

Article

An Intuitionist Reinterpretation of the Science Method, Deduction and Induction in Hegel-friendly Terms

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ABSTRACT

I hypothesize that it is the feeling that sources the middle term that allows exploration into Kant's synthetic (an avenue Hegel and Husserl pursued), and this exploration is done by noting the intuitionist connections to deduction and induction. The deductive process goes through two Hegelian negations before returning itself to source. Otherwise, the principle of excluded middle cannot be justified as Husserl noted. Deduction and induction are two aspects of the same middle term, and their feelings can best be described as an oscillation: from crude to subtle. Newly cultivated feelings draw us into the synthetic as we discover deeper laws that are built from prior discoveries; this builds a spiral of understanding from the evidence compiled by our vast plurality, and permitting a spectacular celebration of the many as one. The oscillation become more subtle as feeling self cultivate.

Key Words: intuitionist, science method, deduction, induction, Kant, Hegel, Husserl, middle term.

1. Introduction

While Marx, Engels and Lenin acknowledged the dialectical nature even in mathematics, Marxist materialism wanted to extinguish the strong intuitions felt by the likes of Weyl and Brouwer (see Kol'man and Yanovskaya, 1931); this is perhaps close to the source of tension between Marx and Hegel given a intuitionist reinterpretation of Hegel's logic that relates to the first and second negation. Freedom is discovered even in the one-sided drive to extinguish intuition as permitted by Hegel's first negation, if only because the second negation turns Marx on his head and returns Hegel to his upright position; according to the intuitionist view of course. But we do not have to look to the dryness of mathematics to see the dialectical tension in action. My account in section 2 relates this tension to deduction fighting with induction, between Popper and Kuhn in their struggle to win the heart of science.

More must be said about Hegel's logic. Describing Hegel's dialectic as thesis, antithesis and synthesis reveals an overly simplistic account from an intuitionist reinterpretation; say in Husserl or Brouwer's view. Therefore, saying that Hegel's logic starts with a thesis, and an intuitionist will discover the emotion of euphoria that is projected. The thesis extends itself, and claims more ground in its fury. Hegel's long espousing provides additional testimony for this tendency to elaborate, but Hegel was deliberate enough to conceal his intense emotionality. Therefore, elaboration must source a vitalistic feeling too. However, the day will come when the thesis finds opposition in its antithesis, following the simplistic account. The opposition will be weak at first. Nevertheless, the antithesis expresses a growing irritation, to the point that the thesis finds its defeat in Hegel's first negation. The antithesis with its newly discovered dualism extends beyond the territory covered by the original thesis. With the first

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negation the irritations are relieved, but later they will reappear. Eventually, the antithesis is itself defeated in Hegel's second negation. And with this negation a new euphoria is discovered in the synthesis achieved by combining the thesis and its antithesis. Now this account based on thesis/antithesis/synthesis may sound silly. Nevertheless, the three-fold pattern is found to repeat, and Hegel only writes more and more! At a certain point the pattern can no longer be denied, and this is not silly. It can only be that the synthesis represents the non-dual act of self-recognition, when a euphoric thesis as content finds its supporting context in the primary irritation expressed by its antithesis. This realization is Hegel's absolute Notion, and to ask further questions is to return to the meaning of the Notion.

The absolute Notion is less problematic from an intuitionist perspective. However, Hegel's logic as thesis/antithesis/synthesis is too combative with thesis conflicted with its antithesis; with the pursuit of human knowledge going uncontested even in the wake of injury. In fact, the above movement from thesis, to antithesis, and finally to synthesis, is given above as a double oscillation involving irritation and its euphoria. Moreover, a real antithesis is a collective, and what is found in practice are the emotion-laden judgments (caricatures) that are assigned to particular hypotheses in a time sequence. However, the Notion can be described more succinctly: the first negation is Aristotle excluding the middle term from classical reason, and this is found offending our qualitative sensibilities. In the second negation, the irritation is found healing itself as self-awareness coincides with the tension returning to source; irritation is transformed into its other, the euphoric freedom that reintroduces of the middle term into reason. Caricatures are found in the present moment coming with meanings that source Husserl's (2001) passive synthesis, in spite of and because of the desperation projected by literalism found in active synthesis. I develop these observations fully in section 3.

2. Scientific Redux

Science may pretend to have the final answers for our questions, and no doubt science can go a long way even with the issues which have to do with vitalism and transcendentalism. At some point we might expect to reach a limit in our understanding, and at that point we may have to abandon science as we know it. Yet, these issues that question the applicability of science as a tool have been with us before.

