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NOTES ON *BEING AND EVENT* (PART 3)

PART 3: BEING: NATURE AND INFINITY. HEIDEGGER / GALILEO

MEDITATION 11: NATURE: POEM OR MATHEME?

1) Heidegger and phusis
   a) Heidegger
      i) Being is phusis as appearance which resides in itself
      ii) The Platonic turn to Idea: the "evident aspect" of what appears
         (1) Appearing then ceases to be full being qua phusis
         (2) And becomes lack of being, "mere appearance"
   b) Two directions of the "destiny of thought in the West"
      i) The two directions:
         (1) Poem: appearing as coming-to-presence of being
         (2) Matheme: subtraction of presence; disjoins being and appearance
      ii) Badiou's different take on the two directions
         (1) For Heidegger: Plato's mathematical – Ideal turn completes Greek thought of being
         (2) For Badiou
            (a) Matheme is the Greek interruption of poem (multiple sites: China, India)
            (b) Math rupture "retroactively constitutes" poem as nostalgia for presence
   c) Transition
      i) Nature is an ontological question; nothing to do with physics
      ii) Heidegger's clue: phusis as stable appearance

2)Badiou's interpretation of nature as "normality" of a situation
   a) Normality as stability, as being counted twice, by situation and state of situation
      i) Balances presentation (belonging) and representation (inclusion)
      ii) Symmetrizes structure and metastructure
   b) Homogeneity of natural situations
      i) A normal multiple is a multiple of multiples
      ii) Thus the multiples of which it is composed could be singular, normal or excrescent
      iii) Thus the multiple could be internally contradicted by singularities
      iv) Thus normality has to extend downward as it were into sub-multiples
      v) So naturality is the "recurrent form-multiple" of balance btw belonging and inclusion

MEDITATION 12: ONTOLOGICAL SCHEMA OF NATURAL MULTIPLES AND NON-EXISTENCE OF NATURE

The re-securing performed by the state is the key to formalizing the concept of normality.

1) The concept of normality: transitive sets
   a) Definition: a transitive set is a set in which
      i) belonging implies inclusion

ii) that is, all elements are parts
iii) that is, everything counted in the situation is counted again in the state of the situation

b) Existence: given the only existential axiom (the null-set)
i) Possibility of existence of a transitive set depends on it being generated from null-set
ii) B shows this possibility via the "Two" as void and singleton of void together

2)Natural multiples: ordinals
a) The Two formalizes "natural existent-duality" [*la dualité-étante naturelle*]
b) Naturality requires that all the elements of a transitive set must also be transitive
c) Ordinal
i) A set that is recurrently transitive "downward"
ii) This is the "ontological reflection" of natural situations
(1) Showing the homogeneity of nature
(2) This is the "backbone of all ontology"
(3) The "very concept of Nature"

3)The play of presentation in natural multiples or ordinals
a) Four aspects of natural being
i) Transitivity means belonging "transmits itself" from ordinal to ordinal
ii) Order of belonging:
(1) An ordinal belonging to a set is "smaller" than that to which it belongs
(2) This also means that the "smaller" is included in the "larger"
(3) Bcs no set can belong to itself, no ordinal can be smaller than itself
iii) The "belonging-minimal" element ("∈-minimal")
(1) An element exists such that it has property X but no multiple belonging to it has X
(2) This is natural "atomism"
(a) There's always an "ultimate" element w/ any property
(b) Nature has a "halting point" with regard to properties
iv) The "global connection of all natural multiples": there are no holes in nature
(1) Given two ordinals one must belong to the other
(2) The universal co-presentation of ordinals
b) Summary: four "organic concepts of natural-being" [*l'être naturel*]
i) Normality or transitivity
ii) Order
iii) Minimality
iv) Total connection
c) Demonstration

