Levels of Variableness Elaborated

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Abstract

The proposed account is a reasonably sporadic and incomplete interim bridge to the rationale of further calculi (yet to be exposited), as spawned by the logic of orduality ex post albeit departing from rather remote premises ex ante. It is aimed to showcase the interlinkage between azimuthality and narrowing, or gradiency and recovery.

Implication Bounding, Identity Binding

The very quest after completeness could be prone to many threats, more so bearing in mind that oversimplifying shortcuts (be it strong symmetry or excessive narrowing) will likely strike back ushering in a plethora of unrelated results. To begin with, one need not bound the very domain of search, with completeness yet to be arrived at with respect to the very number and natures of domains to fit with one another rather than being imposed exogenously. No system can at this rate be assured of being entirely and uncontroversially endogenized from within—unless one has a clear rationale of how this kind of meta-gradiency is to be ensured without collapsing into azimuthality beyond P- and NP-complexity, or having to sin a similar tossup over Type I versus Type II errors.

In particular, the accuracy or coherence of the ordinal calculus (Shevenyonov, 2016c-d) cannot be guaranteed even when arriving at similar results from a variety of angles (even as this could alone be a good ordual check to have started with and end up securing). To start with good *implicative* guesses only to arrive at *equivalences* yet to be tested could be one way to advance axiomatization, with the more controllable alternative being to embark on *identity* as the more binding vehicle. Fortunately, these dual perspectives are mutually reducible.

Consider the special case of *(A, a)* or rho-calculus, with *a* tending to *A*:

$$(A,A)^{\rho} \sim (A,A)^{\frac{\rho}{\rho-1}}$$

In fact, despite similar appearance, the *(A, A)* bases need not amount to the same in the LHS versus RHS. If one is to ensure that they do, the respective control could be about picking a reduction, i.e. a narrowing of the basis or its particular representation (e.g. in terms of *A*) for an identity to build upon one:

$$[A^{\frac{\rho}{\rho-1}}]^{\rho-1} \equiv A^{\rho}$$

This, largely trivial, result *simultaneously* seconds the convention of index transform operations (akin to powers) and the choice of A as a reduction of basis. Outside each other, the two choices may or may not make much sense.

The Many Faces of Floating Basis

More generally, consider the unbounded or ultimate floating basis (UFB) X (which also has shown to be the indefinite yet boundable level of variableness generalizing many familiar notions, notably layers of recursive functions, or functionals):

$$[(X,X),X] \equiv [X,(X,X)]$$

This generic representation of the ultimate variable or floating basis (showing how particular values are endogenized) would accommodate the above corner case as well as the weaker one as below:

$$(A,a)^{\rho-1} \sim (a,A)$$

For all practical purposes (of re-validating the rho calculus etc.), it can be reduced as follows:

$$(A1)\ \bar{X}^{f_L(\rho)*(\rho-1)} \equiv \bar{X}^{f_R(\rho)}$$

With the X-hat being identical reduction in the LHS and RHS alike (not generally tantamount to unity), this can be rendered more general still:

$$(A2)\ \ f_R(*) = F_L^R(f_L(*))$$

This could be reduced to either a solution of a functional equation or seen as the likes of tensor (not necessarily linear) or functional space. Ironically, for the m-ality generalization of rho-calculus, the above can simply be reduced to:

$$(A3)\ \ f_k(\rho) = \frac{\rho_l}{\rho_k} * f_l(\rho)\ \forall k \neq l\ \in (1,m)$$

The rho in the ellipses could be seen as a numeraire—indeed a further reduction of the basis, or the flipside of that assumed from the outset[1].

Elusive yet Non-Tenuous Unity

It has been argued extensively that the very positivist premises are inconclusive exactly (if ironically) to the extent they (supposedly) comply with naïve syllogistic or implicative logic, which fails in the event of multiplicity (nonsingularity) of implications and/or premises:

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[1] The bulk of the prohibitively abundant detail and overlaps will be omitted for now.

$$\{A_i\} \to \{B_j\}$$

This may in fact not be reducible to the non-bijective or homeomorphic functionality. On second thought, isomorphic maps could facilitate refutation (inverted implication or mapping), while again somehow referring to identity. The following related depictions, $A \leftrightarrow B$, $A \equiv B$, $(A \to B) \cap (B \to A)$ as well as the dual case, or $NOT(A \to B) \cup NOT\ (B \to A)$ naturally induce an m-ality extension $[\equiv \{A_i\}]$ as completeness $\{A\}$.

Now, if this basis were to be reduced in the sense of rotations or shifts, the status quo as completeness can be restored as a full-cycle period:

$$\overline{\{\,\}_m^{k\equiv m}} \equiv \{\,\}_m$$

And if there is correspondence between the complete and the entire set of its reductions (whether elements or sections or specific narrowings), this can be conveyed likewise:

$$\left\{\overline{\{\,\}}\right\} \equiv \{\,\}$$

The dual possibility of the complete equaling the negation or narrowing of its higher-level form appears to hold plausibly for reductions yet remains to be seen for the "special" case of utmost generality. In prior notations (Shevenyonov, 2016h) this essentially amounts to (A1) above in suggesting that,

$$\forall n\ \exists k \colon L^k L^{-n} X \equiv L^{-n+1} X$$

Here k may or may not trivially amount to unity depending on the symmetry assumptions (e.g. whether the L operator applies as a left or right action) or [non]singularity (e.g. whether n is far from very large). In any event, the *{ }* and L operators alike appear to suggest a non-trivial dichotomy of narrowing versus recoverability (with the latter rarely ever being symmetric, e.g. when taking an integral of zero or decomposing a resultant matrix into its likely component matrices or operators, as the issue is taken beyond the spectral theory). In line with ordualty, these operators reveal just how fuzzy the line is between the objects and the operation (while simultaneously denying functional hierarchy as one facet of causality).

From this stage on, the induction is straightforward:

$$\exists \varphi \colon \prod_i^{\varphi} L^{-i} = L^{-\varphi} \equiv 1, \ \ A_i \equiv L^{-i} A$$

$$L \sim 1^{\varphi}, L^{-i} = 1^{\frac{\rho_i}{\rho_{i+1}}} \sim 1^L, \qquad m = \frac{-1 \pm \sqrt{8\varphi + 1}}{2}$$

This should provide an early glimpse at how unity representations will recur throughout the series of distinct yet related calculi as forthcoming.

References

Shevenyonov, A. (2016h). A levels-of-narrowness existentialism. Forthcoming at viXra.

Shevenyonov, A. (2016d). Ordinalcy calculus: Entangled avenues nuanced. *viXra: 1610.0379*

Shevenyonov, A. (2016c). An introduction to New Foundations: The Ordual calculus for ultimate search. *viXra: 1610.0363*.