relation of complete frame configurations. The retrocausal perspective reads their shared determinability from the present relational configuration. [N2, N5]

A later closure thus participates in determining how an earlier context becomes readable. Volume I connects this back-reading with the recombination of different perspectives; Volume II describes the retrocausal ordering of prior history from the present. Both references hold prior history and present together within the same enactment. [N1, N5; K1]

“Air composition,” “engine operation,” and the energy figure are determinations within the relation under consideration. Engine operation changes the shared relational configuration. Under different couplings, we read this change as an energetic determination or an altered air measurement. The earlier measurement position also receives its meaning within this jointly read context. [N4, N5]

If it is now said that the effect must “already be there at the beginning,” this designates the shared relational determinability of prior history and result. The earlier measurement position, the later action, and its appearances stand within this context and receive their meaning within it. Retrocausal back-reading makes their relationships jointly readable.

“Combustion,” too, is a determination—here from a technical and chemical measurement perspective. It likewise belongs within the relational enactment of action and appearance. [E2]

The Consolidated Measurement Order: Why the CO_2 Readout Is Read as a Necessary Continuation

It is worth now reading the engine not only as an example of retroaction, but as an example of a historically established system of measurement. We have connected particular relations under the names “fuel,” “combustion,” “engine work,” “exhaust gas,” “CO_2,” and “energy.” A reliable technical practice emerged from them. Apparatuses were developed, reaction equations and standards formulated, and further apparatuses calibrated against the conditions of comparison already introduced. This history is not stored outside our present: it is effective in the present technical, linguistic, and metrological order.

When we say today that an internal combustion engine emits CO_2 during operation, we do not read the public CO_2 value from an empty space devoid of presuppositions. We read it within the context of a highly differentiated, tested practice of measurement and action. Under this established coupling, CO_2-specific registration is not arbitrary. The respective conditions of measurement and comparison stipulate what counts as a consistent readout. The very reliability of the finding shows how stable the reading concerned has become.

The further question posed by the Tractatus is: how is this stabilization taken up into the shared relational continuation? Every technical action introduces new distinctions; its consequences are read anew, documented, and put to further use. The present thus contains the continuing trace of a long sequence of measurements and interventions already brought into relation. Prior history, too, appears through back-reference from today's complete relational configuration. This is the retrocausal dimension: present closure and stringent prior history determine one another within a single enactment. No ready-made cause is sent backward through an absolute time for this purpose. [N5, N8]

Under exactly one fixed system of combustion and measurement, therefore, not every result is equally admissible. If the conditions of a particular process are fulfilled, a CO_2 readout may be required by this system. This differs from claiming that any wish could conjure any substance out of air. The reading is conditional, not arbitrary. It derives its binding force from its bound-back trace and from the congruent measurement couplings.

The necessary reading *under given conditions* and the necessary *historical increase* concern different depths of the same relation. The individual operational process is read within its determinate order of measurement and action. Historical continuation also encompasses the retroaction of this order upon further observers, actions, and measurements. The grounding of the increase thus lies not in an isolated act removed from its context, but in the continuing self-referentiality of the entire observer order developed here. Distinguishing these levels unfolds the argument; it does not withdraw the necessity.

The grounding of this directed trend lies in the change in the observer order itself. The human population has grown historically while many wild animal populations have declined; at the same time, the technical, linguistic, economic, and metrological connections devised by humans have become far denser. More humans do not mean merely more mutually separate perceptions. In many cases, they mean more humans entering the same inherited practices of distinction, continuing them, combining them, and differentiating them further through their actions. The respective complexity must not be misunderstood as a naturally given hierarchy of humans and animals. On our human scale, we consider different forms of embeddedness within the same basic isomorphism.

The increasingly nested observer relations continue the historically bound paths of intervention and measurement within their shared closure. In the argument of this essay, the historically rising CO_2 measurement series is determined as a necessary reading of this changed overall order. The increase does not confront observer continuation as an independently given process for which an external cause would subsequently have to be sought. The increase is the determinate public readout of observer continuation. The direction of grounding leads from the jointly related enactment to the CO_2 metric, not from a metric posited without presuppositions to an explanation of the enactment.

This question does not require the claim that a measuring instrument has put additional CO_2 molecules into the atmosphere through its presence alone. A measurement coupling is a particular relation; action, operation, resource consumption, metabolism, plant activity, and registration are further determinations coupled within it. The carbon flows actually measured also belong to the verifiable trace of these contexts. The ontological tracing back to Δ does not replace their investigation with a freely chosen numerical direction. It requires us to understand this investigation, too, as part of the enactment.