4)Ultimate natural element (unique atom)
a) An ultimate atom ("∈-minimal") for property X is unique
b) Take an ordinal A which is ∈-minimal for property X; and another ordinal B
i) Either A belongs to B in which case B is not ∈-minimal for X
(1) Because A belongs to B
(2) And A is "∈-minimal" for X
(a) Which means A has X
(b) Even though nothing that belongs to A has X
(3) Therefore B contains A which has X
(4) Thus B is not ∈-minimal for X
(5) Because the definition of "∈-minimal" is to have no element w/ X
ii) Or, B belongs to A
(1) In which case, B does not have X

(2) Because it belongs to A, which does not have an element belonging to it with X

c) Thus A is unique in being the "atom" of X; no other multiple is ∈-minimal for X

5)An ordinal is the number of that of which it is the name

a) Chain of belonging:
   i) An ordinal A can be visualized as a chain of belonging starting from the name of the void
   ii) But this chain does not contain A, bcs then A ∈ A, which is forbidden
b) So the signifier "A" is the "interruption" of the chain of belonging
   i) IOW, A is the "Ath" term of the ordered chain of belongings
   ii) An ordinal is thus "the number of its name"
c) Natural multiples
   i) Ordinal as number of its name is thus a "possible definition" of a natural multiple
   ii) And thus "nature" and "number" can be substituted for themselves

6)Nature does not exist

a) We might be tempted to look for the Whole of Nature, its totality, the set of all ordinals
b) But this can't be bcs of outlawing auto-belonging sets
   i) The ordinal of all ordinals is itself an ordinal
   ii) And thus it would have to belong to the set of all ordinals
   iii) But then it would belong to itself, which can't be in ZF AST
c) Thus we have for nature
   i) Universal intrication
   ii) No Totality or Whole
d) Consequences
   i) We have the "unlimited opening of a chain of name-numbers"
   ii) Such that "each is composed of all those which precede it"

MEDITATION 13: INFINITY: THE OTHER, THE RULE AND THE OTHER

1)Christian monotheism did not really break with Greek finitism

a) The divine infinite is just the projected other of finitude
b) It's just that region of being where we can't recognize our essential finitude
c) So divine infinity is still w/in Greek substantialism and its finitist singular essence

2)The thesis of the infinity of being has to be post-Christian; it historically involves infinity of nature

a) This can't be the infinity of the world, bcs Kant showed the illusion of a totality of infinite nature
b) So we have to go through the thought of "numerous infinite multiples" (16^{th}-17^{th} C revolutions)
   i) Via Cantor we see infinity is a predicate of being qua being, not of nature
   ii) Since the one is not, we must have an infinity of infinities

3)Four elements of an "ontology of infinity"

a) A point of being as presented or existent multiple
b) A rule of passage from one term to another (rule must fail to run through entire multiple)
c) Testimony as to existence of a term "still-not-yet traversed")
d) A second existent which acts as cause of failure of rule of passage, bcs the "still-more" is reiterated w/in it
   i) This is necessary bcs w/o it the failure to complete count is just empirical
   ii) But this 2^{nd} existent multiple cannot be presented as such in the rule
   iii) It must be presented "elsewhere" as the "place of the rule's impotence"
   iv) This is the "Other" on the basis of which all the elements to be counted are lined up
   v) IOW, it is the "limit" of the rule

4)The "second existential seal" (the limit)

a) Forbids imaging that infinite can be deduced from finite (as simple repetition)
b) Entails that infinity of being is an "ontological decision," an axiom

5)The historical connection of thesis of infinity of being w/ the 16^{th} – 17^{th} C thought of natural infinity
a) The 16-17^{th} C thinkers showed a "pure courage of thought"
b) The thesis of the infinity of being developed by way of thesis of infinity of nature

6)The ontological decision
a) An infinite natural multiplicity exists
b) No reference here to "Nature" as "cosmological one" (coming after God as "divine one-infinity")
c) Ontology will demonstrate there are other infinite multiples incommensurate with the first

