

Levels of Selection in Their Own Right

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Skinner (1981) postulates three levels of selection, and allocates them to the disciplinary domains of biology, psychology and anthropology. They all share the causal mode of selection by consequences. What separates them is their 'level' of selection.

But disciplines today are not divided on this basis. Anthropologists are not necessarily concerned with selection, or any kind of nomothetic explanation (Eriksen, 2006). Behavior analysis has come to encompass both the study of culture and the individual. We can obtain a different reading if "subject matter" is substituted for "discipline". This way, we can grasp an assumption inherent in the division of selection into levels: they are linked to the notion of autonomous inquiry, or the study of a subject matter in its own right.

This possibility of autonomous inquiry may be explicated as *epistemic independence* – the notion that knowledge of one state of affairs may be obtained, or must be obtained, independently of other states of affairs. Epistemic independence is a trivial notion if one believes two phenomena to be unconnected. It's a significant notion when phenomena are considered highly connected. Herbert Simon (1962) addressed epistemic independence when he asked why "a scientist has a right to treat as elementary a subsystem that is in fact exceedingly complex"; scientists, he says "do this all the time", and "if they are careful scientists they usually get away with it." (p.468).

The idea of the study of behavior – in its own right – fits into this larger notion of

levels of selection. This feature isn't necessarily explained by constitutive accounts of how one level is enabled by another (Glenn, 2003), or by appeal to qualitative differences (Houmanfar, Rodrigues, & Ward, 2010).

Why epistemic independence?

The assumption of epistemic independence is part of what justifies the organization and division of disciplines. To set up separate institutions for different disciplines means facilitating stronger interaction within disciplines than across them. One way to rationally reconstrue such actions is to attribute them with the implicit assumption of epistemic independence. We generally expect ideas relevant to our subject matter to originate within our discipline rather than outside it. More importantly, we expect that relevant ideas may be produced with limited knowledge of what goes on outside our discipline. It's easy to think of exceptions, but such cases are salient because they are scarce.

One could argue that interdisciplinary work is important and that division of labor in science happens for many other reasons. I recognize both of these points, but request they be put aside for now.

Belief in autonomous inquiry isn't a practically innocent notion. At the other end of this theoretical issue of what makes a level of selection, are the practical ways behavior analysts have organized themselves. Collectively, this pertains to journals, seminars, lectures, labs, and more; and individually, with whom each of us decide to share our ideas and findings.

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Justifying separation

Separating selection into levels requires a rationale. It's easy to say that an argument, a finding, or a research program, is irrelevant because it all pertains to a different level of analysis. The question is what justifies the separation.

The issue can be illustrated with Gilbert Ryle's (2009) notion of category mistakes. The notion can be used to argue *against* separation of two terms as entities. We recognize that a university as an institution, and a university faculty, shouldn't be conceived of as separate entities. "Faculty" is subsumed under the logical category of "university" in ordinary speech. So, it's a category mistake to say that universities are independent of their faculties. This is Ryle's conceptual context for scrutinizing alleged mind-body relationships. Note, however, that Ryle is also *for* separation in a semantic sense. To say that someone is intelligent means something different than saying that someone is acting intelligently. We may hold that these two require different explanations, regardless of whether intelligence is solely a behavioral phenomenon. The separation is explanatory because the questions – about, say, intelligence and intelligent acts – are assumed to be different (Ylikoski, 2013).

Ryle's logical categories have been wielded as an argument for explanatory separation (Holth, 2001) in a similar way to the notion of levels of analysis (Sandaker, 2006) – as conceptual tools for distinguishing relevance from irrelevance. The reasoning seems to be that if two questions A and B are different, their respective explanations E^A and E^B must have some degree of independence to be specified. This can't necessarily be true.

One can be faulted for conflating categories or levels of analysis, but the potency of the critique hinges upon a definition of "category" or "level". According to Ullin Place (1999), Ryle never solved this problem. A verbal community could agree upon a definition, but then the critique will only be valid within that sphere of consensus. Even if there's complete

consensus, the definition may still be challenged empirically. If the categories or levels themselves are what is being questioned, the critique is moot.

Consider how one might explain what a category mistake is. One would first use everyday examples for pedagogical purposes. Then, at some point, one moves on to technical terms. The starting point may be the category of fruit, and the final example could be operants. The transition is essentially one of uncontroversial categories to controversial ones. The argument won't necessarily maintain its validity through this transition. To insist upon one's own categories is to beg the question. Some putative category mistakes could more charitably be interpreted as a challenge to one's taxonomy.

The same can be said for levels of selection. The separation needs a rationale. Theorizing about the qualitative nature of groups or how individuals become groups doesn't necessarily address this need. These two approaches strike me as theories about the level we have accepted, not about the reasons for why we should accept it. I will argue below that epistemic independence is a candidate rationale for dividing selection into levels. But first I will attempt to clarify the type of justification called for.

Internal, not external, justification

Rudolf Carnap (1950) distinguished between internal and external questions about language. External questions are pragmatic. The concern lies with what language to accept as appropriate for attaining certain goals. Internal questions concern logical and empirical matters. We ask what is entailed given a network of premises and whether the network hold up against the empirical world. The external question for levels of selection concerns whether to accept the concept as *meaningful*, while the internal question concerns the *existence* of such levels.

The justification called for above may be viewed as a question about language usage.

The question of accepting a level of selection branches out into accepting it as meaningful and accepting its existence. As such, it can be interpreted either as an external or internal question. The justification called for here is internal. I hold that the notion of levels of selection is a meaningful concept. The concern lies with whether levels of selection exist – an internal question.

