Buffy Vampire Slayer Relationships ≠ BVSR

Creativity and Discovery as Blind Variation and Selective Retention:

Multiple-Variant Definitions and Blind-Sighted Integration

Definitions

- Under simultaneous selection
- Under sequential selection

Set of k Hypothetical Variants

Variant	Probability	Utility	Expectation
X_1	p_1	u_1	q_1
X_2	p_2	u_2	q_2
X_3	p_3	u_3	q_3
…	…	…	…
X_i	p_i	u_i	q_i
…	…	…	…
X_k	p_k	u_k	q_k

where $q_i = P\,(X_i | \, u_i)$

Blind-Sighted Continuum

- Blind-sighted measure
  - For all *k* variants: $0 \leq r_{pq} \leq 1$, where
    - 0 = perfect blindness
    - 1 = perfect sightedness
  - For subset of variants $p_i > 0$, truncated r_{pq}
    - Special Case 1: $r_{pq} = 1$, if all *p*s, *u*s, and *q*s equiprobable
    - Special Case 2: $r_{pq} = 0$, if only all *p*s equiprobable

Variant Typology

Type	p_i	u_i	q_i	Generation	Status	Designation
1	> 0	> 0	> 0	possible	true positive	sighted inclusion
2	> 0	> 0	= 0	possible	true positive	blind inclusion
3	> 0	= 0	= 0	possible	false positive	blind inclusion
4	= 0	> 0	> 0	impossible	false negative	blind exclusion
5	= 0	> 0	= 0	impossible	false negative	blind exclusion
6	= 0	= 0	= 0	impossible	true negative	sighted exclusion

Sequential Selection

- Need to add a index for consecutive trials to allow for changes in the parameter values:
- $p_{1t}, p_{2t}, p_{3t}, \ldots p_{it}, \ldots p_{kt}$
- $u_{1t}, u_{2t}, u_{3t}, \ldots u_{it}, \ldots u_{kt}$
- $q_{1t}, q_{2t}, q_{3t}, \ldots q_{it}, \ldots q_{kt}$
- where $t = 1, 2, 3, \ldots n$ (number of trials)
- Then, $0 \leq r_{pq}(t) \leq 1$

Sequential Selection

- N.B.: Although $r_{pq}(t) \rightarrow 1$ as $t \rightarrow n$,
  - it would not do so monotonically except under highly unlikely circumstances,
  - e.g., when $\rho_{pu}(t) = -1$ (i.e., where the rank-order correlation between the *p*s and *u*s is perfectly negative)
  - Hence, the problem of local utility maxima and the question of when to terminate BVSR

Three Final Points

- Although the above formulation is very abstract, it can be readily explicated in terms of concrete examples
- Moreover, by deriving the blind-sighted continuum, the formulation allows us to avoid useless debates about BVSR
- That said, it is likely that highly creative scientists often operate at the blind end of the continuum