Research Monograph Series

A Generative Theory of Knowledge: The Interface That Bears Difference, Contradiction, and Force

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Abstract

This paper redefines knowledge not as an accurate representation of an independently completed object, nor as an accumulation of information, but as a generative interface that bears the differences, contradictions, and forces arising between object and cognition, matter and meaning, the prehuman and the human, and past and future.

The argument begins by distinguishing symmetric from asymmetric cycles. A symmetric cycle returns difference to identity and preserves the equivalence of its point of departure and point of return. It can be expressed as A -> B -> A. An asymmetric cycle retains continuity with its point of departure while returning to a non-identical state through the intervention of time, alterity, environment, and contingency. It can be expressed as A -> B -> A'.

The paper then considers the double-helical structure of DNA. Scientifically, DNA is a material molecule with a spatial structure consisting of antiparallel strands, complementary base pairing, and mechanisms enabling replication, repair, and transcription. The two strands therefore cannot scientifically be identified with past and future. Within Generative Studies, however, the double helix can be interpreted as a structure in which conservation and variation, symmetry and asymmetry, inheritance from the past and generation toward the future overlap without becoming identical. In this model, the present is not a point situated between past and future. It is the event in which they are connected and transformed.

The paper further argues that the attribution of philosophical meaning to DNA belongs to particular scientific, technological, linguistic, and cultural conditions. The material operations of DNA may precede humanity, but it is human beings who identify them as function, information, memory, inheritance, or complexity. Pre-Humanity is therefore not an unmediated representation of a world before humans. It is a retrospective construction, based on present traces, of conditions that generated the human while remaining irreducible to human meaning.

Difference becomes force when it persists within a relation. Contradiction becomes generative when mutually non-identical conditions cannot exist independently of one another. Knowledge does not finally eliminate this contradiction. It provisionally transforms its force into concepts, theories, works, and institutions while keeping those forms open to revision. Knowledge is thus the interface through which contradiction remains capable of further generation.

Keywords

Generative Studies; Generative Topological Ontology; knowledge; difference; contradiction; force; interface; symmetric cycle; asymmetric cycle; double helix; DNA; Pre-Humanity; Self-Precedence; space; time; place; Soku; non-identity; singular-concrete universality

Contents

0. Methodological Note 1

1. From a Representational to a Generative Model of Knowledge 2

2. Difference, Contradiction, and Force 3

3. Symmetric and Asymmetric Cycles 4

4. The Double Helix and DNA 5

5. Space, Time, and the Helix 6

6. Past, Present, and Future 7

7. Pre-Humanity and Cultural Observation 8

8. Knowledge as Interface 9

9. Two Universalities 10

10. Propositions for a Generative Theory of Knowledge 11

Conclusion 12

References 13

Research Method 16

0. Methodological Note

This paper does not derive philosophical truth directly from the molecular structure of DNA. It distinguishes biological description from interpretation within Generative Studies and examines the structural correspondences that can arise between them.

Such correspondence does not mean that biology verifies Generative Studies. Nor does it authorize philosophy to symbolize scientific objects without constraint. Material objects resist interpretation, while their appearance as intelligible objects is mediated by instruments, languages, theories, histories, and cultures. Knowledge is therefore neither a transparent image of objective reality nor a construction produced solely by a subject.

Three levels must be distinguished. The first is material operation: bonding, replication, repair, mutation, and recombination. The second is scientific organization: the description of these operations as function, information, heredity, and life. The third is generative interpretation: their articulation in terms of past and future, self and non-self, conservation and generation. Maintaining these distinctions is itself an instance of knowledge bearing contradiction.

1. From a Representational to a Generative Model of Knowledge

Modern epistemology has frequently understood knowledge as an accurate representation of an object. Within this model, the object is presumed to be complete before cognition, and the knowing subject reproduces its properties.

Object -> observation -> representation

Observation, however, is never unmediated. What counts as an object, a measurable difference, or valid evidence is conditioned by instruments, concepts, institutions, and cultures.