The essay therefore concludes: the historically established system of measurement and action is not merely described by coupled observer continuation, but continued and further determined. Its trace participates in every renewed closure; the readout remains bound to this continuing relation. Within the system developed here, positive CO_2 drift is thus claimed as a necessary consequence of the jointly related observer order, not as a merely possible effect of things externally juxtaposed. In this system-immanent sense, the essay claims to have proved the connection. To contest it requires identifying an error in the premises or conclusions of this argument. Measuring the explanation against an independently posited concentration quantity would, by contrast, presuppose anew the order of grounding criticized by the text.

Historical Reading Back: the Same Trace, a Different Temporal Perspective

A look at ancient structures makes the problem tangible. Today we examine the stones of Machu Picchu, measure their dimensions and fits, compare working traces, and reconstruct work processes. All this takes place within our present measurement relation. Even when the reconstruction points into the past, it does not leave the present observer position. The people of that time did not live within our present conceptual world of measurement procedures, machines, and material classes. Their respective distinctions had different connections.

It does not follow, however, that every imaginable construction method must actually have been used. The fact that another observer position permits another reading is not equivalent to evidence of stones floating without support. Precisely because the complete trace is meant to sustain changes of perspective, historical reading back must not become arbitrary. Surviving traces of working, experiments with tools, and the spatial relationships of the site are part of the reading verifiable today and must be incorporated into every further hypothesis.

The philosophical point nevertheless remains. We must not confuse the present reconstruction with a perspectiveless view from outside all times. What we call “back then” is the present temporal addressing of a relation that continues to operate. Its historical meaning does not arise in detachment from our current position; but neither is it reduced to freely telling whatever story we please. The question of which determination remains invariant under a changed back-reference belongs here to meta-holonomy. [N10]

Textual references for this chapter

- Volume I, Chapter IV, “The Systemic Error—Why the Container Arises before the Theory”: solidification of distinction into an independent counterpart.

- Volume I, Chapter XVIII, section “The Number Is Not the End of Its Relation”: public readout, relation that continues to operate, and present trace.

- Volume II, Chapter VIII, “This Is Energy”: energy as a reading of change under a time relation rather than an additionally effective substance.

- Volume II, Chapter XVIII, “Measurement—How Difference Becomes Actuality,” especially the introduction, “The Observer's Self-Measurement,” “The Apparatus as an Externalized Boundary,” and “From Measurement to Self-Knowledge”: the object of measurement as a relational determination, retrocausal ordering of prior history, coupling, registration, perception, and back-reference to one's own standpoint.

- Volume III, Chapter IX, “Self-Organization”: feedback, change in the observer position through experience, and further relating through the consequences of one's own operations.

Chapter V – Disempowerment at the dining table: when the figure replaces judgment

And now we leave the field of light, measurement, and engines—to go to a place where our distinctions are no less effective: the dining table. A meal stands in relation to our bodies, our habits, its origins, the available resources, and shared life. Nutritional science makes particular aspects of this interconnection measurable and comparable. Politically and socially, things become interesting where such a reading is suddenly supposed to become a judgment on a person's entire way of life.

Here, too, the systemic error lurks. We determine a nutrient profile, calculate a figure, and assign a color. This is initially a particular order of comparison. But then something happens: the color seems to tell us what the food is, full stop. The perspective from which we obtained it

disappears. Along with it, its scope of validity and the decisions underlying its formation slip from view. A limited comparison becomes a supposedly complete judgment.

The relation between meal and labeling can be expressed as follows:

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(¤ | meal) | (¤ | labeling)
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The labeling receives its meaning only within a particular consideration of the meal. Its public expression must, in the sense of read(Σ), be referred back to its prerequisites. The formula itself passes judgment neither on the meal nor on the person eating it. [N1, N5]

Take the Nutri-Score. It assesses selected features of a nutritional profile on the basis of 100 grams or 100 milliliters and is intended to facilitate comparison of corresponding products. A quite specific task. Yet the letter describes neither a complete meal nor a person's entire diet. [S1] As a guide, the labeling must therefore be read within these limits. A letter does not decide on its own whether a concrete act of eating makes sense.

Let us imagine a salami pizza and bread with salami and cheese. From the perspective of ingredients, we find in both a similar combination of a grain base, salami, and cheese. If we consider proportions, preparation, and portions, other differences emerge. Yet another perspective asks about origins, packaging, and the situation in which the food is eaten. The same meals can thus appear similar under one reading and different under another. Both determinations belong to the context.