Internal questions are not pragmatic questions. We have already agreed upon what is pragmatic once the external questions have been answered. After that, we inquire how we reach a consensus that something in fact is pragmatic. To say that this is also a pragmatic question is to conflate knowing what we want, with knowing what we need to get it – premises, empirical findings, and heuristics. A hallmark contention of radical behaviorism is that mentalism prematurely ends inquiry (Chiesa, 1994). Notions of ‘pragmatism’ can do that too with internal questions.

When understood as an internal question, one can also explain how the idea of epistemic independence isn’t a mere device for grounding something whose need for grounding never ends except for arbitrary reasons. As an internal justification, epistemic independence is a matter of coherence and heuristics rather than a foundationalist matter. The justification called for is one of how we reach consensus about the existence of levels of selection and what notions could be heuristic for the pursuit. I will first discuss the logical and then the empirical dimensions of the internal justification for levels of selection.

Logical relationships between data

Consider the question of what makes a level of selection in conjunction with an additional premise: *selection operates on multiple levels simultaneously*. This must be true if objects on one level are constituted by objects on another level. They occupy the same empirical space. A change in level

cannot, therefore, be solely accounted for in terms of changes in scale or ‘zoom’. Individuals don’t automatically become groups by virtue of their interactions or multitude. The reductionist can always insist that more individuals only entail more variables; no new level of analysis has appeared. The holist can always insist that having only one individual still means viewing the observed behavior as an expression of culture; the supraindividual level of analysis didn’t change. The reductionist and holist might still have different scale preferences, but that would be an accompanying rather than defining feature of their approach. The point is that the same data may serve as evidence for either phenomenon due to logical overlap.

The fact that levels of selection occupy the same empirical space may be used to argue in a different way against constitutive and qualitative approaches. Changes between levels of selection have a perspective component. This can be illustrated with Wittgenstein’s duck-rabbit. In that illusion, the two animals are derived from the same stimulus, but ‘separated’ in terms of a duck- or rabbit-response. Their stimulus connection isn’t causal but logical, and a description of their qualities – such as beak or ears – doesn’t inform us of why to take note of either one.

Changes between levels of selection might be viewed in a similar way. It’s a taxonomic switch. To understand the warrant for such a switch, we need to look at the normative rationale of our language.

Epistemic independence along with prediction and control

The behavior analytic language reflects an axiological concern on which behavior analysis is commendably explicit: prediction and control. Epistemic independence is arguably consistent with this axiology. I will elaborate on this connection in two ways: how it (a) accommodates Ryle’s analysis, and (b) names the complexity of concern.

(a) This view pays homage to Ryle in the *for* and *against* sense of separation. To be against separation means maintaining that levels of selection don't refer to a layered reality. Levels of selection are taxonomic perspectives, there's no arcane duplication of the empirical world. To be for separation means to hold that questions in one system of classification are epistemically independent of another. The conception of entities here is essentially epistemic. If an object on one level cannot be deduced from an object on another level, without losing prediction and control, we may say the deduced object doesn't occupy the same level.

(b) The scaling view of levels of analysis is linked to constitutive complexity; here the question is "how big", "how much?" or "how many?". Epistemic complexity concerns what is relevant for specific knowledge. Following Simon (1962), we may say that there's a noteworthy difference between constitutive and epistemic complexity. Extensive constitutive complexity is no necessary impediment to epistemic simplicity. An analogy may be the study of coordinated motor movement (Turvey & Fowler, 1990). The question isn't how many muscles and joints that are involved in coordination, the question is what variables are required to model coordination. Now, here's the link between epistemic independence and taxonomy: when the phenomenon of interest changes *it may or may not be true* that we need to redefine the relevant variables. If true, the group variables may adhere to one rule of classification, and the individual variables to another.

Evidence

An essential question is what might qualify as evidence for epistemic independence. Each researcher should probably explore this on his or her own; conceptually and empirically. That said, here are three hierarchically arranged suggestions.

1. *Unreliability*. The question is whether the functional relationship observed on one

level has a reliable relationship to the functional relationship on another. For example, is there a reliable relationship between a type of aggregate product and positive reinforcement, or is the relationship unreliable? Or, is a group feature potentiating or inhibitory for an individual feature, or vice versa? One way to investigate this might be through a conditional probability analysis.

2. *Asymmetrical robustness*. This is reliability and generality combined. We ask if the functional relationship on one level can tolerate more variation than the functional relationship on another level. The question is whether a *ceteris paribus* clause is (a) required for the reliability relationship, but which (b) names a smaller domain than the one the functional relationship on the level in question applies to.

3. *Non-unitary*. The questions of (1) and (2) may be repeated for additional variables so that we can build a general case. We inquire whether the variables noted are members of different networks of dependency relations.

In conclusion, Skinner (1981) may be interpreted as saying that levels of selection are types of selection which can be studied in their own right. This is different from conceiving of such levels as differences of scale. The scaling view isn't fit for purpose if we intend to wield the notion of levels of selection in a way similar to Ryle's categories. The possibilities of scaling are endless and arbitrary. Epistemic independence is non-arbitrary and potentially limited. More importantly, epistemic independence is an explanatory link between the goal of prediction and control and our taxonomy. The extent to which we understand this link, is the extent to which we have an internal justification, and possibly heuristics, for assigning our data to objects at their appropriate levels of selection.

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