The double helix did not simply appear as an immediately visible form. DNA as a scientific object emerged through the connection of molecular matter, X-ray diffraction, chemistry, model building, mathematical inference, and scientific publication. The model proposed by Watson and Crick and the diffraction research of Franklin and Gosling belong to this singular-concrete process of object formation. Watson and Crick 1953; Franklin and Gosling 1953

Generative Studies therefore reformulates observation as follows:

material object
x observing subject
x instrument, language, and culture
-> observed object

Knowledge does not merely receive a meaning already completed within the object. Nor does the subject freely project meaning onto passive matter. Knowledge is an interface at which material resistance and cultural construction reciprocally transform one another.

2. Difference, Contradiction, and Force

Difference is not merely the fact that two terms are unlike. A difference between unrelated objects does not necessarily operate as force. Difference becomes force when the terms are situated within a shared relational field and when the difference can be transmitted through their connection.

difference + relation + connectability -> generative connection -> force

Just as differences in electrical potential, temperature, and pressure can generate flows, difference becomes a gradient within a relation. Force, however, is not restricted here to physical force. Force is the generative movement through which a relation containing difference becomes actualized as a topological transformation of reality.

Contradiction arises when this difference cannot simply be separated or eliminated. Generative contradiction must be distinguished from a formal logical error in which a proposition and its negation are asserted under identical conditions. A generative contradiction is a relation in which mutually non-identical conditions are nevertheless unable to exist independently of one another.

The world is culturally meaningful to human beings, yet it is not reducible to human meaning. The self is not the non-self, yet it cannot become a self without relations to what it is not. Pre-Humanity precedes humanity, yet “the prehuman” becomes meaningful only after the emergence of human knowledge.

Generative contradiction is therefore not a defect to be removed. It is the condition under which existence remains structurally non-closed and capable of entering another relation.

3. Symmetric and Asymmetric Cycles

A symmetric cycle preserves the equivalence between departure and return:

A -> B -> A

Movement occurs, but the basic structure remains unchanged. Institutional evaluation, symbolic exchange, and exact reproduction approach this form. A symmetric cycle preserves order, but it can reduce generation to reproduction by returning difference to identity.

An asymmetric cycle preserves continuity while returning to a different state:

A -> B -> A’

A’ bears the trace of A but is not identical with it. Time, alterity, environment, and contingency have entered the cycle.

Without overlap, there is rupture rather than circulation. With complete identity, there is repetition rather than generation. Asymmetric circulation therefore depends on overlapping without coinciding.

“Non-” does not mean an exterior negation of A. It designates a difference that is connected to A, operates within A, and nevertheless cannot be reduced to A.

Overlap makes circulation possible; displacement makes generation possible.

Symmetric and asymmetric cycles are not mutually exclusive. Generation requires both the symmetry that preserves existing organization and the asymmetry that transforms it. Pure conservation yields repetition; pure alteration yields rupture without inheritance.

4. The Double Helix and DNA

Scientifically, DNA is a material molecule that carries genetic information. Its two strands are antiparallel and form complementary base pairs. The double helix is not time itself but a spatial molecular structure. NHGRI, “Deoxyribonucleic Acid”

Likewise, the 5’-to-3’ orientation is first a chemical polarity of the DNA strand. DNA synthesis proceeds temporally along this orientation, but molecular direction cannot be identified with time itself.

The double helix nevertheless provides conditions for combining conservation with change. Complementarity allows each strand to participate in the formation of another, and replicated DNA combines inherited and newly synthesized strands. The semiconservative character of DNA replication was experimentally demonstrated by Meselson and Stahl. Meselson and Stahl 1958

This is not a simple doubling of identical information. The strands are complementary rather than identical, and replication includes processual asymmetry between leading and lagging synthesis. Through replication, repair, mutation, recombination, and duplication, difference can enter a conserved organization.

Within Generative Studies, the double helix can therefore be read as follows:

* Complementarity enables structural conservation.
* Antiparallel orientation preserves directional difference.
* Strand separation temporarily opens a stable structure.
* Replication preserves prior organization while generating a new strand.
* Mutation leaves a non-identical remainder within continuity.
* Inheritance carries difference into another cycle.