Even the words “bread with toppings prepared at home” and “frozen pizza” may evoke quite different ideas—before we have even considered the concrete relationships. Anyone who calls home-prepared food good and a ready-made product bad for that reason alone allows an attribution to pass judgment on the whole. Yet the reverse conclusion, that similar ingredients mean complete equivalence, would also fall short. The relational view holds ingredients, preparation, quantity, measurement perspective, and social meaning together. It asks: under what relationship does our judgment hold? And what other relationships are we overlooking in the process?

We should be similarly cautious with the opposition between “natural” and “industrial.” The origin of a food does not, in itself, say everything about its effect. But neither can an entire meal be explained through the identity of a single molecule. Recipe, quantity, preparation, and the wider dietary context belong to the respective question. Anyone who traces a complete relation back to just one selected property repeats the very reduction we criticized earlier.

Fructose in cooked-down apples and in a sweet illustrates a further distinction. From a chemical measurement perspective, origin changes nothing about the identity of the same chemical form of fructose. [S4] Yet “fructose,” here too, is a particular determination of appearance under a particular question. We have not thereby decided anything about the entire context of consumption. Fifteen apples or a few gummy bears—these words alone determine neither the same quantity of fructose nor the same portion or composition. The chemical reading and the consideration of the respective food answer different questions. We must hold them together.

Not knowing does not make a relationship disappear. What we fail to grasp is initially absent from our explanation, not necessarily from the enactment. A designation such as “natural,” a single ingredient, or a figure can conceal this gap as soon as we trust it to deliver a complete judgment. Our criticism therefore targets the confusion of two things: what we can determine from a particular perspective, and everything that remains effective in the relationship under consideration.

Volume III, Chapter VII, formulates experience as:

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experience = (R₊ | R₋)
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The posited appearance relation R_{+} remains related to its particular shadow relation R_{-}. The appearance continues to carry the conditions of its selection with it. The shadow field here designates a particular relationship to the appearance and must in turn be understood from this context. [N1, N6]

Such partial perception is by no means without consequences. From it we select goals, orient interventions, and measure success against the quantities selected beforehand. Under the conditions of our limited reading, we thereby shape further relationships. The consequences return in perceptions, measurements, and decisions. An abbreviated description can thus become socially entrenched if the conditions of its selection remain unexamined.

A “partial effect” is the effect we select or seek from a particular perspective of action. At the same time, the intervention remains connected with other, possibly overlooked consequences. A single success figure therefore does not say of itself how far the implications of an action extend. Our limited reading influences the decision; the changes thereby brought about are in turn read from particular perspectives. This feedback between reading, use, and renewed determination must be investigated concretely.

We encounter another form of solidification in the image of human beings themselves. If we describe them as wholly remote-controlled creatures of instinct, we have already removed their capacity to take a position and change from the description. Yet pointing to bodily influences or influences partly conditioned by food does not amount to complete external control. Such influences can be investigated empirically. [S2] And when we speak of “the brain” taking control, we should not inadvertently turn this into two mutually independent agents: a human being and their brain.

However, personal responsibility is not without relationships either. Decisions arise under conditions. Time, income, available foods, habits, and social relationships belong in the picture too. [S3] Self-control can be a way of dealing consciously with these conditions. If, by contrast, we make it the complete explanation of every eating behavior, we once again reduce the context to one pole. Autonomy here means the capacity to recognize one's own involvement, examine information, and orient one's further actions.

Labeling, recommendations, and political measures must therefore also be judged by whether they support this capacity. Their aims, assumptions, limits, and consequences must be open to discussion. Political decisions additionally require a justification of their value commitments

and interventions. A measurement does not already decide these questions for us. Disempowerment begins where a limited number is supposed to replace reasoned judgment and the human being appears only as a deviation to be corrected.

This by no means releases manufacturers, retailers, media, and political institutions from their responsibility. They too shape relationships and must be subject to scrutiny in light of the consequences of their interventions. The individual's responsibility does not absolve the conditions of their actions. Conversely, these conditions do not render their possibilities for action meaningless.

We can encounter the same reduction with CO_2. Read ontologically, "CO_2" designates a particular measurement appearance within the jointly considered context. Its figure must not replace the relationships between measurement coupling, human action, and planetary conditions of life. What is criticized here is not the reading, but its elevation into the complete context. [S5; E1]

What, then, would an autonomous practice at the dining table look like? One in which knowledge can be traced back to its prerequisites, recommendations make their scope apparent, and people are given opportunities to understand and change their decisions. Society would then treat citizens as participants in the shared formation of judgment. And slowing down also has a place here: time to understand and examine what would otherwise merely be followed as yet another directive.