7)Structure of the historical decision of infinity of being
a) Proliferation of infinities once subtracted from the "empire of the one"
b) Thus finitude is the exception
c) But "the human" is that which prefers to represent itself as finite (cf. Foucault *Order of Things*)
d) Consolation: thinking infinity of being is not necessary but needs decision ("courage of thought")

MEDITATION 14: THE ONTOLOGICAL DECISION : "THERE IS SOME INFINITY IN NATURAL MULTIPLES"

1)Point of being and operator of passage
a) Point of being for ontology = name of the void
  i) Name of a natural multiple (nothing forbids this)
  ii) Only existential axiom
b) Rule of passage allows ceaseless construction of other existing ordinals from null-set
  i) The Two = multiple whose elements are the void and the singleton of the void
  ii) From this we can define the operation of union of two sets "A U B"
  iii) Rule of passage then is "A implies A U {A}": "A implies the union of A and the singleton of A"
    (1) We are thus adding the proper name of A to A
    (2) A is different from A U {A}; this difference is precisely A
c) A U {A} = S(A), the successor of A
  i) (S)A is another ordinal
  ii) But it is also the "same" insofar as it is also an ordinal
d) No ordinal can come between A and S(A)
e) There is no "existing infinity" here, only an "indefinite" succession: there is no Totality here

2)Succession and limit
a) Preliminary definitions
  i) A successor ordinal Sc(A) is when there is a B which A succeeds
  ii) A limit ordinal is a non-successor ordinal: lim(A) when there is no B which A succeeds
    (1) We see here a "qualitative discontinuity in homogeneous universe" of natural multiples
    (2) Thus a limit ordinal is "place of the Other" for succession of ordinals belonging to it
b) Consequences
  i) If an ordinal belongs to a limit ordinal its successor belongs to that limit ordinal as well
  ii) Btw a limit ordinal and any ordinal belonging to it, an infinity of ordinals are inserted
    (1) So the series of successors all belong to the limit ordinal
    (2) But it can never be the successor of an ordinal
c) Comparison of successor and limit ordinals
  i) Successor ordinals
    (1) Possesses a maximum multiple w/in itself
      (a) If A is the successor of B

(b) Then A = B U {B}
(c) But no ordinal can come between B and {B}
(d) Thus B is the largest ordinal of A
(2) Appropriate for hierarchical natural multiples w/ a dominant term
(3) Determined by the unique ordinal they succeed (above, A is determined by B)
(4) Successor ordinal has local status relative to its smaller ordinals

ii) Limit ordinals
(1) Do not have a maximum internal multiple; there is always an intervening ordinal
(2) Natural multiples w/ limit ordinals are "open"
(a) No immanent closure or max term
(b) Limit dominates but from "exterior"
(3) Limit ordinals, as place of succession, can only be determined by what have previously been passed through (even though this sequence can never be finished)
(4) Limit ordinal has a global status
(a) No one internal ordinal is any closer to it than another
(b) IOW, they are all infinitely far away bcs an infinity of intervening ordinals is possible
(c) Thus the limit is the Other of all its ordinals (vs "just another one" or "an other")

d) The limit ordinal is what "stamps into ek-sistence" the passage itself
i) Gives a series both its principle of being (the one-cohesion that it is as *this* series)
ii) And its "ultimate" term: one-multiple toward which it tends w/o ever arriving / approaching

3)The second existential seal: "there exists a limit ordinal"
a) We need an axiomatic / ontological decision for limit ordinals
b) Decision in favor of infinity at level of ontological schema of natural multiples
c) Formalizing the gesture of the 17^{th} C physicists