Thomas Kuhn, in *The Structure of Science*, related science to the fallibility of scientists, and this made science into a progression of phase changes (Kuhn's paradigm transitions). Science could not be separated from either scientist or from history. The ruling paradigm was an opiate, a habitual application of the one induction that gave its support to an authoritarian class; breaking the paradigm required something special.

Karl Popper's *The Logic of Scientific Discovery* departed significantly from Kuhn's view. Popper was an deductivist, and he wanted to bring scientific theories to the test of falsification, mere verification of the ever-go-lucky induction would not do. Popper's deduction was to eliminate induction by refutation, bringing science closer to an ideal that is independent of the fallibility of scientists. Popper wanted to liberate science from the dictates of the ruling paradigm.

Fuller (2004) tells us that Kuhn won the class struggle, and Fuller's own emotionality betrays his affection for Popper's deduction. Fuller is very harsh with Kuhn. Yet if Popper's science was so wonderful why did it fail? The highly irate Stove (1998) tells us why: Popper fell for Hume's inductive skepticism. Popper, like Fuller, gives to deduction a perfection that cannot be given to any logic

independent of the emotions of the logician. Induction cannot be reduced by deduction, the two must stand independent yet one logic cannot eliminate the other.

Popper had hoped to separate pseudoscience from science with the falsification principle, yet Stove tells us that Popper failed to tame his own irrationality, and that irrationality in science was made worse by Popper. The falsification principle only permitted error recognition for inductions, it said nothing about the failure of Popper's own deductions that Stove happily points out.

There is more to be said. The confident induction and the doubting deduction as emotions are made obvious by a read of Stove, or Fuller. Deduction works to break free of the overbearing induction, while induction works to return us to a blissful automatic polite. It can only be that deduction and induction are one in the same emotion, only coming at us from a different point of view. Schelling's transcendental idealism gives support to this view, as a sensation must come that is found breaking away from itself if only to return later to get a better look of itself (see Watson 2004, chapter IV). Therefore, error recognition is required for induction (as Popper demanded), but it is also needed for deduction (as Popper forgot), and it is also needed on something that has to do with emotionality (what Charles S. Peirce called abduction). The three levels of error recognition returns us to science again; it is here we find the transcendental logic that includes science by relating it to the experiential.

3. Logic Redux

Classical logic, and deduction in particular, is dependent on three Aristotelean principles; having to do with identity, contradiction and the excluded middle (e.g., see Russell 1997, chapter VII). In this section I will reconnect classical logic with feelings.

3.1 Principle of Identity

The principle of identity is stated as a simple tautology, $A=A$, and is rather uninspiring. Nevertheless, what is being said is that some set of necessary conditions denoted by A are equal to themselves. And what this means is that conditions A are caricature that is thought to exist without remainder. However, this is potentially very misleading. It must be that A is revealed to an observer that is found in relation to an observed phenomenology, and A is the set of all such equations that characterize the phenomenology; i.e., the tautology is only assumed to hold between observer and observed where both subject and object are inside of consciousness, and where A is derived from necessary conditions given by equations of the form $B=C$.

We are led to believe that the principle of identity is obviously a tautology, but it is not. The simple tautology is only a precondition to abstract deduction, and in general it is not true that the observer comprehending necessary conditions A leads to a sufficient explanation of an observed that has been impacted by necessary conditions A . When a sentient agency holds the left-hand side of an equation (of the form $B=C$) to its right-hand side, what is found beyond the necessary conditions is a sufficiency that has escaped declaration. In Kant's transcendental aesthetic, the sufficiency is referred to as a "synthetic a-priori" and the thing in itself is beyond the appearance that is found in a space-time embedding. The term "synthetic" is intended to indicate a composite involving the observer and the observed, and it is a-priori in the sense that the synthetic is a precondition to the awareness that is only denoted by the tautological relationship, $A=A$. It is not that the synthetic is a tautology, and a mistaken identity is where abstract deduction fails.

It is worth noting that every law of nature that is given by an equation is a synthetic where the question of sufficiency is found escaping conditions of necessity. Unlike abstract equations where the principle of identity is enforced, every equation found in nature is experiential. Firstly, natural laws are conceived in the mind, and secondly, they are empirically verified. What holds the equation together to give a natural law is not the principle of identity, and therefore, deductions that follow law are only provisional and are limited to a domain of application.

Every law of nature derived from a symmetry condition relates to a duality and an action principle that lends itself to new breaks in the time-symmetry, and all of this comes with preconditions that are undeclared by law. Necessary conditions are not found in a pure form, and this is independent of the question of whether sentience sources the precondition of law that is also recognized as a synthetic.

