

Operant Subjectivity

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**More Than Just a Research Tool: A Comment on
An Overview of the Statistical Techniques in Q
Methodology**

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“Q-methodology is a research tool....” So begins Professor Akhtar-Danesh’s article, and it is from this initial misunderstanding that many of the difficulties that follow can be traced. On the very first page of *The Study of Behavior*, Stephenson (1953), in setting out his challenge to psychology, proposed that the science of behavior could be improved by attending to his “Q technique,” but then he continued:

Our concern, however, is not to be with Q-technique alone, or even principally.... We are to consider a *methodology* to serve this purpose: We call it “Q-methodology.” This is a set of statistical, philosophy-of-science, and psychological principles.... (p. 1, italics in the original)

Statistics and tool considerations are therefore only a part of a broader methodology and it is only in light of the latter that the former can be appraised, yet there is no evidence in his article that Professor Akhtar-Danesh, although he employs the term “Q methodology,” is aware of or even minimally familiar with Q methodology *qua* methodology, only with its technical accouterments.

He is not alone in this misunderstanding, of course, but takes his place in an illustrious group. As Stephenson (2014) has lamented, “Q-methodology was meant to be the foundation for a subjective science. Instead it remains as Q-technique, Q-analysis, Q-method, alongside multivariate analysis, discriminative function, variance analysis, R factor analysis and the like tools of statistical minds” (p. 48). Rather than constituting a fresh critique, therefore, Professor Akhtar-Danesh’s comments serve as yet another contribution to the corpus of what Stephenson (1990) referred to as “exclusionary psychometrics” (see also Brown, 2006; Brown, Danielson, & van Exel, 2014), a collection of writings that contains contributions by many statistical luminaries – Cyril Burt, L.L. Thurstone, Hans Eysenck, R.B. Cattell, and virtually everyone else in the field of psychometrics – but that at best makes no contribution to Q methodology and at worst is misleading. The well-known Paul Meehl, to provide an example, attributed to Stephenson the view that a Q factor analysis was based on the transposition of an R data matrix (Waller & Meehl, 1998), a misunderstanding shared more recently by Bruce Thompson (2010); and Stanley Mulaik (1986), while singling out one of Stephenson’s early papers as foundational to the field of psychometrics, then associated it with developments in cluster analysis. And the justifiably famous Lee Cronbach issued a blistering critique of Stephenson’s book (Cronbach & Gleser, 1954), but based on presuppositions that were anything but those advanced by Stephenson, leading the latter to remark that “if my

critics persist in arguing from premises I not only do not make but am at great pains to deny, then I think I know where the charge of lack of care and explicitness has at least some of its beginnings” (Stephenson, 1954, p. 333). Professor Akhtar-Danesh’s reference section is wholly dominated by this traditional literature, which constitutes something of an echo chamber for critics who continue to puzzle over how it was that Stephenson could have gotten things so wrong.

In his article, Professor Akhtar-Danesh makes a number of questionable assertions that appear out of touch with essentials – e.g., that theoretical rotation leads to subjective results lacking in reliability, that theoretical rotation is hypothetico-deductive rather than abductive, and so forth. But consider in this regard the two hypothetical factor structures in Table 1. Were the study leading up to this table one in which participants had been asked to provide Q-sort representations of their perceptions of President Donald Trump’s policy priorities, then structure (a) has structural clarity in its favor in showing the first three participants having one view of the president’s priorities (factor I) and the last three a separate view (factor II), with participant no. 4 being a mixed case. We can assume that Professor Akhtar-Danesh would favor structure (a), especially if its original dimensions had been derived using principal components or principal axis analysis.

Table 1:
Two Hypothetical Structures

Sort	Factor Structures			
	(a) Simple (Varimax)		(b) Operant (Theoretical)	
	I	II	A	B
1	X		X	-X
2	X		X	-X
3	X		X	-X
4	X	X	X	
5		X	X	X
6		X	X	X
7		X	X	X