Factual references for the social example

[S1] Max Rubner-Institut, Nährwertkennzeichnung (https://www.mri.bund.de/de/themen/naehrwertkennzeichnung/), and Bundeszentrum für Ernährung, Nutri-Score (https://www.bzfe.de/kueche-und-alltag/einkaufen/nutri-score): purpose, calculation basis, and scope of application of the labeling. The assessment depends on the respective composition and the calculation rules.

[S2] Hall et al. (2019), "Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain" (https://pubmed.ncbi.nlm.nih.gov/31105044/): randomized inpatient study with 20 adults and dietary phases of two weeks each. Under the conditions investigated, energy intake and weight trajectories differed.

[S3] WHO, "Healthy diet" (https://www.who.int/news-room/fact-sheets/detail/healthy-diet): individual, cultural, social, and economic conditions of nutrition. The DGE explains the target group, guidance, and variety of its recommendations under Fragen und Antworten zu den lebensmittelbezogenen Ernährungsempfehlungen (https://www.dge.de/gesunde-ernaehrung/faq/lebensmittelbezogene-ernaehrungsempfehlungen-dge/).

[S4] NIST Chemistry WebBook, Fructose, CAS 57-48-7 (https://webbook.nist.gov/cgi/cbook.cgi?ID=C57487): chemical identification of fructose.

[S5] Feldman et al. (2015), "Observational determination of surface radiative forcing by CO_2 from 2000 to 2010" (https://www.nature.com/articles/nature14240): spectral observations at two measurement sites demonstrate additional surface radiative forcing associated with increased CO_2 concentration.

Chapter VI – Wu Wei, Buddhist Mindfulness, and the Place of Doing Nothing

So far, we have considered the limits of our measuring and acting from a relational perspective. It is now worth turning to Daoist and Buddhist texts. Their concepts retain their own contexts; we do not want simply to rename them as expressions of the Tractatus. Rather, the comparison addresses a shared question: How do we act when we ourselves belong to those relationships whose consequences we can grasp only to a limited extent?

The Compulsion to Improve

A performance-oriented society becomes problematic where it turns the mere possibility of acting into a continual obligation to intervene. Everything is to be changed, enhanced, accelerated, or improved, as though one's own existence could be justified only in this way. Anyone who leans back, observes, and first wants to understand is then quickly called upon to explain themselves. Their repose is supposed at least to serve as preparation for a later achievement. Simply looking no longer seems to suffice.

The compulsion to intervene may reinforce the very narrowing we have already encountered. From our limited perspective, we set a goal and measure success by the corresponding value. Yet every intervention introduces new distinctions into a network that is already at work. They change relationships and thus the conditions of further distinctions. Their unfolding extends beyond the segment we have designated by the word “improvement.”

The notorious attempt to improve things that only makes them worse arises when an improvement sought from a selected perspective brings adverse repercussions that we have not sufficiently taken into account in this assessment. These consequences then appear as new problems, to be followed by the next intervention. The conditions of selection remain unchanged; only the number of our corrections grows. In this way, compulsive activity can keep driving itself onward through its own repercussions. Our critique therefore calls for reading the network of consequences alongside it and for incorporating the limits of our overview into further action as well.

$R_1 | R_2$ keeps this ongoing relating visible. An already determined relationship is related to a further relationship that helps determine it. And its selection must itself be examined in the reflexive relation $(¤ | \text{world}) | ¤$. Both expressions show the continued relating and the involvement of our perspective. Consequences must be considered within the relationships they change and assessed from the respective perspective. [N1, N2, N5]

The “clock of progress” here designates the expectation that we must change more and more. That it runs faster is itself already a chosen reading: we count more interventions and call this more progress. But this standard, too, must be referred back to those relationships whose viability it supposedly assesses. Whether a particular change helps is established by its consequences. Intervening ever further is not yet an answer to this question.

Wu Wei and Letting Be

In chapter 48 of the Dao De Jing, the daily increase in learning is contrasted with a diminishing in the enactment of the Dao that leads to Wu Wei. Chapter 64 connects the critique of forcing action and holding on with careful attention and support for what unfolds of itself. [W1] For our comparison, Wu Wei can be read as an acting that does not continually have to force things. Conscious letting be finds its place within it.

