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A NOTE ON THE UNITARIAN EXPLICATION OF IDEALIZATION

The purpose of this note is to point out a problem with L. Nowak's [1989a-b] explication of idealization. Nowak develops a metaphysics underlying counterfactual procedures frequently used by sciences, reduction (earlier referred to as abstraction[1]) and abstraction (earlier known as idealization[2]). Reduction is a hard counterfactual procedure and involves the existential negation of an attribute, whereas the soft counterfactual abstraction consists in assigning a value of zero to an attribute.

Idealization, as it is thought of in the Idealizational Conception of Science, is explicated as a complex procedure composed of both reduction and abstraction. Thus, when Galileo idealizes the fall of bodies, not only does he abstract some factors (e.g., air resistance) but he reduces others (e.g., color of the bodies, their electric charge). Let us now see whether this explication is adequate in Nowak's own framework.

The significance of idealization is that it allows a scientist to consider only the essence of a phenomenon – the influence of other factors is negated. If the explication of idealization in terms of abstraction and reduction is correct, then either abstraction, or reduction, or both should eliminate the influence of attributes accordingly deformed. Since, abstraction and reduction are independent of one another this condition of adequacy can be formulated as a disjunction of:

(CA) The abstraction of factor B eliminates B's influence on F

(CR) The reduction of factor B eliminates B's influence on F.

The meaning of these statements becomes more precise in light of Nowak's explication of the concept of influence – until recently taken as primitive.

Let A and B stand for attributes, b for a value of B and $a_1, ..., a_k$ for a proper subset of values of A. According to a slight modification of

Nowak's definition [see our in print], b influences A iff it is not the case that when B adopts value b, A adopts values a_1, ..., a_k. The set of values a_1, ..., a_k thus excluded by b will be termed the exclusion set, $w(A, B)_b$. Clearly, the greater the cardinality of an exclusion set the greater the influence of b on A. We say that B is essential to A iff there exists a value b of B that influences A.

In order to formulate the condition of adequacy a little more precisely, let us assume that two factors are given: F (the determined factor) and B (the determining factor). For simplicity, we will assume that they can adopt only two values $\{m, n\}$, where m is the minimal value. We can then interpret (CA) and (CR) as:

$$\text{(CA')} \qquad w(F, B)_m = \emptyset$$

$$\text{(CR')} \qquad w(F, -B)_m = \emptyset \;\&\; w(F, -B)_n = \emptyset$$

respectively.

It is easily noticed that assumptions made by Nowak are too weak to render either (CA') or (CR') true. Let us take abstraction first. Intuitively, it appears that when a factor is "zeroed" it does not have the capacity to exert any influence. There is, however, no non-arbitrary reason on Nowak's account why (CA') should hold. Setting an attribute to a certain value (minimal or not) does not explain why the exclusion set should be empty. Indeed, no relation between these is proposed. If so, however, then there is absolutely no relation between abstraction and idealization.

Reducing B will not empty the exclusion set either. At first, just like in the above case, (CR') looks very intuitive: after all there is no B that could influence F after it has been reduced. Notice, however, that it is not B strictly speaking that is supposed to influence F but its value, i.e. either m or n. This fact is quite relevant as Nowak wants to allow that values be assigned even if attributes are reduced. That is to say, the following points are admissible in Nowak's construction: $<F - B, mn>$, $<-F -B, mn>$, etc. If so, however, then we again face the same problem as above. There are no relations imposed between values of determining attributes and values of determined attributes. Unless they be specified, there is no relation between reduction and idealization.

If that is the case, however, then the explication of idealization in terms of reduction and abstraction is clearly inadequate, as it stands.

This situation could be aided in at least two ways. The framework might be supplemented with more or less arbitrary restrictions. One might require that for every attribute there exists a value, a functional

zero, for which the exclusion set is empty (to render (CA') true). Furthermore, one may exclude the reduced attributes from adopting values and thus place just as arbitrary a restriction on the construction. Alternatively, and less arbitrarily, one may introduce another counterfactual procedure that operates on the exclusion sets, essentialization.[3] Idealization would then be a special case of the latter.

Which way the framework will be developed is a further issue, the conclusion that seems unavoidable now is that on the unitarian conception of metaphysics there is no idealization.

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NOTES

[1] See, Zielińska [1981], [1990].
[2] See e.g., Nowak [1980].
[3] This is suggested in our [in print].

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