X = significant loading

Suppose, however, that no. 4 is President Trump himself and that participants 1-3 were among his military advisors whereas nos. 5-7 were from his group of domestic advisors. Now structure (b) might be considered the more reasonable way to conceive of the situation, with the factors rotated in such way as to place the president’s viewpoint (which, after all, was the target of the others’ perceptions) as purely defining for A and the others now mixed on A and B. Comparable to the men chained to a wall in Plato’s cave allegory, participants 1-3 and 5-7 grasp a piece of reality (factor A) from the shadows that they observe, but their understandings are also apparently clouded by extraneous conditions (documented by factor B) that they bring to the task and that serve to throw them off the scent: Factor B could therefore constitute an interesting discovery. Although lacking in the statistical niceties of structure (a), therefore, structure (b) re-

serves “a key place for reality” (Stephenson, 1953, p. 38; see also Brown & Robyn, 2004) inasmuch as it incorporates whatever might already be known or intuited about the world – e.g., that Q sort no. 4 was provided by President Trump, that his policy advisors seem not always to be on the same page, etc. – rather than leaving the final solution reliant solely on the caprice of statistical rules. Like the regression line, all versions of factor and component analysis as well as all rotational schemes (save for theoretical rotation) can respond only to the topographical features of the data. Varimax cannot entertain hunches and suspicions or respond to cues.

Professor Akhtar-Danesh contends that judgmental rotation runs contrary to abductive reasoning and is more in keeping with hypothetico-deductive thought, but it is difficult to imagine what the major and minor premises would be (as required for deduction) in relation to Table 1 or what generalizations the results would support (as required for induction). On the other hand, it is easy to imagine that an investigator tasked with studying the decisional interactions within the White House might start with the condition of experimentation, “What are the president’s policy priorities?”, just to get a sense of the lay of the land, and then use the machinery of factor analysis (centroid plus theoretical rotation) as a way to probe the factor space that the Q sorts have created. Is everyone in the West Wing chock-a-block with the president (i.e., all on the same factor), or are some on board and others not? Or might confidential comments by some staffers or political pundits (or perhaps propositions found in the literature on leadership) lead us to look at the data in one way rather than another? It is this kind of puzzling environment in which the abductive instincts come to the fore and are given leeway by the multitude of possible rotations, which contrasts with the single factor structure (PCA or PAF plus varimax, oblimin, and other standardized recipes) with which Professor Akhtar-Danesh seems content to rest satisfied. Scientific curiosity will demand more.

There is a sense, as Professor Akhtar-Danesh and his associates have discussed (Mirza et al., 2014), that abduction can be conceived as limited to hypothesis generation or to inferring the best explanation for extant observations. This was the way in which Peirce originally conceived abduction, but his views evolved, as Burks (1946) has shown, and “in his later period Peirce widened the concept of inference to include methodological processes as well as evidencing processes” (p. 301) and increasingly came to regard abduction “as a method of discovering new ideas rather than as a mode of argument” (p. 302). Stephenson picked up on this methodological extension and the pragmatics of incorporating technique, noting that “a telescope, or a microscope, or for that matter a Rorschach ink-blot, makes discoveries possible on a *first-time* basis” (Stephenson, 1961a, p. 8, italics in original), and subsequently concluding that “a virtue can therefore be made of the centroid method’s indeterminateness *by rotating deliberately so as to bring unexpected but not unsuspected results to light, that is to make discoveries*” (Stephenson, 1961b, p. 10, italics in original). Professor Akhtar-Danesh seems to regard this as unscientific in the extreme, but his vision of science appears limited to testability and the reliability and reproducibility of findings. Testing, of course, has its place, but science is a more comprehensive enterprise: discovering what is worth testing in the first place is also of value. When Kepler discovered that Mars followed an elliptical path, for instance, he could then leave it to lesser minds to test whether the same was true for the other planets. Testing comes toward the end of the scientific process when most of the more important work has already been done.

Professor Akhtar-Danesh makes numerous other assertions that would be worth addressing were space more plentiful – for example:

- that no good reasons have been advanced in support of centroid analysis (but of course they have, which leaves the question as to why they have not been taken cognizance of);
- that adoption of centroid analysis has only been based on loyalty to Stephenson (which is a correlational statement, paraded as if causal, and likely not based upon systematic study);
- that centroid analysis is an approximation to principal axis factor analysis (which is true enough from a *statistical* standpoint, but which is neither here nor there and overlooks that "... from the abductory point of view, the indeterminacy of the centroid method is its most important attribute" [Stephenson, 1961b, p. 9], not its approximation to PAF).

And so forth. But I am not sure that Professor Akhtar-Danesh will find any of the above remarks compelling, or perhaps ever will, for they emanate from a methodological world quite different from his own. In this connection, the story is told that Ludwig Wittgenstein, after having been examined for his Cambridge doctorate by Bertrand Russell and G.E. Moore, quipped to his somewhat puzzled committee members, "Don't worry, I know you'll never understand it," and this may be where we have to leave it, but not before noting that Moore, despite his uncertainty, demonstrated humility by concluding that "I myself consider that this is a work of genius" (Monk, 1990, pp. 232-233), an acknowledgement that may also be due Stephenson's contributions.

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