From a relational perspective, we discover in this an attentiveness to relationships that are already at work. Not everything has to be changed simply because we would be capable of doing so. We can first perceive the movement of a context, examine its conditions, and scale back our own claim to shape it. Even the idea that something must be improved thereby becomes the object of renewed consideration.

|(|) designates precisely this attention to one's own enactment of distinguishing. (¤|world)|¤ keeps our own involvement readable in the process. Attention returns to the very perspective from which an intervention appeared necessary in the first place. Here lies the connection to the stance of letting be. [N1, N5]

Mindfulness and the Examination of Consequences

We find a concrete Buddhist connection in the instruction to Rāhula, Majjhima Nikāya 61. There, bodily, verbal, and mental actions are examined before, during, and after their enactment to determine whether they cause suffering to oneself, others, or both. Actions recognized as harmful are to be refrained from or ended, and their consequences taken into account in further action. [W2] Pausing thus acquires an ethical direction: we consider our intentions together with the consequences of what we do.

This examination does not end with the decision. It accompanies the action and subsequently returns to its consequences. Complete foresight is not made a prerequisite for every decision. Rather, attentiveness means being able to review an action already begun and, if necessary, change it. Early Buddhist right effort is directed toward avoiding and abandoning unwholesome qualities and developing and maintaining wholesome ones. [W3] Whether repose, restraint, or active care is called for depends on the respective context.

Repose as Part of Shared Life

Someone who sits and looks has therefore not dropped out of the world. They perceive, listen, understand; Δ continues to work. “Doing nothing” here designates merely refraining from a further directed intervention. Precisely this allows attention to be given to changes that have already occurred and to one's own habits of evaluation. Refraining, too, has consequences. And these, too, we must read alongside it.

The difference between ongoing enactment and a closed reading is captured in $|_| \equiv 0|_{=}\Delta$. In the Tractatus, the expression records that closure under a reading does not end the working of Δ. Conscious refraining is an ethical thought connected to this, not a conclusion that springs from the sign alone. [N2]

And yet repose should have a value without first having to prove itself through later achievement. A pause may be a pause. People must be able to be present without turning every experience into a result. Otherwise, pausing itself would once again fall under the rule of the very metric whose limited claim we have just examined.

Wu Wei and the Buddhist texts considered here thus lead us to a question of measure. Must we really improve, change, intervene yet again? Sometimes the responsible next step consists in observing, listening, and allowing something to remain. Sometimes the same context calls for action. Whether it makes sense must be examined in light of the relationships and consequences that sustain it. The freedom to change nothing for the time being, too, belongs to the formation of shared judgment.

Sources on Daoism and Buddhism

[W1] Dao De Jing, chapters 48 and 64, Chinese text with translation: Daodejing, Wang-Bi-Text (https://de.wikisource.org/wiki/Daodejing_(Wang_Bi)).

[W2] Majjhima Nikāya 61, Ambalaṭṭhikā Rāhulovāda Sutta, “The Exhortation to Rāhula at Mango Stone” (https://www.dhammatalks.org/suttas/MN/MN61.html), translation by Ṭhānissaro Bhikkhu: repeated examination of action and its harmful or harmless consequences.

[W3] Saṃyutta Nikāya 45.8, Magga-Vibhaṅga Sutta, “An Analysis of the Path” (https://www.dhammatalks.org/suttas/SN/SN45_8.html), translation by Ṭhānissaro Bhikkhu: right effort, right mindfulness, and right concentration as parts of the path.

What Refraining Means in the Context of Drift

Against this background, the meaning of the sentence “Perhaps we should measure less” changes. It is not a call to expect a new automatic healing effect from a retreat from science. It expresses the insight that an additional distinction is an additional participation in the present configuration. It can yield insight, prevent harm, and enable better decisions. But it can also equip an already problematic chain of action with ever more finely differentiated instruments, thereby stabilizing its own continuation.

The decisive difference lies between observation as attentive presence and measurement as continued intervention in a particular order of tasks. The two can pass into one another, but they do not necessarily serve the same purpose. Someone who does not immediately translate every further measurable difference into a demand for optimization need by no means perceive less. Perhaps they are, for the first time, taking their own distinction into view as well.

The epistemic hole gives this restraint a further meaning. Every specialized measurement opens up a particular segment and leaves another unread. The more precisely we orient ourselves toward a single metric, the greater the temptation may become to mistake our own perspective for the entire context. Returning to the complete 4Δ context reminds us that no single readout exhausts the whole. The question “Must I measure even more precisely?” is therefore supplemented by the question: “What have I already excluded by choosing my standard of measurement?”