4)Infinity finally defined
a) Limit ordinal and the void
i) Although there are two existential axioms, there are not two principles of infinity of being
ii) IOW, void summons being, while limit ordinal provides place for operator of succession
b) Definition / decision of infinity
i) Cannot equate concept of infinity and that of limit ordinal
ii) The real or obstacle of thought is rarely a matter of finding the right definition
(1) rather there is a "wager upon sense,"
(2) "hazardous detour" that the subject must undergo
(3) There is no Method for thought
c) The first infinity: "aleph-null"
i) Every ordinal with a property X has a unique ordinal which is ∈-minimal for X
ii) So axiom "there exists a limit ordinal" entails a unique ordinal with property of "limit"
(1) that is, there is a unique ordinal which is ∈-minimal for "limit"
(2) a unique ordinal w/ property of "limit" none of whose elements has that property
(3) in other words, there is a "smallest" ordinal that is a limit-ordinal
iii) "Aleph-null" is the proper name of infinity, the border btw finite and infinite

5)The finite, in second place

MEDITATION 15: HEGEL

1)The Matheme of infinity revisted
a) Determinate being for Hegel implies internalized negativity
b) From this internalized negative, Hegel tries to generate the operator of infinity

c) Thus infinity becomes law or internal reason of finite as always going beyond its limit

2)How can infinity be bad?

a) Bad infinity is mere repetition of finite beings in a series, a "progression to infinity"
b) The infinite is here merely void w/in which repetition of finite operates as transgression of limit

3)The return and the nomination

a) Hegel's genius is to say that good infinity is the presence of bad infinity
b) That is, good infinity is subjective virtuality contained in pure presence of bad infinite
c) That is, good infinite qua presence of repetition is relation-to-self or pure immanence

4)The arcana of quality

a) Intro: the being of the one is not same in quantity as in quality
    i) In quality, the mark of the other is inside the "something"
    ii) In quantity, the "something" is indifferent to otherness
        (1) The quantitative One is the being of the pure One, not differing from anything
        (2) IOW, a quantity always differs in the same way from another quantity; its difference is "indifferent" (= all numbers are the same qua number)
b) The transition from qualitative to quantitative infinity is the key upon which Badiou focuses
    i) Qualitative infinity:
        (1) dialectic of identification: one proceeds from other
        (2) exterior = void in which a repetition insists
        (3) operator = passing-beyond
    ii) Quantitative infinity:
        (1) dialectic of proliferation: same proceeds from the One
        (2) exterior of number is itself as multiple proliferation
        (3) operator = duplication
c) Crucial consequence
    i) Good quantitative infinity cannot be pure presence, subjective virtuality
    ii) Because the same of quantitative One proliferates inside itself
        (1) So outside itself it is incessantly number (indefinitely large)
        (2) Inside itself it remains external to itself (infinitely small)
            (a) So there's no self-presence in interiority of quantitative
            (b) So number seems to be "universally bad" (see above)
d) Hegel's solution to this impasse (which B likes: number is un-presence)
    i) Good quantitative infinity is "forming-into-difference of indifference"
    ii) So the infinity of number is being a number
        (1) Quantity qua quantity
        (2) Quantitative infinity is the quality of quantity
e) This is where B objects:
    i) Why call this "infinity"?
    ii) This is Hegel's "symptom"
        (1) He tries a mere nominal equivalence of qualitative and quantitative infinity
        (2) He "fails to intervene on number"
            (a) Nominal equivalence of good quantitative and qualitative infinity is an illusion
            (b) There is no symmetry btw proliferation and identification
                (i) Proliferation / pure multiple is exteriority of itself: no self-presence
                (ii) Identification / quality is interiority of negative
        (3) So Hegel is interrupted: "mathematics is the discontinuity w/in the dialectic"

5)Disjunction

a) This is the real of Hegel's discourse:

i) Hegel can't face the impossibility of pure disjunction
ii) You can't make the repetition of One in pure number arise from interiority of negative
iii) That is, you can't get to the quantitative via the qualitative

b) Hegel can't face the necessity of an ontological decision
i) He can't maintain the dialectic through the "chicanes" (quibbles) of the pure multiple
ii) What Hegel tries to dismiss comes back as symptom in the text
(1) The split btw two dialectics, quality and quantity
(2) The good quantitative infinity is a hallucination