A PROPOSED RESEMBLANCE TO HEGEL'S OBJECTIVE LOGIC

Leo Harrington

University of California, Berkeley

January 2006

Hegel's *Phenomenology of Geist*, 1807
('Geist' is 'Spirit' or 'Mind')

Hegel's *Logic*, 1812–1816
(and revised up to Hegel's death in 1831)

The Logic has no axioms –
it is a discursive presentation of categories.

Hegel: the Logic has no presumptions.

But also

Hegel: the only presumption is
the experience presented in the
Phenomenology of Geist:

the only presumption of the *Logic* is the experience
of the phenomenon that the *Logic* categorizes.

The *Proposed Resemblance*: **group actions**

The *Proposed Resemblance* to the **Phenomenology**:

We are spirited away towards encountering certain beings;

we end up potentially constituted as a set U acted on transitively and faithfully by a group G (although G and U are never actually achieved and are to be viewed as under construction);

we encounter beings through actions G^* where G^* acts on U through G and so through a homomorphism π from G^* to G;

but our ability to grasp these encounters is limited: at best we only have access through what is available from the stabilizer actions G_u ($u \in U$), and not even all of each G_u (since G is under construction).

To start the presentation of the Logic:

Some **initial** Hegelian **terminology**
and their *proposed resemblances*:

<u>immediacy</u>: subgroup K of G^*
acting transitively on a set C.

<u>mediation</u> (of K on C): b in a set acted on by G^*
such that $K \subseteq G_b^*$ (G_b^* is the stabilizer of b).

<u>determinate immediacy</u>: π maps K 1–1 onto
an $H \subseteq G$ where H is mediated by some $u \in U$.

<u>reflection</u> (of determinate immediacy K, C): an $S \subseteq U$
where π maps K 1–1 onto H and this isomorphism
extends to an isomorphism between K, C and H, S.

The organization of Hegel's Logic:

Three Doctrines:

Doctrine of Being, Doctrine of Essence, **Doctrine of the Notion**

Hegel joined the first two together calling them the **Objective Logic**.

For the *Proposed Resemblance*:

The **Doctrine of Being** is about G^* acting, where our (i.e. G on U) access is limited to what is determinant.

The **Doctrine of Essence** is about how G acting on U reflects the doctrine of being, where again our access is limited.

The **Doctrine of Being** is divided into three parts:

Quality, Quantity, Measure

In this talk, the *proposed resemblances* will be presented in the order:

Quality;

the beginning and conclusion of
the **Doctrine of Essence**;

Quantity and Measure;

and ending with a revisit to **Essence**.

For **Quality**, the presentation will follow closely the series of terms Hegel introduces.

For **Essence, Quantity and Measure**, the presentation will be looser.

Quality: this starts with

being is indeterminate immediacy: a K, C

(where $K \subseteq G^*$, C an orbit under K)

(By being we mean K is acting on C).

nothing is indeterminate immediacy: a K, C

(By nothing we mean K is not acting on C).

Hegel: They are the same except for intention.

becoming is the passage between being and nothing.

An example of becoming: K, C verses
a determinant H, S contained in K, C.

<u>determinant being</u>: H, S where π maps H 1–1 onto
H' mediated by some u in U.

(here, H, S is intended as contained in some K, C)

<u>quality</u> as such: H, S itelf, not as contained in K, C;

<u>etwas</u> (a something, or a somewhat):
H, S as acted on by K (the K–orbit of H, S).
(Let $e(H, S) = $ the etwas of H, S)

<u>something</u> and <u>other</u>: H_1, S_1 and H_2, S_2
distinct determinant beings inside K, C (K acting)
(a 'something' is in 'being'; an 'other' is in 'nothing')

Hegel: the etwas H, S is its own 'other'
(when H_1, S_1 and H_2, S_2 are both
K–conjugate to H, S)

Limitation: H, S has a boundary.

Proposed resemblances:

c in S can leave S for somewhere else in C;
    (here the boundary is between S and $C \sim S$).

c in S can leave H, S for some other H_2, S_2.

Finitude: inside the boundary, as opposed to –
Infinitude: outside the boundary.