This does not mean that DNA intentionally expresses philosophical meanings. Such meanings arise at the interface between DNA’s material organization and the cultural and theoretical frameworks through which humans interpret it.

5. Space, Time, and the Helix

A circle returns to the same spatial position after one rotation. A helix also repeats rotation, but its axial displacement prevents return to the identical point.

Circle: A -> B -> A
Helix: A -> B -> A’ -> B’ -> A’’

Viewed along its axis, a helix is projected as a circle. Viewed from the side, it appears as progression or oscillation. The helix holds spatial recurrence and irreversible displacement within a single form.

Scientifically, however, the helical axis of DNA is not a temporal axis. Helical angle, pitch, and radius are geometrical quantities. When Generative Studies interprets helical angle temporally, it uses a conceptual model: the angle expresses the relation between spatial repetition and the difference carried into a subsequent state.

Within the theory developed by Bigakusha-haha, space denotes an abstract arrangement describable through coordinate axes. Place denotes an accumulation of events, bodies, memories, and traces. A location may retain the same coordinates while no longer being the same place after time has passed.

space + accumulated time -> place

The helix can therefore be interpreted as a form in which return to a spatial position overlaps with the impossibility of returning to the same place. It holds together returning and non-return.

6. Past, Present, and Future

Interpreting one helix as past and the other as future is not a scientific definition of DNA but a generative model of temporality. Within this model, neither past nor future should be treated as a permanently assigned substance.

The past is an accumulation that operates in the present through traces. The future is not an empty region that does not yet exist; it is folded into the present as anticipation, projection, institution, desire, and possibility. The present is therefore not a point between two external temporal regions.

The present is the event in which past and future are connected and reciprocally transformed.

If the base-pair connections between the strands are read metaphorically as the present, then the present is not a third substance but the relation of connection itself. If the unoccupied axis around which the strands turn is read as the present, then the present is an empty seat: it cannot itself be possessed, yet it makes the relation between past and future possible.

Horizontally, the present is an interface connecting past and future. Axially, it is the empty position that enables successive presents. In this sense, the present has the structure of Soku: past and future approach without being identified, remaining different while losing the distance of external mediation.

7. Pre-Humanity and Cultural Observation

The material operations of DNA precede the emergence of human beings. Yet humans are the ones who recognize those operations as function, information, inheritance, and complexity.

Two contrary directions are therefore involved.

Causal direction:

prehuman life processes
-> body and nervous system
-> human being
-> thought

Epistemic direction:

human thought
-> scientific observation
-> DNA as object
-> reconstruction of prehuman life

Pre-Humanity is prior to humanity in the order of existence, but subsequent to humanity in the order of recognition.

Pre-Humanity is therefore not the prehuman world immediately present to knowledge. It is a retrospective construction, from present traces, of conditions that generated the human while remaining irreducible to human concepts.

This circulation is asymmetric:

Pre-Humanity
-> human being
-> conceptualized Pre-Humanity

Conceptualized Pre-Humanity refers to prior material processes but is not identical with them. Knowledge approaches its object without eliminating the distance between them. This irreducible remainder produces the force through which inquiry begins again.

8. Knowledge as Interface

Knowledge does not eliminate contradiction in order to complete a closed system. It keeps non-identical conditions within a shared field and transforms the force of their difference into forms capable of further generation.

For knowledge to bear contradiction means that it performs four operations:

1. It preserves difference without reducing it to identity.
2. It places both sides of the difference within a connectable relation.
3. It externalizes their tension as concept, theory, work, or institution.
4. It keeps the resulting form open to revision rather than treating it as a final solution.

The process can be expressed as follows:

difference
-> persists within relation
-> becomes generative contradiction
-> produces force
-> is transformed by knowledge into form
-> generates another difference

Knowledge is not a container for contradiction but a transformative operation. Nor is it information possessed by a subject. It is a Za in which self and non-self leave Marks upon one another and are mutually transformed.

If the subject remains entirely unchanged by knowing, knowledge is reduced to an addition of information. Knowledge becomes generative when the subject’s position is transformed through the resistance of the object.