Conscious refraining does not mean seeking to halt the difference that continues to operate. Δ enacts itself even in the closed reading. Someone who refrains from an intervention does not alter the self-referentiality of the shared order through a new, imposed determination of a goal. This decision can be more responsible than the next correction intended merely to readjust the consequences of the previous correction. It does not, however, guarantee that every undesirable development will reverse itself without further action. Its value lies, first of all, in restoring the priority of the context over the self-imposed metric.

Chapter VII – Conclusion: We Must Slow Ourselves Down

We must slow ourselves down. Not because our relationships would ever come to a standstill, but because we must learn to sit down and consider what is happening. Which relationships sustain our lives? How do our interventions continue to work within them? And which consequences have escaped our view so far? Our idea of what absolutely must be improved also needs to be scrutinized. The fact that we can change something does not yet oblige us to do so.

Every intervention adds further distinctions to a context whose unfolding we can grasp only in part. Responsibility therefore also means giving perception and understanding room. We can scale back our claim to shape things, examine a change already begun, or allow something to remain. What is already at work thus receives its place in the decision.

Such pausing deserves social recognition. Repose, listening, and attentive observation have a value of their own. A pause may remain a pause. Anyone who initially changes nothing need not justify their presence by its later yield. Our shared life also includes the freedom to have time without converting it entirely into achievement.

From a relational perspective, this changes the question of the meaningfulness of what we do. What appears to us as an improvement under one reading can lose its meaning when we consider the relationships it burdens or dissolves. Caring, preserving, and consciously refraining gain significance for the viability of the context. Stability, too, requires attentiveness: to what can be continued and to what needs to change.

Even while sitting and looking, we remain involved. The relationships continue to work; we perceive and can come to a new understanding of our position within them. Slowing down concerns how we deal with the possibilities of intervening. It creates room to relate the consequences of our actions back to further action and to acknowledge the limits of our own overview.

(¤|world)|¤ thereby makes even the idea of necessary intervention distinguishable once again. Δ := |(|) records the self-referentiality of this consideration. The positive evaluation of conscious refraining is the ethical conclusion we advocate from this perspective.

Autonomy consequently also includes the ability consciously to forgo a possible intervention. This restraint deserves a positive place in our conception of a good life. It is good to want to observe and understand. It is good to allow something to remain. And it is good consciously not to act, even though we could act – precisely in the knowledge that our own perspective always grasps only a segment of the contexts involved.

Afterword: In the Relation That Continues Us

From a present observer position, we read the past as trace and the future as possible continuation. The complete 4Δ context contains more than a single 3Δ observer can presently determine. Its unread direction is not a missing world, but the position of its not-knowing. The drift of its continuation therefore depends not only on what it knows, but also on which distinctions remain open under its orientation.

The same basic enactment connects observers whose readouts differ greatly. The human being moves the glass, and so does the cat; both stand in a shared relation and read it in their own ways. We look toward the Sun, measure temperature, develop a theory of radiation, and build apparatuses. Plants and microorganisms determine their life-world differently. Yet none of their positions becomes the sole source of the world, and none stands outside the context it co-determines.

Historical paths emerge within this shared relation. Human beings have interwoven ever more distinctions through technology and language and made their results into tasks for new interventions. Our present measurement series are part of this history. They are informative precisely because their conditions of comparison can be repeated consistently; but they are not the whole history of their own conditions. Referring the reading back to the enactment broadens judgment rather than discarding the measured value.

Perhaps the observer's responsibility therefore turns, not least, on a simple question: Must every possible distinction become a new action? Not-knowing is not a flaw that must be measured out of existence at any cost. It reminds us of the incompleteness of our respective perspectives within a complete relation. Awareness of this limit can make us more cautious without rendering us incapable of action.

We do not stand before a world that is merely waiting for our explanation. We stand within a relation in which our explanations, too, become effective. The now is not a way station between two already completed times. It is the position in which we can read the context back, read it further, and distinguish our own distinction anew. Perhaps responsible understanding begins where we ask not only what our measurement shows, but also what relationship to the world we continue through it.

Appendix A: Empirical Connections and the Scope of the Reading

The following sources situate the public measurements and historical references that appear in the essay as determinate readings. They are not introduced as an authority that could subsequently permit or annul the system-immanent claim to proof. Nor is an observer placed as an independent additional cause alongside already completed chemical objects. Observer, measurement coupling, and measured appearance are determined within the same enactment. The grounding of their connection is to be examined in terms of the enactment's logical closure and the transitions developed in the text; the sources make the respective measurement perspectives and reference points traceable.