False infinitude: the infinite progress from
one limitation H_i, S_i to the next limitation H_{i+1}, S_{i+1}.

True infinitude: the boundary of a determinate being is
between itself, and all 'other' etwas.

Being–for–self: the indeterminate immediacy K, C
can now be given a more determinant description

a one: (each 'one' is given by an etwas e(H,S))
Proposed resemblance:
for c in S, this 'one' is the K–orbit of c, H, S.

The many: all the (intended) etwas in the
indeterminate immediacy K, C.

Many ones: Each of the many is also a 'one'.

Repulsion: c in H, S, as 'one', can be repulsed (out of
etwas $e(H, S)$) into the 'one' of some etwas H', S'.

Attraction: all the etwas $e(H, S)$ are attracted together;
c in all etwas H, S at once.

being–for–self: an indeterminate immediacy K, C
with a set E of intended etwas.
(E can be enlarged to E' by repulsion;
c in H, S can be repulsed into H', S').

The process,
indeterminate immediacy to
determinate being to
being–for–self
is an example of Hegel's **dialectic**:

indeterminacy is '**negated**' into determinacy;
that determinacy is then also '**negated**' to recover
the original indeterminacy, but with its determinate
aspects **sublated** (cancelled and preserved).

The Doctrine of Essence:

<u>positing reflection</u>: G, U is under construction; v in U can posit 'something', call it X. Here X is posited as some H', S' where $H' \subseteq G_v$ and $S' \subseteq U$.

<u>external reflection</u>: the posited X is found as externally reflected in some determinant being, Y, as just considered in Quality; Y is a H, S, where H is a copy of H' via π.

<u>determining reflection</u>: S is copied into U as some S' where H, S and H', S' reflect. H', S' is then what X was posited to be all along.

Hegel (in the Phenomenology): 'we' (i.e. u in U) go into beings (i.e. c in S) by entering S'.

Clarification: since G, U is under construction, the H' posited in X is also under construction. In a sense, H' and S, X and Y,   are all emerging together.

12

identity (I = I): the intention that G, U is transitive, so each u (in U) can say 'I' speaking for the whole.

difference: u in U can be reflected in a being–for–self with 'a one' (among the many 'ones') reflected back to G, U as a determinate being with quality H, S (so u is in S) where $S \subseteq U$ and $H \subseteq G_v$ for some v.

ground: the essence behind the difference H, S, within identity G, U. In the *proposed resemblance*, the essence is in a sense H itself as a subset of some G_v, but acted on by G so as to be moved into G_u.

Identity, difference, ground,
are near the start of the doctrine of essence.

The doctrine of essence attempts to pursue 'things' (a 'thing' is one of the terms introduced during that pursuit) until every'thing' 'falls to the ground'.

So for each u in U, all possible H, S are realized somehow through H's $\subseteq G_u$.

At the end of the doctrine of essence there are the Kantian **categories of relation**:

substance and accidents; **cause and effect**; **reciprocity**

but for Hegel they refer to what he calls the Absolute Relation. In the *proposed resemblance*:

substance (of u in U) is taken to be G_u with its various posited H which under the action of G_u are each just elements of their G_u–orbit $\mathcal{H}_u$.

(Notice given $H \subseteq G_v$ (for fixed v):   for each $u \in U$ let $\mathcal{H}_u = \{H^k; k \in G, k(v) = u\}$. The function, $u \to \mathcal{H}_u$ is G–invariant; and each $\mathcal{H}_u$ is a G_u–orbit)

An accident (of u) is a (posited, reflected) determinant being S, H, with u in S (and $H \subseteq G_v$ for some v).

An accident viewed as an effect, is ultimately caused by any $\widehat{H}$ in $\mathcal{H}_u$ (since $H = \widehat{H}^g$ for some g).

The reciprocity between cause $\mathcal{H}_u$ and effect H (mediated by v) in $\mathcal{H}_v$ is inherent in the relation between u and v (as members of the same G–orbit U):

Let $G_{u,v}$ be the set of $g \in G$ such that $g(u) = v$. ($G_{u,v}$ is a left coset of G_u, and a right coset of G_v)

$g \in G_{u,v}$ sends G_u to G_v and correlates $\mathcal{H}_u$ with $\mathcal{H}_v$: an effect H in $\mathcal{H}_v$ is correlated with a cause $\widehat{H}$ in $\mathcal{H}_u$.

