Vetter: Chapter 5 Formalizing Potentiality

Formal adequacy:

> “Thus we know that possibility, for instance, is closed under logical implication (if it is possible that p, and q follows from p, then it must be possible that q), is closed under and distributes over disjunction (it is possible that p-or-q iff it is possible that p or it is possible that q), and is implied by actuality (if p, then possibly p). The dispositionalist about modality should provide an account that is not merely compatible with, but which explains or entails those features. “

Recapitulation of the former chapters:

1) First: Potentialities include dispositions and abilities, but they extend beyond both (see chapter 3.4)
2) Second: Potentialities come in degrees;
3) Third: Potentialities can be intrinsic or extrinsic;
4) Fourth: Potentialities can be iterated (see chapter 4.6)

5.2 Framing the language (p.143)

Definition of **POT**:

Where is an n-place singular predicate and t1 . . . tn are singular terms, …, POT[ϕ](t1, . . . , tn) is a well-formed sentence. Semantically, it ascribes to the object or objects denoted by t1 . . . tn a potentiality to have the property or stand in the relation denoted by ϕ.

Definition of **λ**:

Where ϕ is a sentence, open or closed, and ϕ[t/x] is the result of substituting a term t for any free occurrence of x in ϕ, the sentence λx.ϕ (t) is true just in case ϕ[t/x] is true. Intuitively, λx.ϕ turns the sentence ϕ into a predicate meaning ‘is such that ϕ’ (with any free occurrences of x in ϕ becoming ‘gaps’ in the predicate).

5.3 Difficult cases (p.148)

Her overall aim will be to show that despite weird appearance all of these difficult cases actually work and we should accept them.

1) Tautological potentialities (p.148)
    a) Trivial disjunctives
    b) Self-identity
2) Quantified potentialities (p.151)
    a) Existential quantification
    b) Universal quantification
3) Cambridge potentialities (p.153)

5.4 Defining iterated potentiality (p.158)

Definition:

POT_n [ϕ](x) is defined inductively in terms of POT:

1. POT_1 [ϕ](t) =df POT[λx.ϕ](t)

2. POT_n+1 [ϕ](t) =df POT[λx.∃x(POT_n[ϕ](x)](t)

POT_∗ [ϕ](x) is true just in case for some n, POT_n [ϕ](x).

5.5 Introducing the logic of potentiality (p.161)

5.6 Comparisons (p.164)

(2) Essence and its dual (p.166)

5.7 Defending the principles (p.170)

1) Defending Closure (p.170)
   CLOSURE 1: Potentiality is closed under logical implication:
   If being PHI logically implies being PSI, then having a potentiality to be PHI logically implies having a potentiality to be PSI.

2) Defending Disjunction (p.177)
   DISJUNCTION: Potentiality distributes over, and is closed under, disjunction:
   An object has a potentiality to be PHI-or-PSI if and only if it has a potentiality to be PHI, or a potentiality to be PSI.

3) Defending Non-Contradiction (p.180)
   NON-CONTRADICTION: Nothing has a potentiality to be such that a contradiction holds.

4) Actuality (p.182)

   ACTUALITY: Potentiality is implied by actuality:

5.8 Interlude: potentiality in time (p.186)

5.9 The logic of potentiality and the logic of possibility (p.194)