[E1] CO_2 absorbs and emits infrared radiation and thereby influences the radiation budget. A CO_2 figure in ppm, by contrast, determines the proportion of CO_2 molecules in dry air. Additional energy absorption by existing molecules is not an automatic increase in this proportion. The release and uptake of CO_2 in the carbon cycle are relevant to changes in it. The claimed necessary increase due to additional observers is thus not demonstrated. Sources: NOAA on CO_2 quantification (https://gml.noaa.gov/ccgg/trends/), NOAA on the carbon cycle (https://www.gml.noaa.gov/infodata/carbon_toolkit/), NASA on the radiation budget (https://science.nasa.gov/earth/earth-observatory/climate-and-earths-energy-budget/). The spectral finding cited in [S5] examines a particular CO_2-induced change in the radiation budget. An ontological redescription alone does not refute this measured relationship.

[E2] A conventional gasoline or diesel engine burns carbon-containing fuel with oxygen. CO_2 is formed as a product in this process. Its prior measurement is thus not established as the cause of this reaction. Sources: US Department of Energy on how the internal combustion engine works (https://www.energy.gov/cmei/vehicles/articles/internal-combustion-engine-basics), US Energy Information Administration on CO_2 formation during combustion (https://www.eia.gov/tools/faqs/faq.php?id=82&t=11).

[E3] The miners example illustrates the ontological reading and does not demonstrate an alternative physiological cause of suffocation. Where air exchange is insufficient, the oxygen consumption and CO_2 output of those trapped, as well as the volume of the space and ventilation, are relevant to the development of the atmosphere. Elevated CO_2 can be harmful even when oxygen is still present. Describing these relationships as readings does not cancel their verifiable efficacy. Sources: NIOSH research on CO_2 development in occupied enclosed spaces (https://pmc.ncbi.nlm.nih.gov/articles/PMC10772919/), NIOSH on CO_2 exposure (https://www.cdc.gov/niosh/idlh/124389.html).

Nor is the return via the tree a chemical reversal equation $O_2 \leftrightarrow CO_2$. In photosynthesis, carbon from CO_2 is incorporated into organic compounds; the oxygen released comes from water. Considering different relations of life together must be distinguished from claiming a direct material conversion back. Source: Molecular Biology of the Cell: Chloroplasts and Photosynthesis (https://www.ncbi.nlm.nih.gov/books/NBK26819/).

Appendix B: Concepts and References to the Tractatus Volumes

[N1] Volume I, chapter XVIII, “Band Mathematics: The Gaze of Difference”: $A|B$, $A|B \leftrightarrow B|A$ and $\Delta := |(|)$ in the introductory sections; direction of determination under “Perspective Does Not Arise Without a Task” and “The Task Determines the Gaze”; read(Σ) and present trace under “The Number Is Not the End of Its Relation”; multiple perspectives under “Recombination of Different Perspectives” and “Band and Geometry Are Complementary Readings.” Additionally, chapter IV, “The Systemic Error,” on the solidification of an open negation into an independent counterpart.

[N2] Volume II, chapter XIX, “The Uniformity of the Beat”: $|_| \equiv 0|{=}\Delta$ and $¤ : |1_|2 \to |1_\Delta 2$ under “Frame and Delta”; $R_1|R_2$ in the context of renewed relating; scaling, joint closure, and relational depth under “Scaling and Increasing Relating” and “Distance as an Increase in Complexity.” The closure and opening readings in the main text are bound to these same chapter contexts.

[N3] Volume II, chapter XVI, “Why Do We See Light?”: $(¤|R)|(¤|T)$ under “Metre and Second” and $(¤|\Delta_R)|(¤|\Delta_T)$ under “Why Light Appears Invariant”; $(¤|\text{Apparatus})|(\text{Apparatus}|\text{Relation})$ under “The Third Order of Light.” Space and time readings are roles of the same frame difference; relating them presupposes their distinguishability.

[N4] Volume II, chapter VIII, “This Is Energy,” and chapter IX, “Energy, Mass, and Gravitation”: $0|E \equiv 0|(\Delta\ | \div \Delta t)$ as an energetic ratio reading. Chapter XIX, “Frame and Delta,” specifies its reference to the relation of complete standstills.

[N5] Volume II, chapter XVIII, “Measurement – How Difference Becomes Actuality”: $A|B$ in the introduction; $\text{Inside}|\text{Skin}|\text{Outside}$ under “The Skin as the Boundary of Perception”; $¤|\text{Apparatus}|\text{Phenomenon}$, “Coupling Δ Registration Δ Perception” and $¤|\text{Registration}$ under “The Apparatus as an Externalized Boundary”; $(¤|\text{world})|¤$ and $\text{Action}|\text{Justification}$ under “From Measurement to Self-Knowledge.” Retrocausality is determined under “The Observer's Self-Measurement” as the ordering of prior history from the present relational situation.