Hegel, at the end of the **doctrine of essence**, introduces the terms universality, particularity, and individuality.

In this *proposed resemblance*:

universality (for u) is given by $\widehat{H}$ in $\mathcal{H}_u$

particularity (for u) is given by H in $\mathcal{H}_v$
(which for u produces $S = H$–orbit of u)

individuality (for u) is given by g
(the g in $G_{u,v}$ being used).

As the universality $\widehat{H}$ varies through $\mathcal{H}_u$,
the corresponding particularity, H,
and the H–orbit of u,
will vary according to the individuality of g.

Notice, distinctions in individuality
(g, f different members of $G_{u,v}$)
produce an h in substance G_v ($h = gf^{-1}$).

The construction of the posited particularities H at the start of the **doctrine of essence** involve movements in substance ($h \in H \subseteq G_v$), and so could then involve using (somehow) such distinctions in 'individuality'.

After the Doctrine of Essence, which concludes the Objective Logic, the Logic continues on with the Subjective Logic: the Doctrine of Begriff.

Begriff is usually translated as the 'concept', or the 'notion'.

But griff means 'grip',
so begriff could be translated as: the '**grasp**'.

If a completed G acting on a completed U is granted for the moment, the <u>absolute</u> <u>relation</u> at the end of the **doctrine of essence** can, in the *proposed resemblance*, be given as the relation between u and v, namely N = the orbit under G of $< u, v >$.

This is connected with 'grasping' as follows:

In general, if a group K acts transitively on each of two sets B, C, and if $b \in B$, $c \in C$, then the relation between b and c is the K–orbit R of $<b, c>$. (The smallest K–invariant relation relating b to c).

Such an R can be analyzed in terms of 'grasping':

for fixed b in B, b 'grasps' $_b R$
(where $_b R$ is $\{c \in C \; ; \; R(b, c)\}$);
notice K_b acts transitively on $_b R$.

So R may be viewed as each b in B grasping its $_b R$.

And of course R may also be viewed in this way with C doing the grasping.

Returning to the **Doctrine Of Being**:

At the conclusion of **Quality**
a group action K, C
viewed as a being–for–self
consisted of many 'ones' (a set E of etwas)
all attracted together into 'the one'.

With this, Hegel enters **Quantity and Measure**:

In the *proposed resemblance*,
Quantity and Measure are concerned with
the immediate determinant aspects of how
a being–for–self K, C, E, is 'grasped'.

For a determinate $H \subseteq K$ and c in C,
let $H \cdot c = \{h(c); h \in H\} =$ the H–orbit of c.
Let $H(c) =$ the determinant being H, $H \cdot c$.

For F a set of H, let $D(F, c) = \{H(c); H \in F\}$.
And let $E(F, c) = \{e(H(c)); H \in F\} \subseteq E$.

By attraction,
every subset of E is of the form $E(F, c)$ for some F.

The $D(F, c)$ are called <u>discrete</u> <u>magnitudes</u>;
the $E(F, c)$ are called <u>continuous</u> <u>magnitudes</u>.

In the *proposed resemblance*, continuous magnitudes
will be the values of **measures**:

The <u>measureless</u>: for some c' in C, $E(F, c')$ might not
be a subset of the E of the being–for–self K, C, E;
but each $H \in F$ is determinant so $e(H, c')$ can be
added to $E' \supset E$ by repulsion.

If all the H in F are mediated by b
(where $b \in B$ and $< b, c > \in R$ and $P = {}_b R$ as above,
and where $H \in F$ implies $H \subseteq K_b = L$):

Let $\mathcal{F} =$ the L–orbit of F.

In the *proposed resemblance*,
the members F of $\mathcal{F}$ are called <u>extensive</u> <u>quanta</u>;
the $D(F, c)$ are called <u>intensive</u> <u>quanta</u>.

For fixed c, these can be identified and are equally
specific of the continuous magnitude $E(F, c)$.