Provisional deductions are to be permitted, but there remains an intuitionist exploration of the limits of law given by an equation. Laws that are extended show a directionality (both by what is claimed and by the people that make the claim), and it remains to show how directionality subsides and returns us back to the synthetic.

3.2 Principle of Contradiction

The principle of contradiction says that if a deduction leads to an absurdity, then at least one of the deduction's premisses is false. It is bluntly real that we all live in one universe, otherwise we could not share our words, and there must be a consistent way to express our pluralistic accounts even in the situation where there is disagreement. The principle of contradiction provides a minimal declaration that enforces rational consistency, and it is found non-problematic. Even the intuitionist would not deny that we share a common world.

3.3 Principle of Excluded Middle

The principle of excluded middle says that either A or $\sim A$ is true, and it is very problematic. Nevertheless, if provisional deduction is to proceed there must be a way to affirm A , or negate A , without ambiguity. Or in the case where ambiguity is discovered that is not reducible to deduction, it must be that the ambiguity is discoverable. Stated this way, it must be that deduction already comes with a compulsion to select from A or $\sim A$, and this compulsion implies a directionality that is auxiliary, even an irrationality.

The following my very speculative account of how deduction works. The first negation came when $A=A$ was thought to be tautology (with the middle term excluded by intentional activity that left the "passive synthesis" behind, noted by Husserl, 2001, part 2, section 23), even as the synthetic went undeclared to provide a provisional deduction. The compulsion to see provisional truth in A , or $\sim A$, is this directionality, it is felt as a doubting irritation that insults our artistic sensibilities. It is through application of the principle of contradiction that either A is found internally consistent, or it discovered to hold conflicts. But the drive to invent (or discover) new grounding premisses comes with intentional activity that depends on excluding the middle term.

Deduction is found carrying the one-pointed emotionality that goes from general to specific. Provisional truths are discovered, but this leaves undeclared how it is that awareness of truth is made possible through sentience. The precondition for deduction must permit deduction's interpretation, and this is an ever-faithful flow from specific to general. I will argue that deduction's precondition supports an induction.

Deduction's emotionality is irrational when it is discovered inconsistent with its precondition. Unlike deduction, induction extends itself by a blind habit and may dependent on the validity of A that is now turned into a caricature; i.e., the necessary conditions A are found historically true as they characterize phenomenology, and so they are said true tomorrow. Therefore, deduction works to defeat wayward inductive thinking that misunderstood $A=A$ and took in as a simple tautological relation, as deduction now calls for a choice between A and $\sim A$. Deduction's exploration continues until deduction discovers a set of premisses from which the validity of A, or $\sim A$, is deduced. The grounding premisses are said to be "obviously correct", but this declaration can only be an induction again that finds itself consistent with the precondition that declares that $A=A$ is a synthetic, and it is here that deduction meets its second negation (middle term now rediscovered in a return to Husserl's "passive synthesis") and finds itself with its own inductive thinking, now purified. The directionality returns to source, leaving a feeling of awe having discovered artistic beauty. Therefore, consciousness pulls away from itself in the first negation, in order to get a better look of itself in the second negation.

I hypothesize that it is the feeling that sources the middle term that allows exploration into Kant's synthetic (an avenue Hegel and Husserl pursued), and this exploration is done by noting the intuitionist connections to deduction and induction. The deductive process goes through two Hegelian negations before returning itself to source. Otherwise, the principle of excluded middle cannot be justified as Husserl noted. Deduction and induction are two aspects of the same middle term, and their feelings can best be described as an oscillation: from crude to subtle. Newly cultivated feelings draw us into the synthetic as we discover deeper laws that are built from prior discoveries; this builds a spiral of understanding from the evidence compiled by our vast plurality, and permitting a spectacular celebration of the many as one. The oscillation become more subtle as feeling self cultivate.

References

- Steve Fuller, 2004, Kuhn vs. Popper: *The Struggle for the Soul of Science (Revolutions in Science)*. Columbia University Press.
- Edmund Husserl (translated by Anthony J. Steinbock), 2001, *Analyses Concerning Passive and Active Synthesis*. Springer.
- Ernst Kol'man and Sonia Yanovakaya, 1931, *Hegel & Mathematics*, in *Unter dem Banner des Marxismus*.
- Bertrand Russell, 2010, *The Problems of Philosophy*. CreateSpace.
- David Stove, 1998, *Anything Goes*. Macleay Press.
- John Watson, 2004, *Schelling's Transcendental Idealism: A Critical Exposition*. Nabu Press.