[N6] Volume III, chapter VII, “The Memory of the Shadow Relation”: R_+, R_- and $\text{Experience} = (R_+|R_-)$; chapter IX, “Self-Organization”: $0|R_+|R_-|¤|0$. The roles of the shadow network and experience are read in this context. An identity of this shadow network with every use of the trace Σ in Volume I is not presupposed.

[N7] Volume II, chapter XV, “The Content of the World”: apparatuses as part of the relation in which particles appear; retrocausal ordering of their contexts; a shared time axis and shared experience through the similarity of the Δ-relating of different observers, explicitly including unicellular organisms, pets, and humans. In the essay, consensus reality designates this context of shared experience.

[N8] Volume II, chapter XIV, “The Flow of Time”: $(|_|_1) ¤ (|_|_2)$ as the observer relation of complete frames; the connection between choice, present, past, and stringency. The notation $|\Sigma$ used there for stringency has its own local role. It is not identified with the trace Σ from Volume I or the shadow network Σ from Volume III. Chapter XVIII specifies retrocausality as the ordering of prior history from the present relational situation.

The Band Mathematics Relationship Map

[K1] “Band Mathematics — Relationship Map 0.3,” 14 October 2026: supplementary reading reference on basic distinction, self-reference, trace, and changes of perspective. The map brings together the relationships between the corresponding concepts and passages of the Tractatus volumes.

“Stringency,” in the context of frame sequences, experience, and consensus, designates the jointly readable order of their relationships. The respective connections are developed in the cited chapters of Volumes II and III.

[N9] Volume V, “Buch der Kleinstbezüglichkeit von Δ”, Chapters I–IV and VII: basic alphabet with Frame and Δ, 3Δ as observer orientation, 4Δ as complete context, the epistemic hole, twelve elementary transitions of orientation, and the sequence of observer continuation. The full context is not confused with a reading that is complete in each case.

[N10] Volume VII, “Buch der Holonomie”: holonomy traces, gate-determined readout, phase binding and congruence of registers, the observer as a reading transformation, and meta-holonomy as a trace class reconstructible under permitted changes of reading. Holonomic equivalence does not mean that public readouts are arbitrarily interchangeable.

[N11] Volume II, Chapters XI–XIII and XIX, “Zenos Paradox und der Stillstand der Zeit”, “Die Energie und der Frozen Frame”, and “Die Uniformität des Taktes”: energy as a relation of complete Frame configurations; a single Frame without a defined time difference and thus without an independent energy value. Volume II refers to Noether’s theorem in the context of conservation and closure. The classical theorem follows mathematically from continuous symmetries of an action and is considered in this essay within the framework of the relational interpretation.

Appendix C: Conceptual Determinations and System-Immanent Grounding

1. Complete context and reading position. 4Δ designates the complete context; 3Δ the orientation of an embedded observer. The fourth relationship is epistemically unread and is therefore not ontically lost.

2. Frozen Frame and energy. |_| designates a self-contained relational configuration. A measurable energy value is not defined in isolation within a single Frame. Under a particular relation of comparison, the change in complete configurations is read in terms of energy.

3. Shared reality and individual reading. Consensus designates the mutually congruent continuation of different observer relations. It presupposes neither an overall observer nor identical perceptual contents.

4. Retrocausal reading back. Present closure co-determines which prior history becomes readable as its stringent prerequisite. This does not assert the arbitrary retrospective production of any historical events whatsoever.

5. Readout and invariance. A number is the projection of a particular trace under a task. The claim of a shared origin is not equivalent to the identity of different numbers. For a concrete translation, the preserved relational trace and the permissible changes of perspective must be specified.

6. Directed drift. The direction of a public readout is determined from the coupled order of observers and action, not from a measured quantity independently posited in advance. The connection between increasing observer complexity and rising CO_2 or temperature readings belongs to the essay’s system-immanent claim to proof. Its examination must follow the

developed sequence of observer orientation, trace, closure, and readout. The determinate numerical presentation is an explication of this sequence from a measurement perspective, not an externally raised objection to its necessary continuation.

These conceptual determinations refer the argument back to its own premises. They distinguish the roles of reading without breaking the jointly grounded continuation into externally independent individual causes. The claim to logical closure includes immanent criticism: where a transition does not hold, this must be shown through the determinations developed. Merely repeating the order of objects criticized by the text is not such a counterargument.