For $F \in \mathcal{F}$ and $c \in P$ and $g \in L$,
$E(g^{-1}(F), c) = E(F, g(c))$
(so all the continuous magnitudes $E(F, c')$, where
$c' \in P$ and $F \in \mathcal{F}$, are obtained from any one $c \in P$).

Let M_c be the map: $F \to E(F, c)$.
So $M_{g(c)}(F) = M_c(g^{-1}(F))$.
(The $\{M_{c'}; c' \in P\}$ are called <u>real</u> <u>measures</u>).

Let Λ, Q be an isomorphic copy of L, $\mathcal{F}$
(through some isomorphism α).
Pick Λ, Q to be external to the action of K.
Let $\mathcal{M}$ be the corresponding set of real measures
(so $\mathcal{M} = \{M_c \circ \alpha; c \in P\}$).

When a g in K acts,

b will move to $g(b) = b'$ and
L, $\mathcal{F}$ will move to the corresponding L', $\mathcal{F}'$ of b';

but $\mathcal{M}$ will be sent pointwise to itself

(since each value $M(q)$ is a set of etwas,
and each etwas is a K–orbit).

So Λ, Q, $\mathcal{M}$ are all external to the action of K
(yet they hold some of R's 'grasp' on K, C).

In the *proposed resemblance*:

A system of Quanta is

a set Q acted on transitively by a group Λ.

Hegel: any quantum q can change into any other
quantum p; there is a ratio (call it λ) between p and q.
(*Proposed resemblance*:
the ratios are the group Λ acting on the quanta Q).

Hegel only uses the real numbers and integers for
examples about quanta. So the Q, Λ are taken to be
totally detached from the K, C they 'grasp'.

For any map M from Q to a set W,
letting (for $\lambda \in \Lambda$), $\lambda(M)(q) = M(\lambda^{-1}(q))$,
then Λ acts on the set $\mathcal{M}$ of all the $\lambda(M)$;
and for fixed q, by varying through all $M \in \mathcal{M}$,
all possible values are achieved by the $M(q)$.

In the *proposed resemblance*:

A <u>measure</u> is such a set $\mathcal{M}$
of maps M from quanta Q to
continuous magnitudes of a being–for–self K, C, E;
where Λ acts transitively on Q,
and the above natural extension of this action is
transitive on $\mathcal{M}$.

Hegel looks at how (pairs of) measures allow
being–for–selves to relate, calling them <u>real</u> <u>measures</u>
when they do combine two being–for–selves into a
third.

Proposed resemblance:
K, B and K, C combine into K, R; so the real
measures would be the L, $\mathcal{F}$ and $\{M_c; c \in P\}$,
as above, but copied to Λ, Q, $\mathcal{M}$ external to K.

Revisiting the **Doctrine of Essence**:

The **reflections** at the start of **essence** need to involve the immanent manifestations of beings that the **Doctrine of Being** has accumulated:

determinate beings H, S;
etwas of such determinate beings;
certain quanta Q, Λ;
measures on these having sets of etwas for values;
combinations of these.

When these determinant beings H, S are all taken to be reflected at G, U, these immanent manifestations are called *Shein* ('show', or 'illusory beings').

Presumably, in the **doctrine of essence** this '*shein*' is dispelled while the pseudo 'substances' Λ are subsumed by the G_u (presumably through diversity of individuality).

Hegel does not give details of this
specific to the quanta and measures.
For this *resemblance* here is a *proposal*:

The various reflected H', S' are each given by a
$u, v \in U$ where $H \subseteq G_v$ and $S' = H \cdot u$.

The construction of G, U proceeds so that *all* these
$< u, v >$ lie in the *same* **absolute relation** N.

For each $\Lambda, Q, \mathcal{M}$ in the '*shein*'

(where each etwas e in each $M(q)$ has already been
associated by reflection with an etwas $e' = e(H', S')$
of G, U, and so $M(q)$ is associated to a $M'(q)$)

there is a **real measure** $\mathcal{L}, \mathcal{Q}, \mathcal{N}$
(where $\mathcal{L}$ is a copy of **the substance** G_v, any v)
coming from the 'grasp' of N (from **The Begriff**)
which has a subaction mapping onto Λ, Q so that
$\mathcal{M}'$ pulls back to part of $\mathcal{N}$.