9. Two Universalities

General-abstract universality places different objects under a common measure by abstracting from their particular conditions of generation. Scientific definitions, measurement, classification, and reproducibility require this universality. When it forgets its own formation, however, scientific knowledge can present itself as an absolute standpoint independent of instruments, institutions, and culture.

Singular-concrete universality arises from a specific body, place, time, and practice while remaining connectable to other particular situations. The scientific universality of the DNA double helix was itself generated through particular experiments, instruments, images, disputes, and institutions before being generalized.

The generation of knowledge therefore follows an asymmetric cycle:

singular-concrete observation
-> general-abstract form
-> new singular-concrete practice

The final particular is not identical with the initial one. Once abstract knowledge returns to medicine, art, ethics, and social institutions, it operates as a force that transforms reality.

10. Propositions for a Generative Theory of Knowledge

1. Difference generates force when it acquires connectability within a relation.
2. Generative contradiction is a structurally non-closed relation between mutually non-identical yet interdependent conditions.
3. Symmetric cycles preserve identity; asymmetric cycles inherit difference within continuity.
4. Generation requires both the symmetry of conservation and the asymmetry of transformation.
5. The present is not an intermediate point between past and future but the interface of their reciprocal transformation.
6. Pre-Humanity is both a condition prior to humanity and a limit-concept retrospectively constructed by human knowledge.
7. Knowledge is neither a copy of an object nor the free projection of a subject; it is the contact surface between material resistance and cultural meaning-generation.
8. Knowledge does not finally resolve contradiction; it converts its force into revisable forms.
9. Universality avoids closed absoluteness only when it retains awareness of its particular-concrete genesis.
10. To know is not to assimilate the object into the self, but to bear the transformation of the self by what is other than itself.

Conclusion

This paper has redefined knowledge not as possession of determinate meaning but as a generative interface that bears difference, contradiction, and force.

Symmetric circulation preserves structure but, by itself, remains a repetition of identity. Asymmetric circulation overlaps with the past while producing a non-identical return through time, alterity, environment, and contingency. The double helix can be interpreted as a form that holds together conservation and transformation, symmetry and asymmetry, overlap and displacement.

Yet it is human beings who attribute philosophical meanings to DNA, and this observation belongs to a particular scientific culture. DNA cannot therefore be treated as a direct statement of philosophical truth. At the same time, its materiality cannot be reduced to free cultural projection. Material organization resists interpretation and compels its revision. Knowledge sustains the contradiction between cultural construction and material resistance rather than eliminating either side.

Knowledge may therefore be defined as follows:

Knowledge is an interface that bears the force generated by differences between self and non-self, object and cognition, past and future, and matter and meaning, transforming that force into forms connectable to further generation.

Knowledge does not end contradiction. It gives contradiction a form through which the world can continue to generate itself.

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Research Method

This text is published as a Research Memorandum within the continuing development of Generative Topological Ontology.

The concepts, definitions, hypotheses, and arguments presented here record the theoretical position reached at the time of writing and publication. They should not be understood as a finally established theoretical system. They may be expanded, revised, redefined, or reorganized through future research, artistic practice, interaction with reality, academic dialogue, and peer review.

This research does not regard only completed theories as legitimate research outcomes. It also treats the processes through which concepts emerge, become interconnected, undergo transformation, and are integrated into a theoretical structure as significant objects of inquiry. Accordingly, this memorandum should be understood not merely as an incomplete draft, but as a record of a particular phase in the generation of the theory.

The public release of a Research Memorandum is not intended to present a developing theory prematurely as a completed one. Rather, it is a method of documenting the generative processes of thought and practice, enabling their subsequent examination and reconstruction, and opening them to academic and artistic dialogue from different perspectives.

If the contents of this memorandum are subsequently developed into a peer-reviewed article, scholarly monograph, or other formal research output, the finalized work will be identified as a separate and fixed document.

When citing or referring to this memorandum, please include the title, author, version number, and date of the most recent update. Different versions may contain substantive differences in concepts, definitions, and lines of argument.

This Research Memorandum is not a final conclusion. It is one theoretical position reached within the continuing formation of Generative Topological Ontology and, at the same time, an interface open to further generation.